

Conservation Assessment and Management Plan (C.A.M.P.) Workshop

Endemic Orchids of the Western Ghats

REPORT

2001

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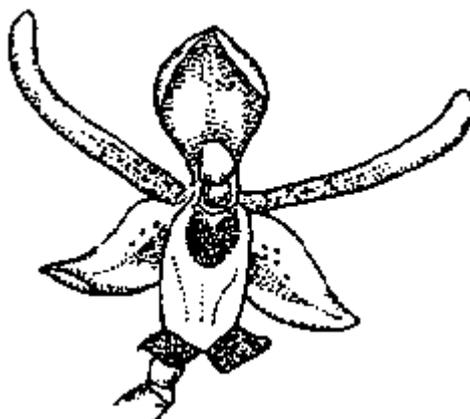


Conservation Assessment and Management Plan Workshop Report
Endemic Orchids of the Western Ghats

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Contents

Authors of the report	i
Participating institutes	ii
Sponsors and organizers	iii
Acknowledgement	iv
Executive summary	1-4
Report	5-33
Taxon Data Sheets	35-185
References	187-195



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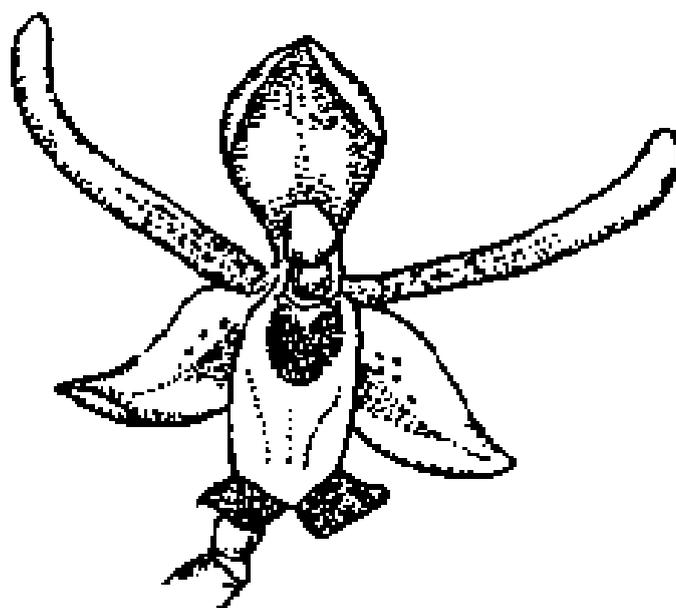
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CAMP Workshop on Orchids of the Western Ghats

Participating Institutions

Botanical Survey of India, TNAU Campus, Coimbatore
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Zoo Outreach Organisation, Coimbatore



Conservation Assessment and Management Plan (C.A.M.P) Workshop

Endemic Orchids of the Western Ghats

Sponsors, Hosts, Coordinators, Organizers, Collaborators

Sponsors

This project has been sponsored by the Paignton Zoological and Botanical Gardens, England.

Host / Co-Organizer

Institute for Forest Genetics and Tree Breeding, Coimbatore

Coordinators / Facilitators / Organizers

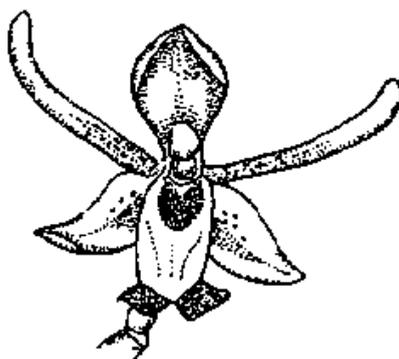
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Indian Subcontinent Regional Orchid Specialist Group, SSC, IUCN
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CONSERVATION ASSESSMENT AND MANAGEMENT PLAN WORKSHOP FOR ENDEMIC ORCHIDS OF THE WESTERN GHATS

EXECUTIVE SUMMARY

The biodiversity of Western Ghats is among the richest in the world – one among the 25 hotspots along with Sri Lanka. The flora and fauna also represents some of the most highly threatened forms in the world, as a result of continuing loss of habitat, fragmentation and expanding human population and activities. The status of endemic orchids of the Western Ghats was assessed at a workshop in May 2000 as a combined effort of academics, field biologists and foresters. A Conservation Assessment and Management Plan (CAMP) workshop was held for five days from 15 to 19 May 2000, at the Institute of Forest Genetics and Tree Breeding, Forest Campus, Coimbatore. The workshop was initiated by Dr. T. Ananda Rao, Emeritus Scientist of the Karnataka Centre for Advancement of Science, Bangalore, who also networked orchid specialists before the workshop. The Wildlife Information Liaison Development (WILD) Society, Zoo Outreach Organisation (ZOO) and the Conservation Breeding Specialist Group, India (CBSG India) organised the workshop, which was sponsored by the Paignton Zoological and Botanical Garden, Paignton, Devon, United Kingdom. The Institute for Forest Genetics and Tree Breeding co-organised and hosted the workshop at their campus. The Conservation Breeding Specialist Group, India facilitated the workshop. The workshop and the process itself was supported by the Indian Subcontinent Regional Orchid Specialist Group (ISROSG) of the SSC, IUCN, by the attendance and active input of its Co-chair Dr. C. Sathish Kumar of the Tropical Botanic Gardens and Research Institute, Palode, Thiruvananthapuram.

Totally, 125 endemic orchids of the Western Ghats were assessed at the 5-day workshop of which 98 species were endemic only to the Western Ghats and 27 had their range extending to Eastern Ghats also. A total of 38 orchid specialists, botanists, conservationists and ecologists participated in the workshop.

The Conservation Assessment and Management Plan (CAMP) is a workshop process developed by the Conservation Breeding Specialist Group (CBSG) of the Species Survival Commission (SSC)/ The World Conservation Union (IUCN). The CAMP Process brings together a broad spectrum of experts and stakeholders to:

- (a) evaluate the current status of populations and habitat in the wild;
- (b) evaluate the current status of populations in captivity;
- (c) assess degree of threat using IUCN Red List Criteria;
- (d) make recommendations for intensive management action; and
- (e) make recommendations for specific conservation-oriented research.

CAMP workshop is an ideal methodology for involving national or regional specialists to assess the conservation status of a group of taxa, e.g. orchids, ferns, mammals, birds, algae, etc. Preparation for the CAMP workshop is extensive, involving identifying specialists on the group of taxa to be assessed, identifying the taxa to be assessed, and interacting with the specialists to expand and improve the lists. Descriptive CAMP material and a set of Biological Information Sheets (Appendix I) for species-specific questions are circulated to specialists. The Biological Information Sheet can be copied and filled out before the workshop or posted to the organisers if the specialist cannot attend. At the workshop, participants are divided into small to medium-size groups (6-12 persons) of either taxonomic group specialty or geographical area specialty. The groups are then provided the Taxon Data Sheets (Appendix II) on which they record information from (a) their discussion, (b) the Biological Information Sheets and (c) participating specialists. The Taxon Data Sheet consists of two parts, (a) the taxon information and (b) the management recommendations. All participants at the workshop correct and ratify their discussions and the data compiled in each Taxon Data Sheet during the final plenary session.

After the workshop the editors/facilitators undertake a review of the information compiled at the workshop by posting a draft report to all participants for corrections, modification and for details not submitted at the workshop.

The taxon assessments were based on the 1994 and 2000 IUCN Red List Criteria developed by the IUCN. The IUCN Red List Criteria have evolved over the last 30 years starting from a subjective perception in Red Data Books to the more sophisticated and objective Red Lists of today. The current categories and criteria ratified by the IUCN Committee in 1994 incorporates principles of population dynamics and conservation biology and is a product of nearly five years of revisions. The 1994 criteria is based on scientific rationale (principles of conservation biology) and has the advantages of being applicable to any taxonomic group, of being comparable across taxa and of transparency in its applicability. The 2000 IUCN Red List Criteria was ratified by the IUCN General Council in October 2000, which is a more developed version of the 1994 Criteria. In the Orchid CAMP workshop, the taxa were assessed using both the versions since information was available. Also, it was tried to test the applicability of the new version, which gave a positive.

The 1994 and 2000 IUCN Red List Criteria were adopted as a tool to assess the endemic orchids of the Western Ghats. The IUCN criteria include categories that determine whether a taxon is threatened, non-threatened, extinct, poorly known or is not to be evaluated, based on the information available for assessment.

Assessments at the workshop were made from information gathered from all the participating biologists, from their knowledge in the field, including unpublished information of range extensions, sightings, local threats, habitat changes, impact of changing ecology and other important information that does not normally get published but is available. Sources from literature are also sought in compiling this information, and museum records, if available, are included. After the initial compilation of data in a Taxon Data Sheet, the status is derived using qualifiers (or criteria) for the degrees of threat and the information is ratified after discussion at an open plenary in the workshop. The information in the Taxon Data Sheet is then typed up and a draft sent to all participants for further review, additions or minor modification of information.

Of the endemic orchid taxa of the Western Ghats (125 taxa), 106 were assessed meticulously by the participants at the workshop, while the rest were assessed by a team of five individuals including all the editors of this report. The decision to do so was widely accepted at the workshop by all the participants since not much information was available with the group. The status derived according to both the 1994 and 2000 Criteria indicated that more than 84.8% of the taxa are threatened in the Western Ghats. Four taxa are Data Deficient and three were Not Evaluated at the workshop. Figure 1a indicates the status of Western Ghats endemic orchids as assessed in the workshop and figure 1b that of the endemic orchids of Western Ghats extending to Eastern Ghats.

Figure 1a. Status of Western Ghats endemic orchids according to the 1994 and 2000 IUCN Red List Criteria.

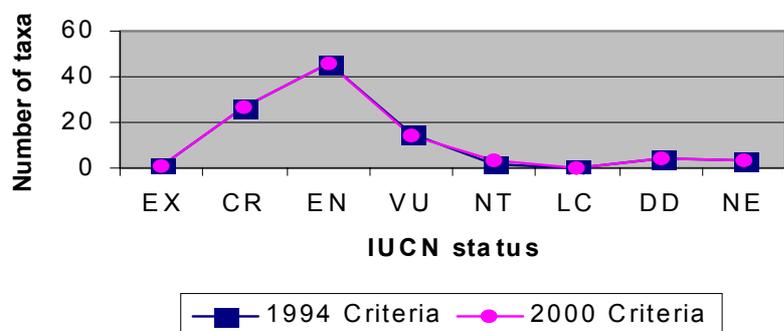
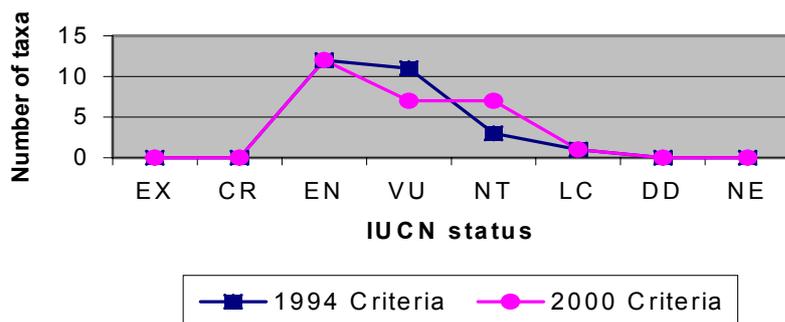


Figure 1b. Status of orchids of Western Ghats extended to Eastern Ghats according to the 1994 and 2000 IUCN Red List Criteria.



As evidenced by the assessments, much of which was done with limited information, more studies are required to truly understand the status of the orchids in the wild, a situation that is common in floral and faunal research in South Asia. Even though most of the assessments are made with reasonable data, or inferences, it is clear that direct observations are lacking for many taxa. Monitoring of species is extremely rare, and in many cases only sporadic sightings or accidental observations are the sole indicators of a species' existence in a habitat. Various recommendations, therefore were suggested as part of the management planning of this exercise, whereby surveys, monitoring, habitat management, genetic studies, taxonomic studies, limiting factor research, limiting factor management, life history studies, captive breeding and other basic research and management recommendations were made. It was also suggested that this exercise be carried out again in 3-5 years to determine the status of Western Ghats orchids after some more information is collected.

CONSERVATION ASSESSMENT AND MANAGEMENT PLAN WORKSHOP FOR ENDEMIC ORCHIDS OF THE WESTERN GHATS

REPORT

The Western Ghats is one of the well-known wildlife centres in India, for its many protected areas, wild locations and beautiful scenery. The Western Ghats is also known as one of the richest areas in the world in terms of biodiversity, making it the one-among-25 Hotspots of the world (Mittermeier *et al.*, 1998, 2000) along with Sri Lanka. Amongst the various components the biogeographical area can boast are high endemicity, taxonomic uniqueness, possibly yet-to-be-discovered flora and fauna, ca. 1,500 endemic angiosperm taxa (Nayar, 1996), 14 endemic mammals (Molur *et al.*, 1998), ca. 100 endemic amphibia (Molur and Walker, 1998), ca. 100 endemic reptiles (Molur and Walker, 1998), 14 endemic birds (P.O. Nameer, pers. comm.), ca. 100 endemic freshwater fishes (Molur and Walker, 1998), ca. 25 endemic rattans (Renuka, 1992), innumerable invertebrates; the region is also known for its rich diversity of orchids. A total of 118 orchid taxa are found nowhere else in the world except the Western Ghats. The region also is home to about 190 taxa of orchids that occur in other parts of India and the world, making the total count of orchids around 310 in the Western Ghats.

The number of endemic orchid taxa listed does not indicate the entire diversity since quite a few unidentified taxa still remain, some of which are in the process of being described. The list of endemic orchids is therefore incomplete. Taxonomic confusion is evident in orchids of the region, which can be seen by the various nomenclature adopted by different authors of Floras of regions. Taxonomic inconsistencies are more pronounced in the subspecies level, with lack of proper surveys and studies adding to the complexity. Though there are quite a few botanists who are familiar with orchids, genuine orchid specialists (taxonomists) are very few, making the task of proper identification a challenging one. However, for the purposes of understanding the status of orchids or any flora or fauna, a first step is required to identify the lacunae in research, methodology, identity, etc. A workshop to do that was organised in mid 2000.

A Conservation Assessment and Management Plan workshop was planned in May of 2000 with the objective of assessing the conservation status of every described endemic orchid of the Western Ghats. The Institute of Forest Genetics and Tree Breeding (IFGTB), the Conservation Breeding Specialist Group, India, Zoo Outreach Organisation (ZOO) and Wildlife Information Liaison Development (WILD) Society organised and hosted the five-day workshop at the IFGTB campus, Coimbatore from 15 to 19 May 2000. The workshop was attended by 38 botanists, ecologists and conservationists from southern India, at the end of which 126 species and subspecies (taxa) of endemic orchids were assessed according to the IUCN Red List Criteria of 1994 and 2000. Conservation research and management recommendations were also made taxa-wise after the assessments were completed. The workshop was facilitated and coordinated by the Conservation Breeding Specialist Group, India (CBSG India) and supported financially by the Paignton Zoological and Botanical Garden, Paignton, Devon, United Kingdom. The Indian Subcontinent Regional Orchid Specialist Group (ISROSG), SSC, IUCN, was represented by its Co-chair, Dr. C. Sathish Kumar, a well-known orchid biologist and taxonomist, at the workshop. The workshop was initially suggested by Dr. T. Ananda Rao of the Karnataka Centre for Advancement of Science, Bangalore. He was also instrumental in keeping the interest alive with the networking of orchid specialists he conducted under the auspices of the CBSG India Orchid Special Interest Group.

Initial discussions with various potential participants and literature survey indicated the near impossibility of assessing all orchid taxa of the Western Ghats, since the numbers totalled 310. It was decided before the workshop that only endemic taxa would be assessed and the list was drawn up from Sathish Kumar's list of orchids of the Western Ghats, plus the input from various participants at the workshop itself. In all, 102 endemic taxa were listed before the workshop and 16 more were added at the workshop. This Report represents the work generated at the workshop by orchid specialists, participants who are credited as authors of the Report, and at the end of every Taxon Data Sheet. The Editors of this report have compiled the information gathered at the workshop in a readable form. Mistakes in the report are due to oversight. The results in this report reflect the group process rather than information by any single individual.

The Conservation Assessment and Management Plan Process

Conservation Assessment and Management Plans (CAMPs) provide strategic guidance for assessing priorities for intensive management, within the context of the broader conservation needs of threatened taxa. The CAMP Workshop was designed and developed by the Conservation Breeding Specialist Group initially to assist zoos to prioritise species for conservation breeding. Over the years, as a result of the careful manner in which the workshops have been planned and conducted, and also modified to reflect evolving scientific methodologies related to requirements of the Convention on Biodiversity, CAMPs have been and are being increasingly used as a means of assisting the regional and national biodiversity planning process and for contributing far greater numbers of species to the Red List of Threatened Animals.

Because of the importance of the tasks currently being undertaken with CAMP workshops, it is crucial that the methodology established by CBSG, which is continuously evolving and improving, be rigorously followed. CAMP workshops are intended to reflect the opinions and collect the knowledge of a wide variety of stakeholders while preserving scientific integrity and providing a uniform standard.

The CAMP process brings together a broad spectrum of experts and stakeholders to:

- a. evaluate the current status of populations and habitats in the wild;
- b. evaluate the current status of populations in captivity;
- c. assess degree of threat using IUCN Red List criteria;
- d. make recommendations for intensive management action; and
- e. make recommendations for specific conservation-oriented research.

The CAMP process workshop is intensive and interactive and facilitates objective and systematic prioritization of research and management actions needed for species conservation, both *in situ* and *ex situ*. Workshop participants assess the risks to a group of taxa and formulate recommendations for action using a Taxon Data Sheet. The Taxon Data Sheet serves as a compendium of the data on the status of population and its habitat in the wild as well as recommendations for intensive conservation action. They also provide documentation of reasoning behind recommendations, as well as details of other species-pertinent information.

The CAMP process is one of prioritization, assembling 10 to 40 experts (e.g., wildlife managers, biologists, representatives of the academic community or private sector, researchers, government officials and captive managers) to evaluate threat status of all taxa in a broad taxonomic group (e.g., Orchids), geographical region or country (e.g., Western Ghats).

Information gathering is focused on the most recent available data, estimates, informed guesses and identification of needed knowledge that allow:

1. assignment to IUCN Category of Threat;
2. broad-based management recommendations;
3. specific conservation-oriented research recommendations useful to generate the knowledge needed to develop more comprehensive management and recovery programs *in situ* and/or *ex situ*.

The results of the initial CAMP workshops are reviewed:

1. by distribution of a preliminary draft to workshop participants who volunteer to serve as preliminary editors;
2. by distribution to all workshop participants.

CAMP workshops are part of a continuing and evolving process of developing conservation and recovery plans for the taxa involved. The CAMP review process allows extraction of information from experts worldwide. Follow-up workshops will be required to consider particular issues in greater depth or on a regional basis or as the populations and habitat undergo the inevitable process of change. Follow-up is necessary to monitor the implementation and effectiveness of the recommendations resulting from the workshop also.

The CAMP process is unique in its ability to prioritize intensive management action for species conservation in the wild and in captivity, if required. CAMP documents can be used as guidelines by national and regional wildlife agencies as well as regional captive breeding programs as they develop their own action plans. It is the intent that the CAMP process will ultimately contribute to the wise worldwide use of limited resources for species conservation.

The IUCN Red List Criteria

The CAMP workshop process employs the IUCN Red List Criteria as a tool in assessing species status in a group. The IUCN Red List Criteria were revised in 1994 and ratified by the IUCN for use in threat categorisation at the global level (IUCN, 1996). The structure of the categories includes extinct, threatened, non-threatened, data deficient and not evaluated divisions; the first three divisions are further split into subcategories (Figure 1). Since 1991, the old Red Data Book categories have undergone successive changes to accommodate general guidelines for across taxonomic groups. To make application of the Criteria more universal, numerical values were attached to the different criteria for threat categories. The 1994 version also includes a purely quantitative criterion, which involves computation of the probability of extinction (such as in a population viability analysis) over a time frame for a taxon. The 1994 version of the Red List threatened categories are derived through a set of 5 criteria based on which the threatened category is assigned. The term “threatened” according to the 1994 IUCN categories means Critically Endangered, Endangered or Vulnerable. The 5 criteria for threat categories (IUCN, 1994) are

- (A) Population reduction
- (B) Restricted distribution
- (C) Population restriction and fluctuation
- (D) Restricted population
- (E) Probability of extinction

For a taxon to be categorised as threatened, it needs to qualify for any one of the above 5 criteria only. Not qualifying for any of the above criteria could mean that a taxon is either not threatened or is data deficient.

With the popularisation of the 1994 IUCN Red List Criteria and its application around the world, a more serious look at the criteria was suggested by various specialists and taxonomic groups. The IUCN formed a Red List Review Committee to suggest changes to the 1994 Criteria and after nearly 2 years of workshops and deliberations, the 2000 IUCN Red List Criteria were drafted, which was finally accepted by the IUCN in Amman, Jordan in October 2000. Since the draft version of the guidelines were available during the Orchid CAMP workshop, it was decided to gather information for the revised criteria. Hence the assessments made at the workshop includes both 1994 and 2000 Red List Criteria. The changes in the 2000 Criteria can be referred in IUCN (2000) but the overall change in the structure of the Categories is shown in figure 2. The changes in the structure of the categories include the upgrading of Lower Risk near threatened and least concern to fulfil categories Near Threatened and Least Concern. The subcategory of Lower Risk conservation dependant is removed completely from the new structure.

Figure 1. The structure of the 1994 IUCN Categories

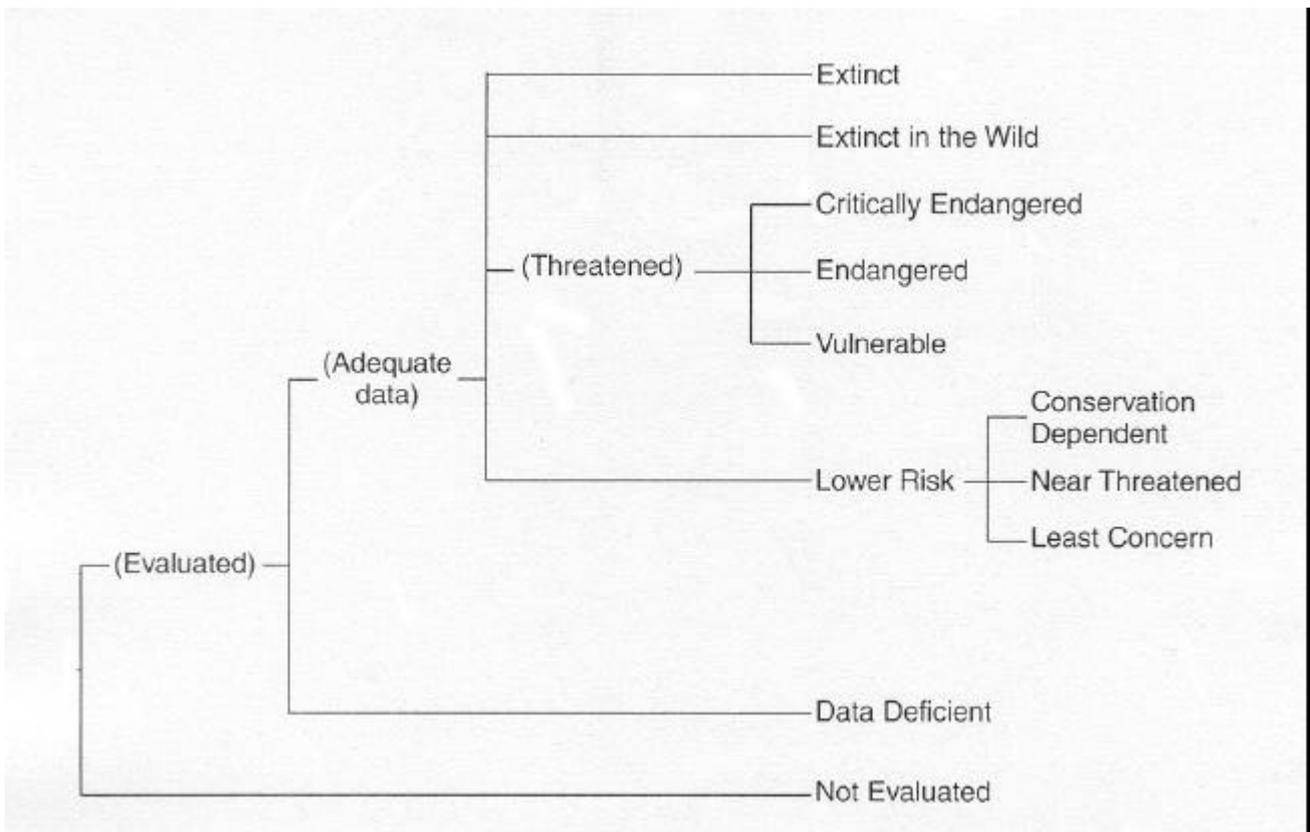
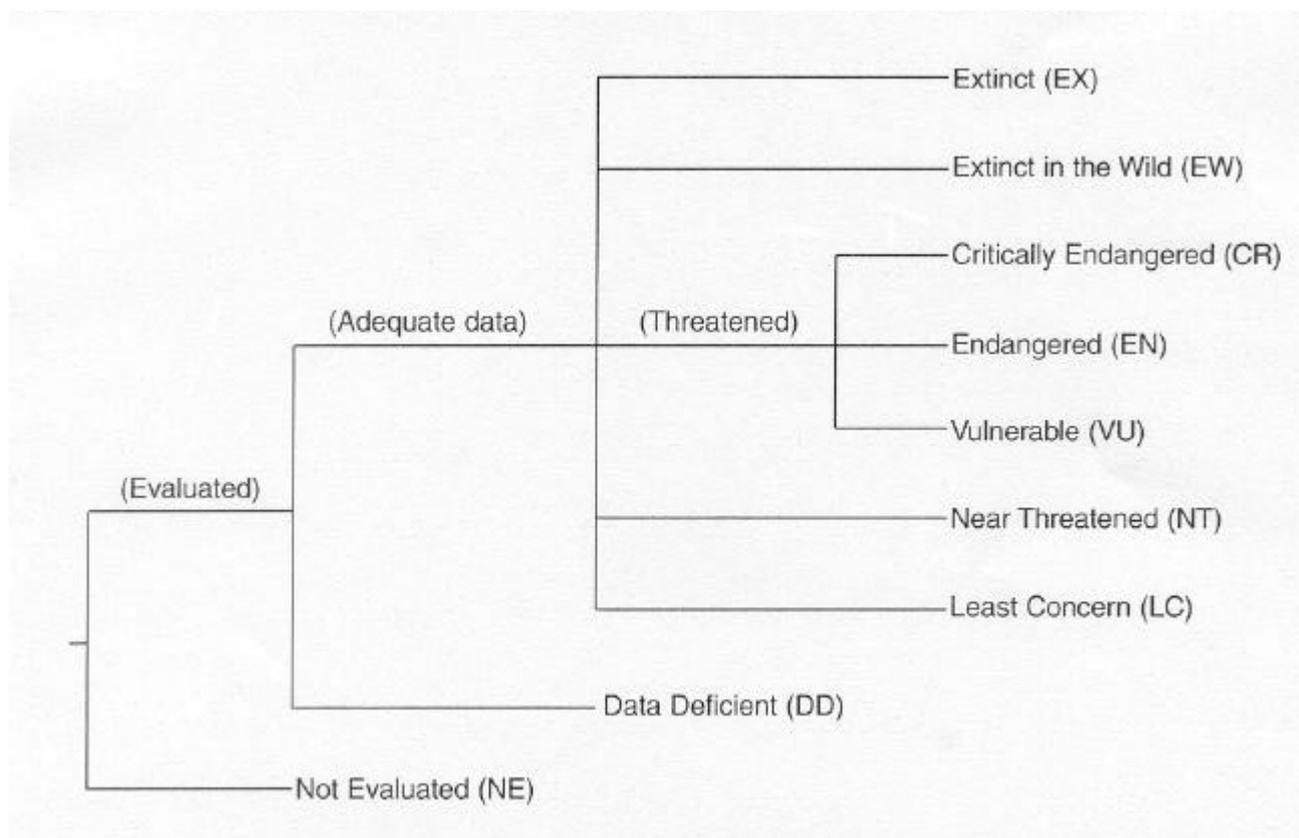


Figure 2. The structure of the 2000 IUCN Categories



Results and Discussion

The 2000 IUCN Red List of Threatened Species lists 23 orchid taxa from around the world, of which 20 are threatened (6 Critically Endangered, 11 Endangered and 3 Vulnerable). Three taxa are near threatened. The categorisation followed by the IUCN is based on the 1994 Red List Criteria. There is not a single Indian orchid mentioned in the list, even though the most popular of Western Ghats ground orchids, *Paphiopedilum druryi*, is one of the world’s most threatened orchids. The assessment made at this workshop and the results derived herein will provide the basis for inclusion of more than 80 endemic orchids of the Western Ghats to be categorised as threatened in the next iteration of the IUCN Global Red listing.

The information gathered at the workshop made it possible for the orchid taxa to be assessed using the 1994 as well as the 2000 IUCN Red List Criteria, based on which Table 2 is listed. More than 80 taxa were assessed as threatened according to either criteria, with the 1994 listing showing 5 orchids more in a higher threat category than the 2000 listing. This is because 5 orchids were assessed as Vulnerable based on population reduction, which, according to the new 2000 criteria has higher threshold values and therefore do not include these taxa. Table 1a and 1b are a summary of orchids assessed at the workshop.

The guidelines for applying IUCN Red List Criteria suggest the importance of data quality and uncertainty regarding information during assessment. The quality of data determines the quality of the assessment. The more research conducted on a species and its habitat, ecology, behaviour, population structure and dynamics, demography, threats etc., the better the assessment. Such studies have not been conducted consistently for many orchid taxa, but the Criteria have been established so as to permit inferences from some information for the species in the wild. The guidelines for applying the IUCN Criteria also support the validity of inference based on habitat, distribution, threats and indirect evidence but warns against making assessments for species that lack any information at all. The assessments for all orchids were made keeping in mind the level of confidence in the available information.

Table 1a. Summary status of endemic orchids of the Western Ghats

IUCN Category	Orchid assessment according to	
	1994 Criteria	2000 Criteria
Extinct (EX) (1994, 2000)	1	1
Critically Endangered (CR) (1994, 2000)	27	27
Endangered (EN) (1994, 2000)	46	46
Vulnerable (VU) (1994, 2000)	15	14
Lower Risk near threatened (LRnt) (1994) / Near Threatened (NT)(2000)	2	3
Lower Risk least concern (LRlc) (1994) / Least Concern (LC) (2000)	-	-
Data Deficient (DD) (1994, 2000)	4	4
Not Evaluated (NE) (1994, 2000)	3	3

Table 1b. Summary: Status of endemic orchids of the Western Ghats extending to Eastern Ghats

IUCN Category	Orchid assessment according to	
	1994 Criteria	2000 Criteria
Extinct (EX) (1994, 2000)	-	-
Critically Endangered (CR) (1994, 2000)	-	-
Endangered (EN) (1994, 2000)	12	12
Vulnerable (VU) (1994, 2000)	11	7
Lower Risk near threatened (LRnt) (1994) / Near Threatened (NT)(2000)	3	7
Lower Risk least concern (LRlc) (1994) / Least Concern (LC) (2000)	1	1
Data Deficient (DD) (1994, 2000)	-	-
Not Evaluated (NE) (1994, 2000)	-	-

The above table is a stark indicator of the level of threat faced by the endemic orchids of the Western Ghats. One endemic orchid is already thought to be Extinct. Botanical surveys over the years has not lead to the rediscovery of these taxa and hence the participants of the workshop were very sure of their status as completely extinct in the wild as well as in captivity (unfortunately, the taxa is not in cultivation). The reasons for 80% of the endemic orchids having been assessed as threatened are due to threats acting directly or indirectly on them affecting either the habitat or population. Only a very small proportion of the taxa is “relatively safe”, those that are classified under near threatened and least concern categories. However, the status of seven endemic orchids is not known because not much information is available or the taxa were not assessed at the workshop. The categories Data Deficient (DD) and Not Evaluated (NE) do not mean that the taxa are safe in the wild. In the case of DD, it simply means that there is not enough information to make an assessment, or, in the case of NE, the taxa were not assessed at all in the workshop. The results of near threatened should not be read as “safe”, rather the taxa are facing some threats whose continuation could eventually propell them into the threatened status of either Vulnerable (VU), Endangered (EN) or Critically Endangered (CR). Only one taxon, *Eria polystachya* is categorised as Least Concern, because of its ability to adjust to the rapidly changing environment.

The list of endemic orchids of Western Ghats and their status can be refered from Table 2a.

Table 2a. Checklist of endemic Western Ghats Orchids assessed at the workshop

Scientific Name	IUCN		Criteria	Reason
1. <i>Aenhenrya rotundifolia</i>	1994	EN	B1+2c; D	Restricted distribution and continuing decline; Very small population
	2000	EN	B1a+b(iii), 2a+b(iii); D	
2. <i>Aerides crispa</i>	1994	VU	B1+2abcde	Restricted area and continuing decline
	2000	VU	B2a+b(i,ii,iii,iv,v)	
3. <i>Aerides maculosa</i>	1994	EN	B1+2bcde	Restricted area and continuing decline
	2000	EN	B2a+b(ii,iii,iv,v)	
4. <i>Brachycorythis splendida</i>	1994	CR	B1+2abcde	Restricted area and continuing decline
	2000	CR	B2a+b(i,ii,iii,iv,v)	
5. <i>Brachycorythis wightii</i>	1994	CR	B1+2ce	Restricted distribution and continuing decline
	2000	CR	B1a+b(iii,v), 2a+b(iii,v)	
6. <i>Bulbophyllum acutiflorum</i>	1994	EN	B1+2abcde	Restricted distribution and continuing decline
	2000	EN	B1a+b(i,ii,iii,iv,v), 2a+b(i,ii,iii,iv,v)	
7. <i>Bulbophyllum albidum</i>	1994	EN	B1+2c	Restricted area and continuing decline
	2000	EN	B2a+b(iii,iv)	
8. <i>Bulbophyllum aureum</i>	1994	EN	B1+2c	Restricted distribution and continuing decline
	2000	EN	B1a+b(iii), 2a+b(iii, iv)	
9. <i>Bulbophyllum elegantulum</i>	1994	CR	B1+2c	Restricted area and continuing decline
	2000	CR	B2a+b(iii)	
10. <i>Bulbophyllum fimbriatum</i>	1994	EN	B1+2c	Restricted area and continuing decline
	2000	EN	B2a+b(iii)	
11. <i>Bulbophyllum fuscopurpureum</i>	1994	EN	B1+2bce	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iii,v), 2a+b(ii,iii,v)	

Scientific Name	IUCN		Criteria	Reason
12. <i>Bulbophyllum mysorense</i>	1994	EN	B1+2abcde	Restricted distribution and continuing decline
	2000	EN	B1a+b(i,ii,iii,iv,v), 2a+b(i,ii,iii,iv,v)	
13. <i>Bulbophyllum proudlockii</i>	1994	EN	B1+2bde	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iv,v), 2a+b(ii,iv,v)	
14. <i>Bulbophyllum silentvalliensis</i>	1994	EN	D	Very small population
	2000	EN	D	
15. <i>Bulbophyllum tremulum</i>	1994	EN	B1+2de	Restricted distribution and continuing decline
	2000	EN	B1a+b(iv,v), 2a+b(iv,v)	
16. <i>Cheirostylis seidenfadeniana</i>	1994	CR	B1+2bcd	Restricted area and continuing decline
	2000	CR	B2a+b(ii,iii,iv)	
17. <i>Chiloschista glandulosa</i>	1994	EN	B1+2bcd	Restricted area and continuing decline
	2000	EN	B2a+b(ii,iii,iv)	
18. <i>Chrysoglossum hallbergii</i>	1994	NE	-	-
	2000	NE	-	
19. <i>Coelogyne glandulosa</i> var. <i>bournei</i>	1994	CR	B1+2c	Restricted distribution and continuing decline
	2000	CR	B1a+b(iii), 2a+b(iii)	
20. <i>Coelogyne glandulosa</i> var. <i>glandulosa</i>	1994	EN	B1+2cd	Restricted distribution and continuing decline
	2000	EN	B1a+b(iii,iv), 2a+b(iii,iv)	
21. <i>Coelogyne glandulosa</i> var. <i>sathyanarayanae</i>	1994	CR	B1+2c	Restricted distribution and continuing decline
	2000	CR	B1a+b(iii), 2a+b(iii)	
22. <i>Coelogyne mossiae</i>	1994	EN	B1+2abc	Restricted distribution and continuing decline
	2000	EN	B1a+b(i,ii,iii,v), 2a+b(i,ii,iii,v)	
23. <i>Coelogyne nervosa</i>	1994	EN	B1+2abcde	Restricted distribution and continuing decline
	2000	EN	B1a+b(i,ii,iii,iv,v), 2a+b(i,ii,iii,iv,v)	
24. <i>Dendrobium barbatulum</i>	1994	VU	A2ce; B1+2abcde	Population reduction; Restricted area and continuing decline
	2000	VU	B2a+b(i,ii,iii,iv,v)	
25. <i>Dendrobium diodon</i> ssp. <i>kodayarensis</i>	1994	CR	B1+2ce; C2b	Restricted distribution and continuing decline; Small population and continuing decline
	2000	CR	B1a+b(iii,v), 2a+b(iii,v); C2a(ii)	
26. <i>Dendrobium heyneanum</i>	1994	EN	B1+2ce	Restricted area and continuing decline
	2000	EN	B2a+b(iii,v)	
27. <i>Dendrobium jerdonianum</i>	1994	EN	B1+2bcd	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iii,iv), B2a+b(ii,iii,iv)	
28. <i>Dendrobium ovatum</i>	1994	VU	B1+2abcde	Restricted area and continuing decline
	2000	VU	B2a+b(i,ii,iii,iv,v)	
29. <i>Diplocentrum congestum</i>	1994	EN	B1+2bcd	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iii,iv), B2a+b(ii,iii,iv)	
30. <i>Disperis neilgherrensis</i>	1994	EN	B1+2abcde; D	Restricted area and continuing decline; Very small population
	2000	EN	B2a+b(i,ii,iii,iv,v); D	
31. <i>Eria albiflora</i>	1994	VU	B1+2abcde	Restricted distribution and continuing decline
	2000	VU	B1a+b(i,ii,iii,iv,v), 2a+b(i,ii,iii,iv,v)	
32. <i>Eria dalzellii</i>	1994	LRNT	-	
	2000	NT	-	
33. <i>Eria exilis</i>	1994	VU	B1+2abcde; C1+2a	Restricted area and continuing decline; Small population and continuing decline
	2000	VU	B2a+b(i,ii,iii,iv,v); C1	
34. <i>Eria microchilos</i>	1994	VU	A1c, B1+2bcd.	Population reduction; Restricted distribution and continuing decline
	2000	VU	B1a+b(ii,iii,iv), 2a+b(ii,iii,iv)	
35. <i>Eria muscicola</i> var. <i>brevilinguis</i>	1994	DD	-	
	2000	DD	-	
36. <i>Eria mysorensis</i>	1994	EN	B1+2bcde; D	Restricted area and continuing decline; Very small population
	2000	EN	B2a+b(ii,iii,iv,v); D	
37. <i>Eria pseudoclavicaulis</i>	1994	VU	D2	Very restricted distribution
	2000	VU	D2	
38. <i>Eria tiagii</i>	1994	VU	D2	Very restricted distribution
	2000	VU	D2	
39. <i>Eulophia cullenii</i>	1994	CR	C2a	Small population and continuing decline
	2000	CR	C2a(i)	
40. <i>Eulophia pratensis</i>	1994	LRnt	-	-
	2000	NT	-	
41. <i>Gastrochilus flabelliformis</i>	1994	EN	B1+2bce; C2a	Restricted area and continuing decline; Small population and continuing decline
	2000	EN	B2a+b(ii,iii,v); C2a(i)	
42. <i>Habenaria bamesii</i>	1994	EN	B1+2b	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii), 2a+b(ii)	
43. <i>Habenaria cephalotes</i>	1994	EN	B1+2bc	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iii), 2a+b(ii,iii)	
44. <i>Habenaria elliptica</i>	1994	EN	B1+2abcde.	Restricted area and continuing decline
	2000	EN	B2a+b(i,ii,iii,iv,v)	
45. <i>Habenaria elwesii</i>	1994	CR	B1+2bcd	Restricted area and continuing decline
	2000	CR	B2a+b(ii,iii,iv)	

Scientific Name	IUCN		Criteria	Reason
46. <i>Habenaria flabelliformis</i>	1994	CR	B1+2e; D	Restricted distribution and continuing decline; Very small population
	2000	CR	B1a+b(v), 2a+b(v); D	
47. <i>Habenaria gibsonii</i> var. <i>foetida</i>	1994	CR	D	Very small population
	2000	CR	D	
48. <i>Habenaria gibsonii</i> var. <i>foliosa</i>	1994	VU	A1ce; B1+2ce	Population reduction; Restricted area and continuing decline
	2000	VU	B2a+b(iii,v)	
49. <i>Habenaria gibsonii</i> var. <i>gibsonii</i>	1994	CR	A2cd; C2a; D	Population reduction; Small population and continuing decline; Very small population
	2000	CR	A3cd; C2a(i); D	
50. <i>Habenaria pallideviridis</i>	1994	CR	B1+2c; D	Restricted distribution and continuing decline; Very small population
	2000	CR	B1a+b(iii), 2a+b(iii); D	
51. <i>Habenaria panchganiensis</i>	1994	CR	B1+2bcde	Restricted area and continuing decline
	2000	CR	B2a+b(ii,iii,iv,v)	
52. <i>Habenaria periyarensis</i>	1994	CR	B1+2c; D	Restricted distribution and continuing decline; Very small population
	2000	CR	B1a+b(iii), 2a+b(iii); D	
53. <i>Habenaria perrottetiana</i>	1994	EN	B1+2bcde	Restricted range and continuing decline
	2000	EN	B1a+b(ii,iii,iv,v)	
54. <i>Habenaria polyodon</i>	1994	CR	B1+2ce; C2	Restricted distribution and continuing decline; Small population and continuing decline
	2000	CR	B1a+b(iii,v), 2a+b(iii,v)	
55. <i>Habenaria richardiana</i>	1994	EN	B1+2abc	Restricted distribution and continuing decline
	2000	EN	B1a+b(i,ii,iii), 2a+b(i,ii,iii)	
56. <i>Habenaria travancorica</i>	1994	DD	-	-
	2000	DD	-	
57. <i>Habenaria suaveolens</i>	1994	EN	B1+2c	Restricted distribution and continuing decline
	2000	EN	B1a+b(iii), 2a+b(iii)	
58. <i>Hetaeria ovalifolia</i>	1994	VU	D2	Very restricted distribution
	2000	VU	D2	
59. <i>Ipea malabarica</i>	1994	EN	B1+2b	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii), 2a+b(ii)	
60. <i>Kingidium mysorensense</i>	1994	EN	B1+2bcde; C2a	Restricted distribution and continuing decline; Small population and continuing decline
	2000	EN	B1a+b(ii,iii,iv,v), 2a+b(ii,iii,iv,v); C2a(1)	
61. <i>Kingidium niveum</i>	1994	EN	D	Very small population
	2000	EN	D	
62. <i>Liparis platyphylla</i>	1994	DD	-	-
	2000	DD	-	
63. <i>Luisia abrahamii</i>	1994	CR	B1+2ce; C2a; D	Restricted area and continuing decline; Small population and continuing decline; Very small population
	2000	CR	B2a+b(iii,v); C2a(i); D	
64. <i>Luisia evangelinae</i>	1994	EN	B1+2bcde	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iii,iv,v), 2a+b(ii,iii,iv,v)	
65. <i>Luisia macrantha</i>	1994	EN	B1+2bcde	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iii,iv,v), 2a+b(ii,iii,iv,v)	
66. <i>Oberonia agastyamalayana</i>	1994	CR	D	Very small population
	2000	CR	D	
67. <i>Oberonia anamalayana</i>	1994	EN	B1+2c; D	Restricted distribution and continuing decline; Very small population
	2000	EN	B1a+b(iii), 2a+b(iii); D	
68. <i>Oberonia balakrishnanii</i>	1994	CR	B1+2c	Restricted distribution and continuing decline
	2000	CR	B1a+b(iii), 2a+b(iii)	
69. <i>Oberonia brachyphylla</i>	1994	EN	B1+2abcde+3c	Restricted distribution, continuing decline and extreme fluctuation
	2000	EN	B1a+b(i,ii,iii,iv,v)+c(iii), 2a+b(i,ii,iii,iv,v)+c(iii)	
70. <i>Oberonia chandrasekharanii</i>	1994	CR	B1+2cd	Restricted area and continuing decline
	2000	CR	B2a+b(iii,iv)	
71. <i>Oberonia josephii</i>	1994	CR	B1+2bc	Restricted distribution and continuing decline
	2000	CR	B1a+b(ii,iii), 2a+b(ii,iii)	
72. <i>Oberonia nayarii</i>	1994	VU	D2	Very restricted distribution
	2000	VU	D2	
73. <i>Oberonia platycaulon</i>	1994	EN	D	Very small population
	2000	EN	D	
74. <i>Oberonia sebastiana</i>	1994	VU	D2	Very restricted distribution
	2000	VU	D2	
75. <i>Oberonia seidenfadeniana</i>	1994	CR	B1+2bc	Restricted area and continuing decline
	2000	CR	B2a+b(ii,iii)	
76. <i>Oberonia wightiana</i> var. <i>nilgirensis</i>	1994	NE	-	-
	2000	NE	-	
77. <i>Oberonia wynaadensis</i>	1994	EN	D	Very small population
	2000	EN	D	
78. <i>Pachystoma hirsutum</i>	1994	VU	D2	Very restricted distribution
	2000	VU	D2	

Scientific Name	IUCN		Criteria	Reason
79. <i>Paphiopedilum druryi</i>	1994	CR	B1+2cde+3c	Restricted distribution, continuing decline and extreme fluctuation
	2000	CR	B1a+b(ii,iii,iv,v)+c(iii), 2a+b(iii,iv,v)+c(iii)	
80. <i>Peristylus brachyphyllus</i>	1994	DD	-	-
	2000	DD	-	
81. <i>Peristylus lancifolius</i>	1994	EN	B1+2bc	Restricted area and continuing decline
	2000	EN	B2a+b(iii)	
82. <i>Peristylus stocksii</i>	1994	EN	B1+2bcde	Restricted area and continuing decline
	2000	EN	B2a+b(ii,iii,iv,v)	
83. <i>Rhytionanthes nodosum</i>	1994	EX	-	-
	2000	EX	-	
84. <i>Rhytionanthes rheedei</i>	1994	EN	B1+2bcd	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iii,iv), B2a+b(ii,iii,iv)	
85. <i>Seidenfadeniella rosea</i>	1994	EN	B1+2c	Restricted area and continuing decline
	2000	EN	B2a+b(iii)	
86. <i>Seidenfia crenulata</i>	1994	CR	B1+2c; D	Restricted area and continuing decline; Very small population
	2000	CR	B2a+b(iii); D	
87. <i>Seidenfia intermedia</i>	1994	EN	B1+2bc	Restricted area and continuing decline
	2000	EN	B2a+b(ii,iii)	
88. <i>Seidenfia stocksii</i>	1994	EN	B1+2bcd; D	Restricted area and continuing decline; Very small population
	2000	EN	B2a+b(ii,iii,iv); D	
89. <i>Smithsonia maculata</i>	1994	EN	B1+2c	Restricted distribution and continuing decline
	2000	EN	B1a+b(iii), 2a+b(iii)	
90. <i>Smithsonia straminea</i>	1994	EN	B1+2c	Restricted distribution and continuing decline
	2000	EN	B1a+b(iii), 2a+b(iii)	
91. <i>Smithsonia viridiflora</i>	1994	EN	B1+2c; D	Restricted distribution and continuing decline; Very small population
	2000	EN	B1a+b(iii), 2a+b(iii); D	
92. <i>Spiranthes sinensis</i> var. <i>wightiana</i>	1994	NE	-	-
	2000	NE	-	
93. <i>Taeniophyllum scaberulum</i>	1994	CR	D	Very small population
	2000	CR	D	
94. <i>Thrixspermum musciflorum</i> var. <i>nilagiricum</i>	1994	CR	D	Very small population
	2000	CR	D	
95. <i>Trias bonaccordensis</i>	1994	VU	D2	Very restricted distribution
	2000	VU	D2	
96. <i>Trias stocksii</i>	1994	CR	B1+2bcde	Restricted area and continuing decline
	2000	CR	B2a+b(ii,iii,iv,v)	
97. <i>Vanda wightii</i>	1994	VU	D2	Very restricted distribution
	2000	VU	D2	
98. <i>Xenikophyton smeeanum</i>	1994	EN	B1+2bcde	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iii,iv,v), 2a+b(ii,iii,iv,v)	

Table 2b. Checklist of endemic Western Ghats Orchids extending to Eastern Ghats assessed at the workshop

Scientific Name	IUCN		Criteria	Reason
1. <i>Anoectochilus elatus</i>	1994	EN	B1+2abcde	Restricted distribution and continuing decline
	2000	EN	B1a+b(i,ii,iii,iv,v), 2a+b(i,ii,iii,iv,v)	
2. <i>Cirrhopetalum neilgherrense</i>	1994	VU	B1+2cd	Restricted area and continuing decline
	2000	VU	B2a+b(iii,iv)	
3. <i>Dendrobium anamalayanum</i>	1994	EN	B1+2abcce	Restricted area and continuing decline
	2000	EN	B2a+b(i,ii,iii,v)	
4. <i>Dendrobium aqueum</i>	1994	VU	A1ac+2c	Population reduction
	2000	NT	-	
5. <i>Dendrobium microbulbon</i>	1994	EN	B1+2abcde; C2a	Restricted area and continuing decline; Small population and continuing decline
	2000	EN	B2a+b(i,ii,iii,iv,v); C2a(i)	
6. <i>Dendrobium nanum</i>	1994	EN	B1+2abcde	Restricted area and continuing decline
	2000	EN	B2a+b(i,ii,iii,iv,v)	
7. <i>Dendrobium wightii</i>	1994	VU	B1+2d	Restricted distribution and continuing decline
	2000	VU	B1a+b(iv), 2a+b(iv)	
8. <i>Eria nana</i>	1994	EN	B1+2bcde	Restricted area and continuing decline
	2000	EN	B2a+b(ii,iii,iv,v)	
9. <i>Eria pauciflora</i>	1994	LRlc	-	-
	2000	LC	-	
10. <i>Eria polystachya</i>	1994	LRnt	-	-
	2000	NT	-	
11. <i>Flickingeria nodosa</i>	1994	VU	B1+2bcde	Restricted distribution and continuing decline
	2000	VU	B1a+b(ii, iii, iv, v), 2a+b(ii, iii, iv, v)	

12. <i>Habenaria decipiens</i>	1994	EN	B1+2bce	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iii,iv), 2a+b(ii,iii,iv)	
13. <i>Habenaria grandifloriformis</i>	1994	VU	A1ac, B1+2abcde	Population decline; Restricted area and continuing decline
	2000	VU	B2a+b(i,ii,iii,iv,v)	
14. <i>Habenaria heyneana</i>	1994	LRnt	-	-
	2000	NT	-	
15. <i>Habenaria longicorniculata</i>	1994	LRnt	-	-
	2000	NT	-	
16. <i>Habenaria longicornu</i>	1994	EN	B1+2bcd; D	Restricted area and continuing decline; Very small population
	2000	EN	B2a+b(ii,iii,iv); D	
17. <i>Habenaria multicaudata</i>	1994	VU	A1c+2c; B1+2bcde	Population reduction; Restricted distribution and continuing decline
	2000	VU	A2c+3c; B1a+b(ii,iii,iv,v), 2a+b(ii,iii,iv,v)	
18. <i>Habenaria ovalifolia</i>	1994	VU	A1c+2c	Population reduction
	2000	NT	-	
19. <i>Habenaria rariflora</i>	1994	VU	A1ac	Population reduction
	2000	NT	-	
20. <i>Liparis biloba</i>	1994	EN	B1+2bcd	Restricted area and continuing decline
	2000	EN	B2a+b(ii,iii,iv)	
21. <i>Oberonia brunoniana</i>	1994	VU	A1ac	Population reduction
	2000	NT	-	
22. <i>Oberonia proudlockii</i>	1994	EN	B1+2abcde+3c	Restricted area, continuing decline and extreme fluctuation
	2000	EN	B2a+b(i,ii,iii,iv,v)+c(iii)	
23. <i>Oberonia santapau</i>	1994	VU	C1	Small population and continuing decline
	2000	VU	C1	
24. <i>Oberonia verticillata</i>	1994	EN	B1+2bcd	Restricted area and continuing decline
	2000	EN	B2a+b(ii,iii,iv)	
25. <i>Robiquetia josephiana</i>	1994	VU	B1+2be; C1	Restricted distribution and continuing decline; Small population and continuing decline
	2000	VU	B1a+b(ii,v), 2a+b(ii,v); C1	
26. <i>Schoenarchis jerdoniana</i>	1994	EN	B1+2bcd	Restricted distribution and continuing decline
	2000	EN	B1a+b(ii,iii,iv), B2a+b(ii,iii,iv)	
27. <i>Vanilla wightiana</i>	1994	EN	B1+2bcd	Restricted area and continuing decline
	2000	EN	B2a+b(ii,iii,iv)	

The highly restricted nature of the Western Ghats endemic orchids is a major contributor to the threat status in the wild. According to the 1994 and 2000 Red List Criteria, factors in addition to restricted distribution of a taxon, such as severe fragmentation, limited locations and/or continuing decline in area, extent, quality of habitat, mature individuals, locations and/or extreme fluctuations in the above, can qualify a taxon as threatened. Hence, as seen in figure 3, 65 threatened orchids (74%) qualify for criterion B (for restricted distribution and fluctuation). A few (10 taxa, 11%) are affected by population declines and hence qualify for Criterion A (for population reduction), though the numbers differ with respect to 1994 and 2000 Red List Criteria (table 3). Information through extensive field surveys is available for some orchid taxa for which the number of mature individuals is estimated, making them threatened due to Criterion C (restricted population and fluctuation) (8 taxa, 9%) or Criterion D (restricted population) (21 taxa, 24%).

Table 3. Threat assessments of endemic Western Ghats orchids based on (a) 1994 criteria and (b) 2000 criteria.

Red list Criteria	Western Ghat Endemics		Endemic to Eastern and Western Ghats	
	1994	2000	1994	2000
A (Population reduction)	4	0	6	1
B (Restricted distribution and fluctuation)	70	70	18	18
C (Restricted population and fluctuation)	8	7	3	3
D (Restricted population)	27	28	1	1

The factors resulting in more than 80% of the endemic orchid taxa threatened in the wild are many. The most common of them are loss of habitat, human interference, biotic pressure and many other perceptible or subtle changes. Table 3 lists in brief the threats that affect orchid taxa in the Western Ghats.

Table 4a. Threats to the habitat of orchids in wild

Threat to habitat	# taxa affected
Habitat loss	87
Trampling	22
Human interference	43
Decline of host species	13
Damming	5
Plantation	11
Grazing	24
Habitat fragmentation	26
Road construction	6
Fire	15
Landslide	11
Vandalism	4

Threat to habitat	# taxa affected
Harvest for timber	5
Human activities	6
Industrialisation	2
Tourism	15
Drought	5
Forest degradation	9
Developmental activities	6
Tree felling	21
Mining	2
Habitat loss due to exotic animals	2
Habitat loss due to exotic plants	6
Others	5

Table 4b. Threats to the population of orchids in wild

Threat to population	# taxa affected
Trade for market or medicine	6
Damming	7
Overexploitation	7
Edaphic changes	9
Harvest for medicine	4
Pollution	6
Propagation difficulties	7

Threat to population	# taxa affected
Reproductive problems	6
Trade of parts	3
Hybridization	10
Interspecific competition	2
Harvest	6
Disease	1
Others	6

The above table (3) shows clearly the number and diversity of threats to which the Western Ghats orchids are exposed. Though quite a few areas in which orchids are recorded fall under protected areas, the level of protection given does not necessarily relate to the protection of the taxa. For example, the threats outlined in the workshop indicate the status of the habitat over many years, which when compared across taxa, clearly shows a decline either in the area of habitat, extent of habitat or quality of habitat. The threats also directly or indirectly affect the population structure. Many studies are conducted in protected areas, where such a situation is prevalent. The status of orchids outside of protected areas can be inferred to be more threatened than those in protected areas, due to unhindered threat factors. Table 4 lists the threats affecting or afflicting orchids in the Western Ghats, either to the habitat or to the population. Habitat loss, a major threat is the most perceptible threat to orchids apart from fragmentation and human interference. Other threats such as those caused by biotic factors (trampling, grazing), by man-made fires and other kinds of human interference (plantations, firewood, minor forest produce collection) can cause either direct harm or change the quality of habitat available for the orchids. Felling of host trees is identified as one of the major threats. Trade is not a major contributor to the threats orchids face in the wild. Only 7 taxa are in any form of trade, mainly in local trade. Due to the rarity of the taxa and the difficulty in finding them, trade seems to be highly restricted.

Table 4a. Threats faced by endemic orchids of the Western Ghats.

Scientific names	Threats to Habitat	Threats to Population	Trade	IUCN 1994	IUCN 2000
<i>Aenhenrya rotundifolia</i>	Trampling by wild ungulates, elephants	Demographic instability	No	EN	EN
<i>Aerides crispa</i>	Human activities, human interference, damming, vandalism	Trade for market or medicine, decline of host species, demographic instability	Local trade of flowers	VU	VU
<i>Aerides maculosa</i>	Industrialisation, human interference, urbanisation, habitat loss, habitat fragmentation	Trade of parts, and overexploitation	Local, domestic, commercial, ornamental trade	EN	EN
<i>Brachycorythis splendida</i>	Habitat loss, grazing, human interference	-	No	CR	CR
<i>Brachycorythis wightii</i>	Eucalyptus plantations, Grazing	-	No	CR	CR
<i>Bulbophyllum acutiflorum</i>	Harvest for timber	Decline of host species	No	EN	EN
<i>Bulbophyllum albidum</i>	Habitat loss	-	No	EN	EN
<i>Bulbophyllum aureum</i>	Human habitation, habitat loss	-	No	EN	EN
<i>Bulbophyllum elegantulum</i>	Human interference, habitat loss	Decline of host species	No	CR	CR
<i>Bulbophyllum fimbriatum</i>	Habitat destruction, human interference, habitat loss, harvest for timber, fire	Reproductive problems, decline of host species	No	EN	EN
<i>Bulbophyllum fuscopurpureum</i>	Habitat loss, plantations, habitat fragmentation	Edaphic changes, harvest for medicine, pollution	No	EN	EN
<i>Bulbophyllum mysorensis</i>	Construction of roads, tourism and human interference, habitat fragmentation, fire,	Reproductive problems, propagation difficulties, decline in the host species	No	EN	EN

Scientific names	Threats to Habitat	Threats to Population	Trade	IUCN 1994	IUCN 2000
<i>Bulbophyllum proudlockii</i>	Habitat loss, human interference	-	No	EN	EN
<i>Bulbophyllum silentvalliensis</i>	No change	Unknown	No	EN	EN
<i>Bulbophyllum tremulum</i>	Vandalism, habitat loss, habitat fragmentation, human interference		No	EN	EN
<i>Cheirostylis seidenfadeniana</i>	Tourism activity, habitat loss	-	No	CR	CR
<i>Chiloschista glandulosa</i>	Human interference, tourism, developmental activities	-	No	EN	EN
<i>Chrysoglossum hallbergii</i>	-	-			
<i>Coelogyne glandulosa</i> var. <i>bournei</i>	Coffee plantations, habitat loss	-	No	CR	CR
<i>Coelogyne glandulosa</i> var. <i>glandulosa</i>	Landslides, fire, habitat loss	-	No	EN	EN
<i>Coelogyne glandulosa</i> var. <i>sathyanarayanae</i>	Plantations, habitat loss	-	No	CR	CR
<i>Coelogyne mossiae</i>	Plantations, habitat loss, habitat loss due to exotic plants, landslides	Edaphic changes, harvest for medicine, trade for market or medicine, overexploitation	No	EN	EN
<i>Coelogyne nervosa</i>	Habitat loss, plantations, habitat fragmentation, grazing, fire, drought	Demographic instability	No	EN	EN
<i>Dendrobium barbatulum</i>	Habitat loss, vandalism, human interference	Hybridization, harvest, pollution	No	VU	VU
<i>Dendrobium diodon</i> ssp. <i>kodayarensis</i>	Decline in host species, habitat loss, habitat fragmentation	Edaphic changes	No	CR	CR
<i>Dendrobium heyneanum</i>	Habitat loss, habitat loss due to exotic plants	Decline of host species	No	EN	EN
<i>Dendrobium jerdonianum</i>	Human interference, habitat loss	-	No	EN	EN
<i>Dendrobium ovatum</i>	Habitat loss,	Harvest, demographic instability, trade of parts	Local, domestic, ornamental trade of flowers, scientific collections	VU	VU
<i>Diplocentrum congestum</i>	Habitat loss, human interference	-	No	EN	EN
<i>Disperis neilgherrensis</i>	Habitat loss, grazing, deforestation, trampling, drought, landslides	Edaphic changes, nutritional disorders, pesticides, propagation difficulties	No	EN	EN
<i>Eria albiflora</i>	Habitat loss, human interference, habitat fragmentation	-	No	VU	VU
<i>Eria dalzellii</i>	Landslides, habitat loss	-	No	LRNT	NT
<i>Eria exilis</i>	Loss of habitat, human interference, habitat fragmentation	-	No	VU	VU
<i>Eria microchilos</i>	Habitat loss, human interference	-	No	VU	VU
<i>Eria muscicola</i> var. <i>brevilinguis</i>	Unknown	Unknown	No	DD	DD
<i>Eria mysorensis</i>	Habitat loss, human interference	-	No	EN	EN
<i>Eria pseudoclavicaulis</i>	No change	No threat	No	VU	VU
<i>Eria tiagii</i>	Stable	None	No	VU	VU
<i>Eulophia cullenii</i>	Habitat loss, human interference, grazing, habitat fragmentation, trampling	Harvest for medicine, overexploitation	Local trade	CR	CR
<i>Eulophia pratensis</i>	Habitat loss, human interference, habitat fragmentation, trampling, drought	-	Local trade	LRNT	NT
<i>Gastrochilus flabelliformis</i>	Habitat loss, habitat fragmentation, harvest for timber	-	No	EN	EN
<i>Habenaria barnesii</i>	Habitat loss, fire	-	No	EN	EN
<i>Habenaria cephalotes</i>	Habitat loss, trampling		No	EN	EN
<i>Habenaria elliptica</i>	Road construction, grazing, damming	Over exploitation and trade for market or medicine	No	EN	EN
<i>Habenaria elwesii</i>	Habitat loss, human interference, habitat fragmentation	Harvest,	Not known	CR	CR
<i>Habenaria flabelliformis</i>	Stable	Perennating tuberosities are eaten away by wild boars etc	No	CR	CR
<i>Habenaria gibsonii</i> var. <i>foetida</i>	Habitat loss, trampling	-	No	CR	CR
<i>Habenaria gibsonii</i> var. <i>foliosa</i>	Habitat loss, trampling, habitat fragmentation	-	No	VU	NT
<i>Habenaria gibsonii</i> var. <i>gibsonii</i>	Habitat loss, forest fires, grazing, human interference, trampling, forest	Edaphic changes, overexploitation, grazing, trade for market or medicine,	Medicinal trade,	CR	CR

Scientific names	Threats to Habitat	Threats to Population	Trade	IUCN 1994	IUCN 2000
	fires, habitat fragmentation	reproductive problems, propagation difficulties	scientific collections		
<i>Habenaria pallideviridis</i>	Habitat loss	Grazing, habitat loss and trampling	No	CR	CR
<i>Habenaria panchganiensis</i>	Grazing, trampling, tourism, human interference, sustainable utilisation	Interspecific competition	No	CR	CR
<i>Habenaria periyarensis</i>	Habitat loss, grazing, trampling	-	No	CR	CR
<i>Habenaria perrottetiana</i>	Habitat loss, human interference, grazing, trampling	-	No	EN	EN
<i>Habenaria polyodon</i>	Habitat loss, grazing, human interference	-	No	CR	CR
<i>Habenaria richardiana</i>	Tourism, habitat loss	-	No	CR	CR
<i>Habenaria suaveolens</i>	Urbanization, human interference, tourism, grazing, trampling	-	No	EN	EN
<i>Habenaria travancorica</i>	Unknown	Unknown	Not known	DD	DD
<i>Hetaeria ovalifolia</i>	Stable	None	No	VU	VU
<i>Ipsea malabarica</i>	Invasion of trees, habitat loss, habitat fragmentation, fire, landslides, grazing	Fruit predation by insects, natural or man-induced threats	No	EN	EN
<i>Kingidium mysorensis</i>	Habitat loss, forest operations	-	No	EN	EN
<i>Kingidium niveum</i>	Stable	None	No	EN	EN
<i>Liparis platyphylla</i>	Unknown	Unknown	No	DD	DD
<i>Luisia abrahamii</i>	Development, habitat loss, human interference	-	No	CR	CR
<i>Luisia evangelinae</i>	Road construction, traffic, tourism, habitat loss	-	No	EN	EN
<i>Luisia macrantha</i>	Habitat loss, deforestation, fire	Decline of host species,	No	CR	CR
<i>Oberonia agastyamalayana</i>	Stable	Unknown	No	CR	CR
<i>Oberonia anamalayana</i>	Habitat loss	Decline in host species,	No	EN	EN
<i>Oberonia balakrishnani</i>	Human interference, tourism, developmental activities	-	No	CR	CR
<i>Oberonia brachyphylla</i>	Habitat loss	Decline of host species	No	EN	EN
<i>Oberonia chandrasekharanii</i>	Human interference, developmental activities	-	No	CR	CR
<i>Oberonia josephii</i>	Human habitation, habitat loss	-	No	CR	CR
<i>Oberonia nayarii</i>	Human interference, fire	-	No	VU	VU
<i>Oberonia platycaulon</i>	Forest degradation, tree felling, habitat loss, habitat fragmentation	-	No	EN	EN
<i>Oberonia sebastiana</i>	Stable	None	No	VU	VU
<i>Oberonia seidenfadeniana</i>	Habitat loss, human activities	-	No	CR	CR
<i>Oberonia wightiana</i> var. <i>nilgirensis</i>	-	-			
<i>Oberonia wynaadensis</i>	No change	None	No	EN	EN
<i>Pachystoma hirsutum</i>	No change	None	No	VU	VU
<i>Paphiopedilum druryi</i>	Habitat loss, trampling, habitat fragmentation, drought, fire, landslides	Disease, edaphic changes, harvest, overexploitation, trade for market or medicine, reproductive problems, propagation difficulties	Domestic, commercial, international and ornamental trade, scientific collection, cultivation of hybrids	CR	CR
<i>Peristylus brachyphyllus</i>	Unknown	Unknown	No	DD	DD
<i>Peristylus lancifolius</i>	Habitat loss, grazing, trampling, habitat fragmentation	-	No	EN	EN
<i>Peristylus stocksii</i>	Habitat loss, grazing, trampling, habitat	Pollution	Local trade	EN	EN
<i>Rhytionanthes nodosum</i>	Unknown	Unknown	Unknown	EX	EX
<i>Rhytionanthes rheedei</i>	Habitat loss, landslide, flood	-	No	EN	EN
<i>Seidenfadeniella rosea</i>	Habitat loss, developmental projects	-	No	EN	EN
<i>Seidenfia crenulata</i>	Human activities, tourism, developmental activities	No	Not known	CR	CR
<i>Seidenfia intermedia</i>	Habitat loss, trampling	-	No	EN	EN
<i>Seidenfia stocksii</i>	Human interference, habitat loss	-	No	EN	EN
<i>Smithsonia maculata</i>	Human interference, habitat loss	-	No	EN	EN
<i>Smithsonia straminea</i>	Habitat loss	-	No	EN	EN
<i>Smithsonia viridiflora</i>	Human interference	-	No	EN	EN
<i>Spiranthes sinensis</i> var. <i>wightiana</i>	-	-			
<i>Taeniophyllum scaberulum</i>	No change	Unknown	No	CR	CR
<i>Thrixspermum musciflorum</i> var.	No change	Unknown	No	CR	CR

Scientific names	Threats to Habitat	Threats to Population	Trade	IUCN 1994	IUCN 2000
<i>nilagiricum</i>					
<i>Trias bonaccordensis</i>	No change	Unknown	No	VU	VU
<i>Trias stocksii</i>	Habitat loss, plantation, road construction, human activities, habitat fragmentation, grazing	Harvest	No	CR	CR
<i>Vanda wightii</i>	Unknown	Unknown	Unknown	VU	VU
<i>Xenikophyton smeeanum</i>	Habitat loss, coffee plantation, habitat fragmentation		No	EN	EN

Table 4b. Threats faced by endemic orchids of the Western Ghats extending to Eastern Ghats

Scientific names	Threats to Habitat	Threats to Population	Trade	IUCN 1994	IUCN 2000
<i>Anoectochilus elatus</i>	Habitat loss, industrialisation, construction of roads, grazing	-	No	EN	EN
<i>Cirrhopetalum neilgherrense</i>	Habitat loss, human interference, developmental activities	-	No	VU	VU
<i>Dendrobium anamalayanum</i>	Habitat loss, plantations, human interference	Demographic instability, decline of host species	No	EN	EN
<i>Dendrobium aqueum</i>	Habitat loss, timbering, vandalism, coffee plantations, harvest for timber, human interference	Decline of host species	No	VU	NT
<i>Dendrobium microbulbon</i>	Habitat loss, tourism, construction of roads, damming	-	No	EN	EN
<i>Dendrobium nanum</i>	Habitat loss, felling of host trees, human interference	-	No	EN	EN
<i>Dendrobium wightii</i>	Landslides	-	No	VU	VU
<i>Eria nana</i>	Habitat loss, human interference	Demographic instability	No	EN	EN
<i>Eria pauciflora</i>	Habitat loss, habitat loss due to exotic plants		No	LRlc	LC
<i>Eria polystachya</i>	Unknown	Unknown	No	LRnt	NT
<i>Flickingeria nodosa</i>	Habitat loss, human interference, habitat fragmentation	Harvest for medicine, harvest for food, trade of parts, trade for market or medicine, over exploitation	Local trade	VU	VU
<i>Habenaria decipiens</i>	Habitat loss, habitat fragmentation, trampling, grazing, landslides, tourism, habitat disturbance	-	Local trade	EN	EN
<i>Habenaria grandifloriformis</i>	Deterioration of habitat quality, urbanization, habitat loss, human interference, habitat fragmentation, trampling, grazing, habitat loss due to exotic plants, landslides	Edaphic changes, reproductive problems	Not in trade	VU	VU
<i>Habenaria heyneana</i>	Habitat loss, broad gauge operations, tourism, trampling, grazing, fire	Pollution	Not in trade	LRnt	NT
<i>Habenaria longicorniculata</i>	Habitat loss, grazing, habitat loss due to exotic plants, fire, removal as weeds, plantation with exotic species, cultivation	Research collection	Not in trade	LRnt	NT
<i>Habenaria longicornu</i>	Human interference, habitat loss	-	No	EN	EN
<i>Habenaria multicaudata</i>	Tourism, grazing, habitat loss, trampling	Interspecific competition, reproductive problems	Not in trade	VU	VU
<i>Habenaria ovalifolia</i>	Grazing, mining, habitat loss, tourism, trampling, habitat loss due to exotic animals, iron mining	Pollution	No	VU	NT
<i>Habenaria rariflora</i>	Habitat fragmentation, tourism, human activities, plantations, trampling, habitat fragmentation, habitat loss due to exotic animals, fire, habitat loss	Edaphic changes, pollution, demographic instability	No	VU	NT
<i>Liparis biloba</i>	Habitat loss, felling of host trees, plantation of wattle, habitat loss due to exotic plants		No	EN	EN
<i>Oberonia brunoniana</i>	Habitat loss, denudation of forests, decrease in the shola forests, grazing, damming, harvest for timber, drought, fire, landslides	Edaphic changes	No	VU	NT
<i>Oberonia proudlockii</i>	Habitat loss, mining, deforestation, habitat fragmentation	-	No	EN	EN
<i>Oberonia santapau</i>	Human interference, habitat loss,	-	No	VU	VU

Scientific names	Threats to Habitat	Threats to Population	Trade	IUCN 1994	IUCN 2000
	damming, construction of roads				
<i>Oberonia verticillata</i>	Human interference, habitat loss,	-	No	EN	EN
<i>Robiquetia josephiana</i>	Habitat loss	-	No	VU	VU
<i>Schoenarchis jerdoniana</i>	Felling trees, road expansion or other activities, habitat loss	-	No	EN	EN
<i>Vanila wightiana</i>	Habitat loss, human interference	-	No	EN	EN

Recommendations

Status assessments of taxa make meaningful identification of priority areas for research, management and conservation. Management recommendations are made based on the status of the species and the degree of information provided. Recommendations for research, management, conservation breeding and for a species-specific focused analysis such as applying the Population and Habitat Viability Assessment are discussed. Research recommendations include survey, limiting factor research, genetic studies, taxonomic studies, life history studies, population and habitat viability and others. Management recommendations include monitoring, limiting factor management, habitat management, wild population management, captive breeding and others. Since many taxa are relatively unknown, including their biology and population dynamics, recommendations were made for research and management for most orchid taxa (Tables 5 and 6). Table 7 lists the individual recommendations for research and management for the endemic orchids of Western Ghats.

Table 5. Research recommendations for Western Ghats endemic orchids (based on 1994 criteria)

Category	Survey	Genetics	Taxonomy	Life history studies	Limiting factor research	PHVA	Others
EX	2			1		1	
CR	21	6	5	20	6	14	1
EN	41	12	4	29	4	22	2
VU	24	8	4	15	6	14	-
LRnt	2	1	3	2	-	2	-
LRlc	1	1		1	-	1	-
DD	5	-	1	1	-	1	-

Table 6. Management recommendations for Western Ghats endemic orchids (based on 1994 criteria)

Category	Cultivation/ breeding	Habitat management	Monitoring	Limiting factor management	Sustainable utilization	Others
EX	-	-	1	-	-	-
CR	18	14	26	1	2	6
EN	30	11	41	2	2	2
VU	13	11	22	1	1	9
LRnt	3	1	4	-	-	4
LRlc	1	-	1	-	-	-
DD	1	-	3	-	-	-

Table 7. Specific research and management recommendations for endemic orchids of the Western Ghats

Scientific names	Research	Management
<i>Aenhenrya rotundifolia</i>	Genetic research, life history studies, PHVA	Cultivation/breeding
<i>Aerides crispa</i>	Survey, life history studies, PHVA	Habitat management, monitoring, sustainable utilization, cultivation/breeding, public awareness, genome resource banking
<i>Aerides maculosa</i>	Survey, life history studies, genetic research, taxonomic research	Monitoring, sustainable utilisation, cultivation/breeding
<i>Brachycorythis splendida</i>	Life history studies, PHVA	Habitat management, monitoring
<i>Brachycorythis wightii</i>	Life history studies, PHVA	Habitat management, monitoring, cultivation/breeding
<i>Bulbophyllum acutiflorum</i>	Genetic research, life history studies, PHVA	Cultivation/breeding
<i>Bulbophyllum albidum</i>	Survey, taxonomic research, life history studies, PHVA	Habitat management, monitoring, limiting factor management
<i>Bulbophyllum aureum</i>	Survey, life history studies, PHVA	Monitoring
<i>Bulbophyllum elegantulum</i>	Life history studies, PHVA pending	Habitat management, monitoring and cultivation/breeding
<i>Bulbophyllum fimbriatum</i>	Survey, life history studies and limiting factor research	Habitat management, sustainable utilisation, cultivation/breeding and monitoring
<i>Bulbophyllum fuscopurpureum</i>	Survey, PHVA pending	Cultivation/breeding

Scientific names	Research	Management
<i>Bulbophyllum mysorensense</i>	Life history studies	Not recommended
<i>Bulbophyllum proudlockii</i>	Survey, genetic research, taxonomic research, PHVA pending	Habitat management, cultivation/breeding
<i>Bulbophyllum silentvalliensis</i>	Life history studies, PHVA pending	Monitoring, cultivation/breeding
<i>Bulbophyllum tremulum</i>	Survey	Not recommended
<i>Cheirostylis seidenfadeniana</i>	Life History studies, PHVA	Monitoring
<i>Chiloschista glandulosa</i>	Survey	Monitoring
<i>Chrysoglossum hallbergii</i>		
<i>Coelogyne glandulosa</i> var. <i>bournei</i>	Survey, taxonomic research, genetic studies	Not recommended
<i>Coelogyne glandulosa</i> var. <i>glandulosa</i>	Genetic research	Cultivation/breeding
<i>Coelogyne glandulosa</i> var. <i>sathyananarayanae</i>	Survey	Monitoring, Cultivation
<i>Coelogyne mossiae</i>	Life history studies, genetic research, PHVA	Cultivation/breeding
<i>Coelogyne nervosa</i>	Genetic research, life history studies, PHVA pending	Cultivation/breeding
<i>Dendrobium barbatulum</i>	Survey, genetic research, life history studies and PHVA	Habitat management, monitoring, cultivation/breeding, genome resource banking
<i>Dendrobium diodon</i> ssp. <i>kodayarensis</i>	Survey, life history studies, PHVA	Habitat management
<i>Dendrobium heyneanum</i>	Genetic research, life history studies, PHVA	Habitat management, monitoring, cultivation/breeding
<i>Dendrobium jerdonianum</i>	Detailed Survey and pollination biology studies recommended	Monitoring
<i>Dendrobium ovatum</i>	Survey, genetic research, life history studies, PHVA	Habitat management, cultivation
<i>Diplocentrum congestum</i>	Detailed reproductive biology study recommended	-
<i>Disperis neilgherrensis</i>	Survey, life history studies, limiting factor research, PHVA	Habitat management, monitoring, limiting factor management, cultivation
<i>Eria albiflora</i>	Survey, life history studies, PHVA	Habitat management, monitoring, genome resource banking and limiting factor management, cultivation
<i>Eria dalzellii</i>	Survey, PHVA	Monitoring, habitat management, cultivation
<i>Eria exilis</i>	Survey, limiting factor research and PHVA	Habitat management, monitoring and cultivation
<i>Eria microchilos</i>	Survey, genetic research, life history studies, PHVA	Habitat management and monitoring
<i>Eria muscicola</i> var. <i>brevilinguis</i>	Survey, life history studies, PHVA	Monitoring
<i>Eria mysorensis</i>	Survey and life history studies,	Monitoring and cultivation/breeding
<i>Eria pseudoclavicaulis</i>	Survey	Monitoring
<i>Eria tiagii</i>	Survey	Monitoring
<i>Eulophia cullenii</i>	Survey, limiting factor research, life history studies, PHVA	Habitat management, cultivation/breeding, sustainable utilisation
<i>Eulophia pratensis</i>	Not recommended	Not recommended
<i>Gastrochilus flabelliformis</i>	Survey, life history studies, PHVA	Habitat management and monitoring
<i>Habenaria barnesii</i>	Survey	Monitoring, cultivation/breeding
<i>Habenaria caranjensis</i>	Survey	Not recommended
<i>Habenaria cephalotes</i>	Survey, life history studies	Cultivation/breeding and monitoring
<i>Habenaria elliptica</i>	Genetic research, life history studies	Genome resource banking, cultivation/breeding
<i>Habenaria elwesii</i>	Survey	Monitoring, cultivation/breeding
<i>Habenaria flabelliformis</i>	Life history studies, PHVA pending	Monitoring, cultivation/breeding
<i>Habenaria gibsonii</i> var. <i>foetida</i>	Survey, genetic research, taxonomic research	Habitat management, monitoring and genome resource banking
<i>Habenaria gibsonii</i> var. <i>foliosa</i>	Survey, Genetic research, taxonomic research	Monitoring, genome resource banking
<i>Habenaria gibsonii</i> var. <i>gibsonii</i>	Survey, genetic research, limiting factor research, life history studies, PHVA	Habitat management, sustainable utilisation, cultivation/breeding, wild population management, public awareness, genome resource banking, monitoring, limiting factor management
<i>Habenaria pallideviridis</i>	Survey, life history studies	Monitoring, cultivation/breeding
<i>Habenaria panchganiensis</i>	Survey, genetic research, life history studies, limiting factor research, PHVA pending	Habitat management, wild population management, monitoring
<i>Habenaria periyarensis</i>	Survey, limiting factor research, taxonomic research, life history studies	Monitoring, cultivation/breeding
<i>Habenaria perrottetiana</i>	Survey, life history studies, PHVA	Monitoring, habitat management and cultivation/breeding
<i>Habenaria polyodon</i>	Survey, life history studies, genetic research and PHVA pending	Habitat management, wild population management, monitoring and cultivation/breeding
<i>Habenaria richardiana</i>	Survey, limiting factor research, life history studies, PHVA	Habitat management and monitoring, cultivation/breeding
<i>Habenaria suaveolens</i>	Survey, life history studies	Monitoring
<i>Habenaria travancorica</i>	Survey	Not recommended
<i>Hetaeria ovalifolia</i>	Survey, genetic research, life history studies,	Habitat management, monitoring and

Scientific names	Research	Management
	PHVA pending	cultivation/breeding
<i>Ipsea malabarica</i>	Survey	Monitoring
<i>Kingidium mysorensense</i>	Survey, genetic research, life history studies	Habitat management, monitoring and cultivation/breeding
<i>Kingidium niveum</i>	Life history studies, PHVA	Monitoring, genome resource banking
<i>Liparis platyphylla</i>	Survey	Monitoring
<i>Luisia abrahamii</i>	Life history studies, PHVA pending	Monitoring, cultivation/breeding
<i>Luisia evangelinae</i>	Survey	Monitoring
<i>Luisia macrantha</i>	Survey, life history studies	Monitoring, cultivation/breeding, monitoring
<i>Nervilia hispida</i>	Survey	Not recommended
<i>Oberonia agastyamalayana</i>	Survey, taxonomic research	Habitat management and monitoring
<i>Oberonia anamalayana</i>	Survey	Monitoring, cultivation/breeding
<i>Oberonia balakrishnani</i>	Survey, life history studies	Habitat management and monitoring
<i>Oberonia brachyphylla</i>	Survey	Habitat management, monitoring and cultivation/breeding
<i>Oberonia chandrasekharanii</i>	Survey	Monitoring
<i>Oberonia josephii</i>	Survey, life history studies	Habitat management and monitoring
<i>Oberonia nayarii</i>	Survey, life history studies, PHVA	Monitoring
<i>Oberonia platycaulon</i>	Survey	Monitoring
<i>Oberonia sebastiania</i>	Survey, Life history studies, PHVA pending	Monitoring, cultivation/breeding
<i>Oberonia seidenfadeniana</i>	Survey	Monitoring, cultivation/breeding
<i>Oberonia wightiana</i> var. <i>nilgirensis</i>	-	-
<i>Oberonia wynaadensis</i>	Survey, life history studies, PHVA	Monitoring and cultivation/breeding
<i>Pachystoma hirsutum</i>	Survey and life history studies	Monitoring, cultivation/breeding
<i>Paphiopedilum druryi</i>	Genetic research, life history studies, PHVA	Monitoring, Cultivation/breeding
<i>Peristylus brachyphyllus</i>	Survey and taxonomic research	Monitoring, cultivation/breeding
<i>Peristylus lancifolius</i>	Survey, limiting factor research	Monitoring, cultivation/breeding
<i>Peristylus stocksii</i>	Survey	Monitoring
<i>Rhytionanthes nodosum</i>	Survey, life history studies, PHVA pending	Monitoring
<i>Rhytionanthes rheedei</i>	Survey	Monitoring
<i>Seidenfadeniella rosea</i>	Survey, PHVA pending	Monitoring and cultivation/breeding
<i>Seidenfia crenulata</i>	Survey	Habitat management
<i>Seidenfia intermedia</i>	Survey, life history studies	Monitoring and cultivation/breeding
<i>Seidenfia stocksii</i>	Survey	Monitoring
<i>Smithsonia maculata</i>	Survey	Monitoring
<i>Smithsonia straminea</i>	Survey	Monitoring
<i>Smithsonia viridiflora</i>	Survey	Monitoring
<i>Spiranthes sinensis</i> var. <i>wightiana</i>		
<i>Taeniophyllum scaberulum</i>	Survey, Life history studies, limiting factor research, PHVA pending, physiological (photosynthetic) studies	Monitoring and cultivation/breeding
<i>Thrixspermum musciflorum</i> var. <i>nilagiricum</i>	Survey	Monitoring, cultivation/breeding
<i>Trias bonaccordensis</i>	Survey, life history studies	Monitoring, cultivation/breeding
<i>Trias stocksii</i>	Taxonomic research, life history studies	Monitoring, cultivation/breeding
<i>Vanda wightii</i>	Survey	Not recommended
<i>Xenikophyton smeeanum</i>	Life history studies, PHVA	Cultivation/breeding
Orchids of Western Ghats extending to Eastern Ghats		
<i>Anoectochilus elatus</i>	Survey, genetic research, life history studies, PHVA	Cultivation/breeding
<i>Cirrhopetalum neilgherrense</i>	Survey, taxonomic research	Monitoring
<i>Dendrobium anamalayanum</i>	Genetic research, PHVA pending	Cultivation/breeding
<i>Dendrobium aqueum</i>	Survey, genetic research, life history studies, PHVA pending	Monitoring, cultivation/breeding
<i>Dendrobium microbulbon</i>	Survey	Monitoring
<i>Dendrobium nanum</i>	Survey, life history studies, PHVA	Habitat management, monitoring, cultivation/breeding
<i>Dendrobium wightii</i>	Survey, life history studies, PHVA pending	Monitoring
<i>Eria nana</i>	Life history studies and PHVA	Cultivation/breeding
<i>Eria pauciflora</i>	Survey, genetic research, life history studies, PHVA	Monitoring, cultivation/breeding
<i>Eria polystachya</i>	Genetic research, taxonomic research, life history studies, PHVA	Monitoring and cultivation/breeding
<i>Flickingeria nodosa</i>	Survey, limiting factor research, PHVA	Habitat management, monitoring, sustainable utilisation, cultivation/breeding
<i>Habenaria decipiens</i>	Survey	Monitoring
<i>Habenaria grandifloriformis</i>	Life history studies, limiting factor research, taxonomic research, genetic research	Wild population management and monitoring

Scientific names	Research	Management
<i>Habenaria heyneana</i>	Survey, life history studies, taxonomic research	Monitoring, cultivation/breeding
<i>Habenaria longicomulata</i>	Taxonomic research	Wild population management, monitoring
<i>Habenaria longicomu</i>	Life history studies recommended	Monitoring
<i>Habenaria multicaudata</i>	Survey, genetic research, limiting factor research, PHVA pending	Habitat management, wild population management, genome resource banking, cultivation/breeding
<i>Habenaria ovalifolia</i>	Survey, life history studies, limiting factor research, PHVA pending	Habitat management and monitoring
<i>Habenaria rariflora</i>	Survey, taxonomic research, life history studies, limiting factor research	Monitoring and habitat management
<i>Liparis biloba</i>	Survey and limiting factor research	Habitat management
<i>Oberonia brunoniana</i>	Survey, life history studies, PHVA pending	Monitoring
<i>Oberonia proudlockii</i>	Survey, taxonomic research	Wild population management and monitoring
<i>Oberonia santapau</i>	Survey	Monitoring, cultivation/breeding
<i>Oberonia verticillata</i>	Life history studies recommended	Monitoring
<i>Robiquetia josephiana</i>	Survey	Monitoring, cultivation/breeding
<i>Schoenarchis jerdoniana</i>	Survey	Monitoring
<i>Vanila wightiana</i>	Survey	Monitoring

Cultivation or conservation breeding is one of the most important components of conservation, especially applicable to smaller organisms and those facing a high risk of extinction in the wild. Captive breeding as a conservation tool is particularly apt for smaller angiosperms, pteridophytes, bryophytes, and gymnosperms among others in the plant kingdom. Conservation breeding was recommended for 60 endemic orchids of the Western Ghats in the CAMP workshop. A common criteria was the degree of threat affecting the taxa and the objective for captive breeding such as for conservation, education, research or awareness building. As seen in table 8, conservation breeding was recommended for many taxa for very specific reasons and the level of importance for initiating this programme is also cited. In general, the participants at the workshop agreed that conservation breeding would be encouraged for taxa that were under threat since there is no concerted effort towards conservation breeding for species recovery. Apart from some taxa, which are bred in a few institutes and nurseries, for most of the others that were threatened, conservation breeding was recommended for initiation soon. In some cases, the taxa were recommended to be bred in captivity purely for the purposes of commercial sustainability. However, not much information is available on the techniques to breed many of the species of wild orchids in captivity or under cultivation, although the cultivation of hybrids is a well established commercial tool. Table 8 indicates the level of cultivation recommended and the level of understanding of techniques to breed orchids *ex situ*.

Table 8. Captive breeding recommendation for Western Ghats endemic orchids

Scientific name	Cultivation for	Stocks at	# in cultivation	Species management	Recommendation	Propagation technique
<i>Aenhenrya rotundifolia</i>	Research	TBGRI, Thiruvananthapuram and Gurukula Botanical Sanctuary, Wayanad	-	Not recommended	Initiate cultivation programme within 3 years	Not available with this group of compilers
<i>Aerides crispa</i>	Research, education, reintroduction, preservation of live genome, commercial/sustainability	Kaveri Nisargadhama, Kodagu, local green house, Goa	17	Recommended	Initiation of a cultivation programme within 3 years	Some propagation technique known for the taxon
<i>Aerides maculosa</i>	Research, preservation of live genome, commercial/sustainability	Kaveri nisargadhama, kodagu, Karnatak university, Dharwar, Yercaud, Udhagamandalam	42	Recommended	Initiate cultivation programme within 3 years	Some propagation technique known for the taxon
<i>Brachycorythis splendida</i>	-	Cultivated stocks exist at TBGRI, Palode and Gurukula Botanical Sanctuary, Wayanad	-	Not recommended	Initiate cultivation programme within 3 years	Information not available
<i>Brachycorythis wightii</i>	Research	TBGRI, Thiruvananthapuram and Gurukula Botanical Sanctuary, Wayanad	5-10	Not recommended	Ongoing cultivation programme intensified or increased	Some propagation techniques known for similar taxa
<i>Bulbophyllum acutiflorum</i>	Research	Gurukula Botanical	-	Recommended	Initiate cultivation	Some propagation

Scientific name	Cultivation for	Stocks at	# in cultivation	Species management	Recommendation	Propagation technique
		Sanctuary, Wayanad			programme within 3 years	techniques known for similar taxa
<i>Bulbophyllum albidum</i>	Not recommended	-	-	-	-	-
<i>Bulbophyllum aureum</i>	Not recommended	Exist at TBGRI, Palode and Gurukula Botanical Sanctuary, Wayanad	-	-	-	-
<i>Bulbophyllum elegantulum</i>	Research	Do not exist	-	Recommended	Initiate cultivation programme within 3 years	Information on propagation techniques not available
<i>Bulbophyllum fimbriatum</i>	Research, preservation of live genome and reintroduction	Department of Botany, Mysore University and Carmel College, Goa	5 at Mysore	Not recommended	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa
<i>Bulbophyllum fuscopurpureum</i>	Reintroduction	Do not exist	-	Recommended	Initiate cultivation programme within 3 years	Propagation techniques not known at all
<i>Bulbophyllum mysorensense</i>	-	Cultivated stocks available at Cauvery Nisargadhama in Kushalnagar, Kodagu	100	Not recommended	Initiate cultivation programme after 3 years	Some propagation techniques known for taxon or similar taxa
<i>Bulbophyllum proudlockii</i>	Research	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Propagation techniques not known at all
<i>Bulbophyllum silentvalliensis</i>	Research	TBGRI, Palode and Gurukula Botanical Sanctuary, Wayanad	<10	Not recommended	Ongoing cultivation programme intensified or increased	Some propagation techniques known for the taxa
<i>Bulbophyllum tremulum</i>	-	Do not exist	-	-	Not recommended	Propagation techniques not known at all
<i>Cheirostylis seidenfadeniana</i>	-	Cultivated stocks exist in TBGRI	-	-	-	-
<i>Chiloschista glandulosa</i>	-	Do not exist	-	-	-	-
<i>Chrysoglossum hallbergii</i>	-	-	-	-	-	-
<i>Coelogyne glandulosa</i> var. <i>bournei</i>	Not recommended	-	-	-	-	-
<i>Coelogyne glandulosa</i> var. <i>glandulosa</i>	Commercial/sustainability	Do not exist	-	-	-	-
<i>Coelogyne glandulosa</i> var. <i>sathyantarayanae</i>	Conservation	-	-	-	-	-
<i>Coelogyne mossiae</i>	Research	The National Orchidarium, Yercaud	-	Recommended	Initiate cultivation programme within 3 years	Information on propagation techniques not available
<i>Coelogyne nervosa</i>	Research	Home gardens in Ooty	25	Recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa
<i>Dendrobium barbatulum</i>	Research	Local green house	5	Recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa
<i>Dendrobium diodon</i> ssp. <i>kodayarensis</i>	-	Do not exist	-	Recommended	Initiate cultivation programme within 3 years	Propagation techniques not known at all
<i>Dendrobium heyneanum</i>	Research	No cultivated stocks	-	Not recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for taxon or similar taxa
<i>Dendrobium jerdonianum</i>	-	Cultivated stocks exist at Gurukula Botanical Sanctuary, Wayanad	-	-	-	-
<i>Dendrobium ovatum</i>	Research	Cauvery Nisargadhama orchidarium	-	Recommended	Ongoing cultivation programme intensified or increased	Some propagation techniques known for similar taxa

Scientific name	Cultivation for	Stocks at	# in cultivation	Species management	Recommendation	Propagation technique
<i>Diplozentrum congestum</i>	-	-	-	-	-	-
<i>Disperis neilgherrensis</i>	Species recovery and preservation of live genome	Cultivated stocks available at TBGRI, Thiruvananthapuram, Gurukula Botanical Sanctuary and home garden of T. Chhabra	10	Not recommended	Initiate cultivation programme within 3 years	-
<i>Eria albiflora</i>	-	-	-	Not recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa
<i>Eria dalzellii</i>	Research	Karnatak University, Dharwar and Gurukula Botanical Gardens, Wayanad	20	Not recommended	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa
<i>Eria exilis</i>	Species recovery and preservation of live genome	Cultivated stocks are not available	-	Recommended	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa
<i>Eria microchilos</i>	-	Cultivated stocks available at Kaveri Nisargadhama, Kushalnagar	7	Not recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa
<i>Eria muscicola var. brevilinguis</i>	Not recommended	-	-	-	-	-
<i>Eria mysorensis</i>	Research	Cultivated stocks are available at Kaveri Nisargadhama and Kudremukh National park orchidarium	not known	Not recommended	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa
<i>Eria pseudoclavicaulis</i>	No cultivated stocks available	-	-	-	-	-
<i>Eria tiagii</i>	No cultivated stocks available	-	-	-	-	-
<i>Eulophia cullenii</i>	Research	Cultivated stocks are available at TBGRI – Thiruvananthapuram	6	Recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa
<i>Eulophia pratensis</i>	Not recommended	-	-	-	-	-
<i>Gastrochilus flabelliformis</i>	Research and species recovery	Cultivated stocks are available at TBGRI, Thiruvananthapuram	10	Not recommended	Ongoing cultivation programme intensified or increased	Some propagation techniques known for similar taxa
<i>Habenaria barnesii</i>	Research	Do not exist	-	Recommended	Ongoing cultivation programme intensified or increased	Information not available with this group of compilers
<i>Habenaria cephalotes</i>	Research.	Do not exist.	-	Not recommended.	Ongoing cultivation programme intensified or increased.	Information not available with this group of compilers.
<i>Habenaria elliptica</i>	Research.	Do not exist.	-	Recommended.	Initiate cultivation programme after 3 years.	Some propagation techniques known for taxon or similar taxa.
<i>Habenaria elwesii</i>	-	-	-	-	Initiate cultivation programme for species recovery within 3 years	Techniques for cultivation not known at all
<i>Habenaria flabelliformis</i>	Research, species recovery, reintroduction, preservation of live genome	Do not exist	-	Recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for taxon or similar taxa
<i>Habenaria gibsonii var. foetida</i>	Preservation of live genome	Do not exist	-	Not recommended	Initiate cultivation programme within	Some propagation techniques known

Scientific name	Cultivation for	Stocks at	# in cultivation	Species management	Recommendation	Propagation technique
					3 years	for similar taxa
<i>Habenaria gibsonii</i> var. <i>foliosa</i>	-	Do not exist	-	Not recommended.	Initiate cultivation programme within 3 years.	Some propagation techniques known for taxon or similar taxa
<i>Habenaria gibsonii</i> var. <i>gibsonii</i>	Research, preservation of live genome and reintroduction	Cultivated stocks are available at Kudremukh National Park orchidarium	-	Not recommended	Initiate programme within 3 years	Some propagation techniques known for taxon or similar taxa
<i>Habenaria pallideviridis</i>	-	-	-	Recommended.	Initiate programme within 3 years.	Some propagation techniques known for similar taxa
<i>Habenaria panchganiensis</i>	-	Do not exist	-	-	Initiate cultivation programme within 3 years	Some propagation techniques known for taxon or similar taxa
<i>Habenaria periyarensis</i>	Research and preservation of live genome	-	-	Recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa
<i>Habenaria perrottetiana</i>	Research	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Propagation techniques not known at all
<i>Habenaria polyodon</i>	Research	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Propagation techniques not known at all
<i>Habenaria richardiana</i>	-	-	-	-	Initiate cultivation programme within 3 years.	Some propagation techniques known for similar taxa.
<i>Habenaria suaveolens</i>	-	-	-	-	-	-
<i>Habenaria travancorica</i>	Not recommended	-	-	-	-	-
<i>Hetaeria ovalifolia</i>	-	-	-	Not recommended	-	-
<i>Ipsea malabarica</i>	Research and commercial/sustainability	Cultivated stocks are available at TBGRI – Thiruvananthapuram, Narayana Gurukula, Wayanad and National Orchidarium, Yercaud	Ca. 20	Not recommended	Ongoing cultivation programme intensified or increased	-
<i>Kingidium mysorensense</i>	Commercial/sustainability	Do not exist	-	Recommended	Initiate cultivation programme after 3 years	Some propagation techniques known for taxon or similar taxa
<i>Kingidium niveum</i>	Research and commercial/sustainability	Cultivated stocks are available at TBGRI – Thiruvananthapuram	3	Not recommended	Ongoing cultivation programme intensified or increased	Some propagation techniques known for similar taxa
<i>Liparis platyphylla</i>	None in cultivation	-	-	-	Not recommended for cultivation	-
<i>Luisia abrahamii</i>	Research, commercial/sustainability and preservation of live genome	Cultivated stocks are available at TBGRI – Thiruvananthapuram and National Orchidarium, Yercaud	Ca. 5	-	There is no coordinated species management programme for this species and one is not recommended	Ongoing cultivation programme intensified or increased
<i>Luisia evangelinae</i>		Cultivated stocks are available at local green house	2	Not recommended	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa
<i>Luisia macrantha</i>	Research	Cultivated stocks exist in department of Botany, Mysore University and local green house, Goa	-	Recommended	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa
<i>Oberonia agastyamalayana</i>	-	-	-	-	Initiate cultivation programme after 3 years	Some cultivation techniques known for taxon or similar

Scientific name	Cultivation for	Stocks at	# in cultivation	Species management	Recommendation	Propagation technique
						taxa
<i>Oberonia anamalayana</i>	-	-	-	-	Initiate cultivation programme after 3 years	Some propagation techniques known for taxon or similar taxa
<i>Oberonia balakrishnanii</i>	Not recommended	-	-	-	-	-
<i>Oberonia brachyphylla</i>	Research	-	-	-	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa
<i>Oberonia chandrasekharanii</i>		No cultivated stocks available		-		
<i>Oberonia josephii</i>	Not recommended	-	-	-	-	-
<i>Oberonia nayarii</i>		Do not exist	20	Not recommended	-	Some propagation techniques known for taxon or similar taxa
<i>Oberonia platycaulon</i>	Cultivation/breeding	-	-	-	-	-
<i>Oberonia sebastiana</i>	-	Cultivated stocks exist at Gurukula Botanical Sanctuary, Wayanad	-	-	Initiate cultivation programme after 3 years	-
<i>Oberonia seidenfadeniana</i>	-	Do not exist	-	-	Initiate cultivation programme within 3 years	-
<i>Oberonia wightiana</i> var. <i>nilgirensis</i>	-	-	-	-	-	-
<i>Oberonia wynaadensis</i>	Research	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa
<i>Pachystoma hirsutum</i>	Research and commercial/sustainability	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa
<i>Paphiopedilum druryi</i>	Research	Cultivated stocks are available at TBGRI, Thiruvananthapuram	3	Not recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa
<i>Peristylus brachyphyllus</i>	-	-	-	-	Initiate cultivation programme within 3 years	Some propagation techniques known for taxon or similar taxa
<i>Peristylus lancifolius</i>	-	Do not exist	-	Not recommended	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa
<i>Peristylus stocksii</i>	Research	Do not exist	-	-	-	Some propagation techniques known for taxon
<i>Rhytionanthes nodosum</i>	-	-	-	-	-	-
<i>Rhytionanthes rheedei</i>	-	Cultivated stocks exist at TBGRI and Gurukula Botanical Sanctuary, Wayanad	-	-	-	-
<i>Seidenfadeniella rosea</i>	Research and commercial/sustainability	Cultivated stocks are available at National Orchidarium Yercaud [BSI] and Gurukula Botanical Sanctuary, Wayanad	Not known	Not recommended	Ongoing cultivation programme intensified or increased	Propagation techniques not known at all
<i>Seidenfia crenulata</i>	-	Cultivated stocks exist at Gurukula Botanical Sanctuary, Wayanad.	-	-	-	-
<i>Seidenfia intermedia</i>	Research	Do not exist	-	Not recommended	Ongoing cultivation programme intensified or increased	Information not available with this group of compilers
<i>Seidenfia stocksii</i>	-	Cultivated stocks exist at Gurukula Botanical	-	-	-	-

Scientific name	Cultivation for	Stocks at	# in cultivation	Species management	Recommendation	Propagation technique
		Sanctuary, Wayanad				
<i>Smithsonia maculata</i>	Not recommended	-	-	-	-	-
<i>Smithsonia straminea</i>	Not recommended	-	-	-	-	-
<i>Smithsonia viridiflora</i>	-	Cultivated stocks exist at Gurukula Botanical Sanctuary and TBGRI, Palode	-	-	-	-
<i>Spiranthes sinensis</i> var. <i>wightiana</i>	-	-	-	-	-	-
<i>Taeniophyllum scaberulum</i>	Research, species recovery and preservation of live genome	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Propagation techniques not known at all
<i>Thrixspermum musciflorum</i> var. <i>nilagiricum</i>	-	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Information on propagation techniques not available with this group of compilers
<i>Trias bonaccordensis</i>	Research and reintroduction	-	-	Not recommended	-	Propagation techniques not known at all
<i>Trias stocksii</i>	Research	National Orchidarium Yercaud, Kaveri Nisargadhama, Kodagu and Carmel College, Goa	<10	Not recommended	-	-
<i>Vanda wightii</i>	Not recommended	-	-	-	-	-
<i>Xenikophyton smeeanum</i>	Research	Do not exist	-	Recommended	Initiate cultivation programme within 3 years	Information on propagation techniques not available with this group of compilers
Orchids of Western Ghats extending to Eastern Ghats						
<i>Anoectochilus elatus</i>	Research	Cultivated stocks exist at TBGRI, Palode and Gurukula Botanical Sanctuary, Wayanad	-	Not recommended	Initiate programme within 3 years	Some propagation techniques is known for similar taxa
<i>Cirrhopetalum neilgherrense</i>	Research	-	-	Not recommended	Initiate within 3 years	Some propagation techniques is known for similar taxa.
<i>Dendrobium anamalayanum</i>	Cultivation is recommended for commercial/sustainability	Do not exist	-	Recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for taxon or similar taxa.
<i>Dendrobium aqueum</i>	Research	Cultivated stocks are available at local green House.	6	Recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa.
<i>Dendrobium microbulbon</i>	-	Do not exist	-	Not recommended	Initiate programme after 3 years	Some propagation techniques known for similar taxa.
<i>Dendrobium nanum</i>	Research	Cultivated stocks available at TBGRI, Thiruvananthapuram and Narayana Gurukulam, Wayanad	12	Not recommended	Ongoing cultivation programme intensified or increased	Some propagation techniques known for similar taxa.
<i>Dendrobium wightii</i>	Research	Cultivated stocks available at TBGRI, Thiruvananthapuram	20	Not recommended	Ongoing cultivation programme intensified or increased	Some propagation techniques known for similar taxa.
<i>Eria nana</i>	Research	Cultivated stocks are available at home garden	10	Not recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for similar taxa.
<i>Eria pauciflora</i>	Research	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Information not available with this group of

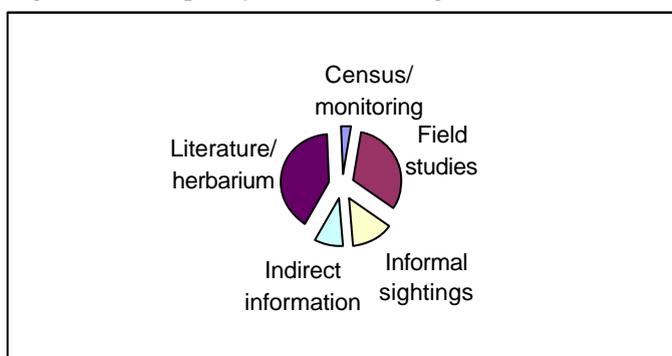
Scientific name	Cultivation for	Stocks at	# in cultivation	Species management	Recommendation	Propagation technique
						compilers.
<i>Eria polystachya</i>	Research	Cultivated stocks are available at Gurukula Botanical Sanctuary	-	Not recommended	Initiate cultivation programme within 3 years	Information not available with this group of compilers.
<i>Flickingeria nodosa</i>	Commercial/sustainability	Cultivated stocks of >100 plants exist at TBGRI, Palode, Gurukula Botanical Sanctuary, Wayanad and Kaveri Nisargadhama, Kodagu	-	Not recommended	Initiate cultivation programme after three years	Some techniques known for taxon.
<i>Habenaria decipiens</i>	Research	-	-	-	-	Some propagation techniques known for taxon or similar taxa.
<i>Habenaria grandifloriformis</i>	-	Do not exist	-	-	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa
<i>Habenaria heyneana</i>	Research	Do not exist	-	Not recommended	Initiate cultivation programme after 3 years. Some propagation techniques known for taxon or similar taxa	-
<i>Habenaria longicorniculata</i>	-	-	-	Not recommended	Initiate cultivation programme after 3 years	Some techniques known for the taxon.
<i>Habenaria longicomu</i>	Cultivated stocks exist at Gurukula Botanical Sanctuary, Wayanad	-	-	-	-	-
<i>Habenaria multicaudata</i>	Preservation of live genome, commercial/sustainability	Do not exist	-	Recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for taxon or similar taxa.
<i>Habenaria ovalifolia</i>	-	Do not exist	-	Not recommended	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa
<i>Habenaria rariflora</i>	-	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Some propagation techniques known for taxon or similar taxa.
<i>Liparis biloba</i>	-	Cultivated stocks available at National Orchidarium, BSI, Yercaud	Not known	-	Initiate cultivation programme after 3 years	Some propagation techniques known for similar taxa.
<i>Oberonia brunoniana</i>	-	Cultivated stocks available at Kaveri Nisargadhama	10	Not recommended	-	Information not available with this group of compilers
<i>Oberonia proudlockii</i>	Research	Cultivated stocks are available at National Orchidarium, Yercaud	10	Not recommended	-	Some propagation techniques known for similar taxa
<i>Oberonia santapau</i>	-	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Information not available with this group of compilers.
<i>Oberonia verticillata</i>	None	-	-	-	-	-
<i>Robiquetia josephiana</i>	-	Do not exist	-	Not recommended	Initiate cultivation programme within 3 years	Information on propagation techniques not available with this group of compilers.

Scientific name	Cultivation for	Stocks at	# in cultivation	Species management	Recommendation	Propagation technique
<i>Schoenarchis jerdoniana</i>	-	Cultivated stocks exist at TBGRI and Gurukula Botanical Sanctuary, Wayanad	-	-	-	-
<i>Vanilla wightiana</i>	-	Cultivated stocks exist at TBGRI, Palode and Gurukula Botanical Sanctuary, Wayanad	-	-	-	-

Data quality

Data quality is a vital criterion while making any conservation assessment. The type of information available while making an assessment determines quality of data. For example, an assessment based on census over years can give an accurate measure of the status of a taxon with respect to its population trends. Direct observations and general field studies make possible a reasonable assessment of the habitat of a taxon based on which its assessment can be made. Indirect evidence such as from trade and field inferences of a taxon can provide valuable information with respect to its population status in the wild. Literature, herbarium and museum records can provide valuable evidence of a taxon's past distribution and therefore a comparative assessment of its present status. Finally, hearsay can provide an insight into what may be popular beliefs as to the status of a given taxon. The order of these different valuations in data quality indicates the degree of confidence in the data while making assessments. The most reliable data quality, namely, census and direct observation over the years is available for a very few taxa across different taxonomic groups, mainly in larger angiosperms, but not for the numerous smaller ones. In this workshop, only 3 orchid taxa were assessed based on census and monitoring information. Many taxa were evaluated using information from general field studies, which indicates fairly high confidence in the assessments. Many taxa known only from their type locations or single studies were assessed based either on indirect information or on literature/herbarium records. The flexibility allowed in applying the IUCN Criteria using inference based on other factors such as comparative habitat status permits such assessments to be considered. Figure 4 indicates the kind of data quality taken into consideration while assessing the endemic orchids of the Western Ghats. Many taxa were evaluated with more than one type of information, for example, with general field studies and literature. No assessment was based only on hearsay/popular belief.

Figure 4. Data quality used in assessing endemic orchids of the Western Ghats



Uncertainty

The issue of uncertainty is certainly a main factor while assessing the status of any taxon in the wild. While there may be uncertainties connected with the way in which the IUCN Red List Criteria are interpreted, there is definitely uncertainty in assimilating the information provided by the participants at the workshop. Because of the lack of consistent field work and consistent methodologies, population trends and structure cannot be easily deduced in various areas. Important functions such as density or abundance per square unit is also difficult to standardize given the differences in the methodologies used. The effects of threats acting on a taxon at any one given area may vary considerably in another area making comparisons more difficult. These uncertainties were evident at the orchid workshop. The assessment derived with the consensus of the participants at the workshop included various degrees of uncertainty ranging from 95% confidence to subjective and hypothetical values. Inferences were made in almost all the cases and values such as geographical area of distribution and population numbers were estimated using either a range of opinion or minimum/maximum values depending on the sensitivity of the assessment. A common feature of all assessments was the consensus established in assessing the status of the taxa. Many assessments were based on evidence at areas of study only. In other areas with no study the habitat features and activities were taken into account and the population

characteristic inferred thereby making the assessment precautionary in some cases. The uncertainties are recorded in every Taxon Data Sheet.

Conclusion

A total of 106 endemic orchid taxa of the Western Ghats including 97 species, 1 subspecies and 6 varieties were assessed. Eleven endemic orchids (including 2 varieties) were not assessed at the workshop although they are listed in the tables. They were Not Evaluated. The orchids were assessed according to both the 1994 and 2000 IUCN Red List Criteria. They were assessed at the global level since only endemics were chosen for assessment.

The distribution of endemic orchids across the 5 states of southern India is indicated in table 9.

Table 9. Presence/absence of Western Ghats endemic orchids and orchids extending to Eastern Ghats in five southern Indian states.

Scientific name	GU	DAD & NAG	MAH	GOA	KAR	KER	TN
<i>Aenhenrya rotundifolia</i> (Blatter) Sathish & F. Rasm., 1997	-	-	-	-	-	+	+
<i>Aerides crispa</i> Lindley 1833	+	+	+	+	+	+	+
<i>Aerides maculosa</i> Lindley 1845	+	-	+	+	+	+	+
<i>Brachycorythis splendida</i> Summerh., 1955	-	-	-	-	+	+	+
<i>Brachycorythis wightii</i> Summerh., 1955	-	-	-	-	-	+	-
<i>Bulbophyllum acutiflorum</i> A. Rich., 1841	-	-	-	-	-	+	+
<i>Bulbophyllum albidum</i> (Wight) Hook. f., 1890	-	-	-	-	-	+	+
<i>Bulbophyllum aureum</i> (Hook. f.) J.J. Smith, 1912	-	-	-	-	-	+	+
<i>Bulbophyllum elegantulum</i> (Rolfe) J.J. Smith, 1912	-	-	-	-	+	-	+
<i>Bulbophyllum fimbriatum</i> (Lindley) Reichb. f., 1861	-	-	+	-	+	+	+
<i>Bulbophyllum fuscopurpureum</i> Wight, 1851	-	-	-	-	+	+	+
<i>Bulbophyllum mysorensense</i> (Rolfe) J.J. Smith, 1912	-	-	-	-	+	+	-
<i>Bulbophyllum proudlockii</i> (King & Pantl.) J.J. Smith, 1912	-	-	-	-	+	-	+
<i>Bulbophyllum silentvalliense</i> Sharma & Srivatsava, 1993	-	-	-	-	-	+	-
<i>Bulbophyllum tremulum</i> Wight, 1851	-	-	-	-	+	+	+
<i>Cheirostylis seidenfadeniana</i> Sathish & F. Rasm., 1987	-	-	-	-	-	+	-
<i>Chiloschista glandulosa</i> Blatter & McCann, 1932	-	-	-	-	+	+	+
<i>Chrysoglossum hallbergii</i> Blatter, 1928	-	-	-	-	-	-	-
<i>Coelogyne glandulosa</i> Lindley var. <i>bournei</i> S.J. Das & Jain, 1978	-	-	-	-	-	-	+
<i>Coelogyne glandulosa</i> Lindley var. <i>glandulosa</i> 1854	-	-	-	-	-	-	+
<i>Coelogyne glandulosa</i> Lindley var. <i>sathyanaarayanæ</i> S.J. Das & Jain, 1978	-	-	-	-	-	-	+
<i>Coelogyne mossiae</i> Rolfe, 1894	-	-	-	-	-	+	+
<i>Coelogyne nervosa</i> A. Rich., 1841	-	-	-	-	+	+	+
<i>Dendrobium barbatulum</i> Lindley, 1830	+	-	+	+	+	-	+
<i>Dendrobium diodon</i> Reichb. f. ssp. <i>kodayarensis</i> Gopalan & A.N. Henry, 1988	-	-	-	-	-	+	+
<i>Dendrobium heyneanum</i> Lindley, 1830	-	-	-	-	+	+	+
<i>Dendrobium jerdonianum</i> Wight, 1851	-	-	-	-	+	+	-
<i>Dendrobium ovatum</i> (L.) Kranzlin, 1910	-	+	-	+	+	+	-
<i>Diplocentrum congestum</i> Wight, 1851	-	-	-	-	+	+	-
<i>Disperis neilgherrensensis</i> Wight, 1851	-	-	-	-	+	+	+
<i>Eria albiflora</i> Rolfe, 1893	-	-	-	-	+	+	+
<i>Eria dalzellii</i> (Hook.) Lindley, 1858	-	-	+	-	+	+	+
<i>Eria exilis</i> Hook. f., 1890	-	-	+	+	+	+	+
<i>Eria microchilos</i> (Dalz.) Lindley, 1858	-	-	+	+	+	+	-
<i>Eria muscicola</i> (Lindley) Lindley var. <i>brevilinguis</i> Joseph & Chandras., 1973 (1976)	-	-	-	-	-	+	-
<i>Eria mysorensis</i> Lindley, 1858	-	-	+	-	+	+	+
<i>Eria pseudoclavicaulis</i> Blatter, 1928	-	-	-	-	-	+	+
<i>Eria tiagii</i> Manilal <i>et al.</i> , 1984.	-	-	-	-	-	+	-
<i>Eulophia cullenii</i> (Wight) Blume, 1858	-	-	-	-	-	+	+
<i>Eulophia pratensis</i> Lindley, 1858	+	-	+	-	+	+	+
<i>Gastrochilus flabelliformis</i> (Blatter & McCann) Saldanha, C.J., 1976	-	-	-	-	+	+	-
<i>Habenaria bamesii</i> Summerh., ex Fischer, 1936	-	-	-	-	-	+	+
<i>Habenaria cephalotes</i> Lindey, 1835	-	-	-	-	-	+	+
<i>Habenaria elliptica</i> Wight, 1851	-	-	-	-	-	+	+
<i>Habenaria elwesii</i> Hook. f., 1896	-	-	-	-	+	+	+
<i>Habenaria flabelliformis</i> Summerh. ex Fischer 1936.	-	-	-	-	-	+	-
<i>Habenaria gibsonii</i> Hook. f. var. <i>foetida</i> Blatter & McCann, 1932	-	-	+	-	+	-	-

Scientific name	GU	DAD & NAG	MAH	GOA	KAR	KER	TN
<i>Habenaria gibsonii</i> Hook. f. var. <i>foliosa</i> (A. Rich.) Santapau & Kapadia, 1959	-	-	+	-	+	+	+
<i>Habenaria gibsonii</i> Hook. f., var. <i>gibsonii</i> 1890	-	-	+	-	+	-	-
<i>Habenaria pallideviridis</i> Seidenf., 1993	-	-	-	-	-	-	+
<i>Habenaria panchganiensis</i> Santapau & Kapadia, 1957	-	-	+	-	-	-	-
<i>Habenaria periyarensis</i> Sasidharan <i>et al.</i> , 1998	-	-	-	-	-	+	-
<i>Habenaria perrottetiana</i> A. Rich., 1841	-	-	-	-	+	+	+
<i>Habenaria polyodon</i> Hook. f., 1890	-	-	-	-	-	-	+
<i>Habenaria richardiana</i> Wight, 1851	-	-	-	-	-	+	+
<i>Habenaria suaveolens</i> Dalz., 1850	-	-	+	-	+	-	-
<i>Habenaria travancorica</i> Hook. f. 1890.	-	-	-	-	-	-	+
<i>Hetaeria ovalifolia</i> (Wight) Benth., 1883	-	-	-	-	-	+	+
<i>Ipea malabarica</i> (Reichb. f.) Hook. f., 1890.	-	-	-	-	-	+	-
<i>Kingidium mysorensis</i> (Saldanha, C.J.) Sathish, 1994	-	-	-	-	+	+	+
<i>Kingidium niveum</i> Sathish, 1994	-	-	-	-	-	+	-
<i>Liparis platyphylla</i> Ridley, 1886	-	-	-	-	-	-	+
<i>Luisia abrahamii</i> Vatsala, 1981	-	-	-	-	-	+	-
<i>Luisia evangelinae</i> Blatter & McCann, 1932	-	-	+	-	+	+	-
<i>Luisia macrantha</i> Blatter & McCann, 1932	-	-	-	-	+	+	-
<i>Oberonia agastyamalayana</i> Sathish, 1994	-	-	-	-	-	+	-
<i>Oberonia anamalayana</i> Joseph, 1963	-	-	-	-	-	+	+
<i>Oberonia balakrishnani</i> R. Ansari, 1990	-	-	-	-	-	-	+
<i>Oberonia brachyphylla</i> Blatter & McCann, 1931	-	-	-	-	+	+	-
<i>Oberonia chandrasekharanii</i> V.J. Nair <i>et al.</i> , 1983	-	-	-	-	+	+	+
<i>Oberonia josephii</i> Saldanha, C.J., 1974	-	-	-	-	+	+	-
<i>Oberonia nayarii</i> R. Ansari & Balakr., 1990	-	-	-	-	+	+	+
<i>Oberonia platycaulon</i> Wight, 1851	-	-	-	-	-	+	+
<i>Oberonia sebastiana</i> Shetty & Vivek., 1975 (1978)	-	-	-	-	-	+	+
<i>Oberonia seidenfadeniana</i> Joseph & Vajravelu, 1971 (1974)	-	-	-	-	-	+	+
<i>Oberonia wightiana</i> Lindley var. <i>nilgirensis</i> R. Ansari, 1982.	-	-	-	-	-	-	-
<i>Oberonia wynaadensis</i> Sivadasan & R.T. Balakr., 1989	-	-	-	-	-	+	-
<i>Pachystoma hirsutum</i> (Joseph & Vajravelu) Sathish & Manilal, 1987	-	-	-	-	-	+	+
<i>Paphiopedilum druryi</i> (Beddome) Stein, 1892	-	-	-	-	-	+	+
<i>Peristylus brachyphyllus</i> A. Rich., 1841	-	-	-	-	+	-	+
<i>Peristylus lancifolius</i> A. Rich., 1841	-	-	-	-	+	-	+
<i>Peristylus stocksii</i> (Hook. f.) Kranzlin, 1898	+	-	+	+	+	-	+
<i>Rhytionanthes nodosum</i> (Rolfe) Garay <i>et al.</i> , 1994	-	-	-	-	-	-	+
<i>Rhytionanthes rheedei</i> (Manilal & Sathish) Garay <i>et al.</i> , 1994	-	-	-	-	+	+	-
<i>Seidenfadeniella rosea</i> (Wight) Sathish, 1994	-	-	-	-	-	+	+
<i>Seidenfia crenulata</i> (Ridley) Szlachetko, 1995	-	-	-	-	-	+	+
<i>Seidenfia intermedia</i> (A. Rich.) Szlach., 1995	-	-	-	-	+	+	+
<i>Seidenfia stocksii</i> (Hook. f.) Szlach., 1995	-	-	-	-	+	+	+
<i>Smithsonia maculata</i> (Dalz.) Saldanha, C.J., 1974	-	-	-	-	+	+	+
<i>Smithsonia straminea</i> Saldanha, C.J., 1974	-	-	-	-	+	+	-
<i>Smithsonia viridiflora</i> (Dalz.) Saldanha, C.J., 1974	-	-	-	-	+	+	-
<i>Spiranthes sinensis</i> (Pers.) Ames var. <i>wightiana</i> Lindley	-	-	-	-	-	-	-
<i>Taeniophyllum scaberulum</i> Hook. f., 1890	-	-	-	-	-	+	-
<i>Thrixspermum musciflorum</i> A.S. Rao & Joseph var. <i>nilagiricum</i> Joseph & Vajravelu, 1981	-	-	-	-	-	-	+
<i>Trias bonaccordensis</i> Sathish, 1989	-	-	-	-	-	+	+
<i>Trias stocksii</i> Benth. ex Hook. f., 1890	-	-	+	-	+	+	+
<i>Vanda wightii</i> Reichb. f., 1861	-	-	-	-	+	-	+
<i>Xenikophyton smeeanum</i> (Reichb. f.) Garay, 1974	-	-	-	-	+	+	+
Orchids of Western Ghats extending to Eastern Ghats							
<i>Anoectochilus elatus</i> Lindley, 1857	-	-	-	-	-	+	+
<i>Cirrhopetalum neilgherrense</i> Wight, 1851	-	-	-	+	+	+	+
<i>Dendrobium anamlayanum</i> Chandrab. <i>et al.</i> , 1981	-	-	-	-	-	+	+
<i>Dendrobium aqueum</i> Lindley, 1843	-	-	+	-	+	+	+
<i>Dendrobium microbulbon</i> A. Rich., 1841	-	-	+	-	+	+	+
<i>Dendrobium nanum</i> Hook. f., 1889	-	-	+	-	+	+	+
<i>Dendrobium wightii</i> Hawkes & Heller, 1962	-	-	-	-	+	+	+
<i>Eria nana</i> A. Rich., 1841	-	-	-	-	+	+	+
<i>Eria pauciflora</i> Wight, 1851	-	-	-	-	+	+	+
<i>Eria polystachya</i> A. Rich., 1841	-	-	-	-	+	+	+
<i>Flickingeria nodosa</i> (Dalz.) Seidenf., 1980	-	-	+	-	+	+	+

Scientific name	GU	DAD & NAG	MAH	GOA	KAR	KER	TN
<i>Habenaria decipiens</i> Wight, 1844-1845	-	-	-	-	-	-	+
<i>Habenaria grandifloriformis</i> Blatter & McCann, 1932	-	-	+	-	+	-	+
<i>Habenaria heyneana</i> Lindley, 1835	-	-	+	+	+	+	+
<i>Habenaria longicorniculata</i> Graham, 1839	+	-	+	+	+	+	+
<i>Habenaria longicornu</i> Lindley, 1835	-	-	-	-	+	+	+
<i>Habenaria multicaudata</i> Sedgw., 1919	-	-	+	+	+	+	+
<i>Habenaria ovalifolia</i> Wight, 1851	-	-	+	-	+	+	+
<i>Habenaria rariflora</i> A. Rich., 1841	-	-	+	-	+	+	+
<i>Liparis biloba</i> Wight, 1851	-	-	-	-	+	-	+
<i>Oberonia brunoniana</i> Wight, 1851	-	+	+	+	+	+	+
<i>Oberonia proudlockii</i> King & Pantl., 1897	-	-	-	-	+	+	+
<i>Oberonia santapau</i> Kapadia, 1960	-	-	-	-	+	+	+
<i>Oberonia verticillata</i> Wight, 1851	-	-	-	-	+	+	+
<i>Robiquetia josephiana</i> Manilal & Sathish, 1984	-	-	-	-	+	+	+
<i>Schoenorchis jerdoniana</i> (Wight) Garay, 1972	-	-	-	-	-	+	+
<i>Vanilla wightiana</i> Lindley ex Hook. f., 1890	-	-	-	-	-	+	+

Orchids not endemic to the Western Ghats were not assessed at the workshop. However, there were a few orchids whose distribution is not strictly confined to the Western Ghats boundaries defined by scientists. Some predominantly Western Ghats orchid taxa have a portion of their distribution occurring in the adjoining areas such as Kolli Hills and Yercaud Hills of Salem, which belong to the Eastern Ghats. Since these hill-chains are close to the Western Ghats and some elements distributed commonly amongst these hills of the Eastern Ghats and the Western Ghats, it was felt that the orchid taxa occurring in the Western Ghats and these hills would be taken as part of the Western Ghats endemics. Table 10 lists the taxa that are found in the Western Ghats and the adjoining Eastern Ghats hills that are considered endemic and assessed at the workshop. The decision to include these under Western Ghats endemics was made unanimously by all the participants at the CAMP workshop.

Table 10. Orchids occurring in the adjoining hills of the Eastern Ghats

<i>Anoectochilus elatus</i> Lindley, 1857	<i>Habenaria longicorniculata</i> Graham, 1839
<i>Cirrhopetalum neilgherrense</i> Wight, 1851	<i>Habenaria longicornu</i> Lindley, 1835
<i>Dendrobium anamalayanum</i> Chandrab. et al., 1981	<i>Habenaria multicaudata</i> Sedgw., 1919
<i>Dendrobium aqueum</i> Lindley, 1843	<i>Habenaria ovalifolia</i> Wight, 1851
<i>Dendrobium microbulbon</i> A. Rich., 1841	<i>Habenaria rariflora</i> A. Rich., 1841
<i>Dendrobium nanum</i> Hook. f., 1889	<i>Liparis biloba</i> Wight, 1851
<i>Dendrobium wightii</i> Hawkes & Heller, 1962	<i>Oberonia brunoniana</i> Wight, 1851
<i>Eria nana</i> A. Rich., 1841	<i>Oberonia proudlockii</i> King & Pantl., 1897
<i>Eria pauciflora</i> Wight, 1851	<i>Oberonia santapau</i> Kapadia, 1960
<i>Eria polystachya</i> A. Rich., 1841	<i>Oberonia verticillata</i> Wight, 1851
<i>Flickingeria nodosa</i> (Dalz.) Seidenf., 1980	<i>Robiquetia josephiana</i> Manilal & Sathish, 1984
<i>Habenaria decipiens</i> Wight, 1844-1845	<i>Schoenorchis jerdoniana</i> (Wight) Garay, 1972
<i>Habenaria grandifloriformis</i> Blatter & McCann, 1932	<i>Vanilla wightiana</i> Lindley ex Hook. f., 1890
<i>Habenaria heyneana</i> Lindley, 1835	

This exercise is only an initial step to understanding the current status of endemic orchids of the Western Ghats with available information. This is not a final assessment, or verdict but a guideline leading to management options and review. The assessments are based on the best information available at this point of time, and reassessments are encouraged as and when further data becomes available. What is to be understood, however, is that the dangers to the taxa are in plenty, and appropriate actions to mitigate the extinction process are required at the right time. A look at the following figures indicates the urgency with which pro-active conservation actions are required.

Scientific name (author: date):	Aenhenrya rotundifolia (Blatter) Sathish & F. Rasm., 1997		
Synonyms:	<i>Odontochilus rotundifolius</i> Blatter, 1928 <i>Anoectochilus rotundifolius</i> (Blatter) Balakr., 1966 <i>Aenhenrya agastyamalayana</i> Gopalan, 1994 (1993)		
Habit:	Terrestrial herb		
Habitat:	Evergreen and shola forests.		
Niche/elevation:	Forest floor, often found in association with <i>Paphiopedilum druryi</i> . 1000-1700 m.		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	High Wavy Mountains [Blatter, 1928]. Tirunelveli, Kattabomman Distrct, Poonkulam, Agastyamala hills, Pandavapura foothills, Ashamba hills north of Tirukurungudi. Trivandrum distruct, south west side of Agstyamala, Idukki district, Periyar Tiger Reserve, Vellimala [Sathish Kumar, 1997].		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Agastyamalai in Tirunelveli District, [R. Gopalan, 1988-90]. High Wavy Mountains [C. Sathish Kumar, 1990 onwards]. <u>Kerala</u> : Vellimalai, Periyar Tiger Reserve in Idukki District [C. Sathish Kumar, 1990 onwards].		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/Locations:	2/3. Fragmented. No continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	No change in area of habitat. Quality of habitat decreasing due to trampling by wild ungulates and elephants.		
Threats			
Threats to taxon:	Demographic instability may result in population decline in the future. The influence of threats on population structure well understood, reversible and not yet ceased to be threats.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/trend:	Mature individuals in all populations <250. Their numbers not declined in the past and, future decline not expected. Generation time not known.		
Population trend:	Stable. Population not expected to decline in the future.		
Recent Field Studies:	R. Gopalan in Agasthyamalai, 1988-90, floristic survey. M.B. Viswanathan in Agasthyamalai, 1999, MoEF project. C. Sathish Kumar in Neyyar Wildlife Sanctuary, 1994-98. N. Sasidharan in Periyar Tiger Reserve. K. Ravikumar in Poonkulam, Agasthyamalai, 1989, ethnobotanical studies.		
Data quality:	Assessment based on field studies and literature/herbarium studies.		
Qualifier:	Area and extent estimated based on known locations. Habitat status, threats, mature individuals and population trends observed over many years of field studies.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2c; D
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Endangered [Nayar & Sastry, 1987]	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve, Meghamalai Wildlife Sanctuary, Neyyar Wildlife Sanctuary, Periyar Tiger Reserve.		
Uncertainty	Assessed with 95% confidence based on evidence and consensus of the field biologists at the workshop.		
Recommendations			
Research:	Genetic research, life history studies, PHVA.		
Management:	Cultivation/breeding		
Cultivation:	Cultivation recommended for research. Cultivated stocks exist at TBGRI, Thiruvananthapuram and Gurukula Botanical Sanctuary, Wayanad. No coordinated species management programme and one is not recommended. Initiate cultivation programme within 3 years. Information on propagation techniques not available with this group of compilers.		
Other comments:	This is a monotypic genus and is known to have the largest pollinarium in the subtribe Goodyerinae. The species was first collected from High Wavy Mountains by Blatter in May 1917. Kew has specimens collected by Ms. Bowden from Tirukurangudi, Tamil Nadu in 1945. Since it is found in inaccessible areas, the species cannot be collected easily.		
Sources:	Balakrishnan, 1966: 330; Blatter, 1928: 521; Gopalan, 1994: 271; Nayar & Sastry, 1987: 220; Sathish Kumar & Rasmussen, 1997: 81-84.		
Compilers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Viswanathan.		
Reviewers:	S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date):	Aerides crispa Lindley 1833		
Synonym:	<i>Aerides lindleyana</i> Wight, 1851		
Habit:	Epiphytic or lithophytic herb		
Habitat:	Dry deciduous, moist deciduous and shola forests		
Niche/elevation:	Branches and rocks. 250-2200m.		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Gujarat, Nagerhaveli, Maharashtra, Goa, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Nagerhaveli - Chispana forest [Rao, 1986]. K. Vengurla, Wari country, Khandala, Panchgani, Mahableshwar, Beema Shankar, Koina Nagar, Devavayi, Yellapur, Anmod, Castle Rock, Poutelli-Dandelli, Sampkhand, Nilgiri, Palni hills [Santapau & Kapadia, 1966]. Silent Valley – Aruvanpara [Manilal, 1988]. Palani downs, about Kodaikanal, Nilgiris, Coonoor [Fyson, 1974]. Konkan to Travancore [Hooker, 1890-1894]. Pykara, Naduvattom, Avalanche [VR]. Coorg [Keshvamurthy & Yoganarasimhan, 1990]. Konkan: near Vingorla, Wari country, Mahableshwar, Kanara-Usheli [Cooke, 1958]. Coimbatore, Madurai, Nilgiri [Henry <i>et al.</i> , 1989]. Bellary, Chikmagalur, Chitradurga, Hassan, Mysore, N. Kanara, Shimoga [Sharma <i>et al.</i> , 1984]. Silent Valley – Aruvanpara [Sathish Kumar, 1999]. Avalanche, Coonoor, Kodanad, Ouchterlony Valley, Ootacamund, Parkside Reserve Forest, Singara Reserve Forest [Sharma, <i>et al.</i> , 1977]		
Distribution from Field Studies:	<u>Nagerhaveli</u> : Silvassa [R. Ingalhalli, 1998]. <u>Maharashtra</u> : Mahableshwar, Goa [S. Phatak, 1981-82]. <u>Goa</u> [S. Phatak, 1981-82]. <u>Karnataka</u> : Kodagu, Mysore, Hassan, Dakshina Kannada and Uttara Kannada [T.A. Rao, 1996]. <u>Kerala</u> : Silent Valley [C. Sathish Kumar, 1995 onwards]. <u>Tamil Nadu</u> : Naduvattom, Nilgiris [P.S. Udayan, April, 1996]. Lovedale, Pykara, Devala in Nilgiris [P.F. Solomons, 1998-99]. Singara, Nilgiris [Rathakrishnan, 1971]. Pykara, Nilgiris [K. Sivabalakrishnan, 1996].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/Locations:	>46/12. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in area of habitat <20% in the last 10 years and predicted decline <20% in the next 10 years due to felling of trees. Quality of habitat decreasing due to human activities.		
Threats			
Threats to taxon:	Human interference, damming, trade for market or medicine, decline of host species, demographic instability and vandalism due to its attractiveness are the threats. The influence of threats on the population structure well understood, reversible and not yet ceased to be threats.		
Trade:	Local trade of flowers for ornamental purpose and aesthetic value.		
Population			
Numbers/Generation time/trend:	Mature individuals in all populations >2500. Numbers declined in the past by >20% and predicted decline >20%. Generation time perennial.		
Population trend:	Declining >10% in the last 10 years due to trade and habitat loss. Expected decline <10% in the next 10 years.		
Recent Field Studies:	T.A. Rao in Kodagu, 1998, conservation of wild orchids of Kodagu in the Western Ghats. K. Sivabalakrishnan in Nilgiris, 1995-98, development of orchidarium. P.F. Solomons in Nilgiris, 1998-2000, development of orchidarium. P.S. Udayan in Nilgiris, 1992, documentation of shola vegetation. R. Ingalhalli in Nagerhaveli, Daman, 1997-98, informal sighting. C. Sathish Kumar in Silent Valley, 1995 onwards, floristic survey.		
Data quality:	Assessment based on field studies, informal sighting and literature/herbarium studies.		
Qualifier:	Area and extent estimated based on known locations. Habitat status, threats, mature individuals and population trends observed and inferred.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	B1+2abcde
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	B2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Bramhagiri Wildlife Sanctuary, Kudremukh National Park, Mukurthi National Park, Silent Valley National Park		
Uncertainty	Assessed with 95% confidence based on evidence and consensus of the field biologists.		
Recommendations			
Research:	Survey, life history studies, PHVA.		
Management:	Habitat management, monitoring, sustainable utilization, cultivation/breeding, public awareness, genome resource banking.		
Cultivation:	Cultivation is recommended for research, education, reintroduction, preservation of live genome, commercial/sustainability. Cultivated stocks exist at Kav eri Nisargadhama, Kodagu, local green house, Goa. Numbers in cultivation 17. There is no coordinated species management programme for this		

species and one is recommended. Initiation of a cultivation programme within 3 years. Some propagation technique known for the taxon.

Other comments:

Described by Lindley based on a collection. The reported occurrence of this species in Sri Lanka and Burma (Saldanha & Nicolson, 1976) and Orissa (Keshavmurthy & Yoganarasimhan, 1990; Misra, 1980; Rathakrishnan & Chitra, 1984) is due to a misidentification. The endemic status of this species is confirmed by Christenson who revised the genus *Aerides*. There is altitudinal effect on the size of leaves in Nilgiri subpopulations [P.F. Solomons]. On the verge of extirpation in Khandala and Mahableshwar [Sharma *et al.*, 1984]. Local trade in Kodaikanal [Fyson, 1974]. This species was described based on (Wallich specimen Cat. No. 7319) from Courtallum. Lindley Herbarium contains two more sheets from Herb. J.L. Stocks, one of which has a beautiful sketch by Lindley.

Sources:

Cooke, 1958: 204; Fyson, 1974: 395; Henry *et al.*, 1989: 3-4; Hooker, 1890-1894: 46; Keshavmurthy & Yoganarasimhan, 1990: 436; Lindley, 1833: 239; Manilal, 1988: 268; Mishra, 1980: V. Ramasundar, 2000, Unpublished Biological Information Sheet; Rao, 1986: 416-417; Rathakrishnan & Chitra, 1984: 1001; Saldanha & Nicolson, 1976: 812; Santapau & Kapadia, 1966: 122-123; Sharma *et al.*, 1977: 138; Sharma *et al.*, 1984: 265; Wight, 1851 5(1): 9.t.1677;

Compilers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarsi, M.B. Viswanathan.

Reviewers:

S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao.

Scientific name (author: date):	Aerides maculosa Lindley 1845		
Synonym:	<i>Saccolabium speciosum</i> Wight, 1851		
Habit:	Monopodial epiphytic herb		
Habitat:	Moist deciduous forests		
Niche/ elevation:	>1500m.		
Distribution	India		
Historical Distribution:	ENDEMIC to Western Ghats (Gujarat, Maharashtra, Goa, Karnataka, Kerala & Tamil Nadu)		
Current Global Distribution:	Kodagu, Uttara Kannada, Hassan, [Rao, 1998]. Gudalur, Kodaikanal, Uttara Kannada [Abraham & Vatsala, 1981]. Silent Valley, Sispara ghat [Manilal, 1988]. Konkan, Badlapur, Karjat, Tansa, Kandala, Lonavala, Panchgani, Mahabaleshwar, Porbandhar, Bhimshankar, Uttara Kannada, Belgaum, Sirsi, Castle Rock [Santapau & Kapadia, 1966]. Belgaum, Bellary, Hassan [Sharma <i>et al.</i> , 1984]. Coimbatore [Henry <i>et al.</i> , 1989]. Goa – Sangum, Molem [Rao, 1986]. Attapadi – Mukkali forest, Walayar forest [Vajravelu, 1990]. Konkan to Travancore, Rajpootana Mt. [Hooker, 1890-1894]. Coorg [Keshvamurthy & Yoganarasimhan, 1990]. Konkan, Mahabaleshwar, Panchgani, Belgaum, west face of Cheeta hills [Cooke, 1958]. Agastyamala [Mammen & Mammen, 1974]. Attapadi – Mukkali forest, Walayar forest [Vajravelu, 1990]. Sispara [Sathish Kumar, 1999]. Pykara [Sharma <i>et al.</i> , 1977].		
Distribution from Literature:	<u>Karnataka</u> : Belgaum, Kodagu, Uttara Kannada, Chikmagalur, Biligiri Rangan Hills [S. Phatak, T.A. Rao, R. Ingalthalli]. <u>Tamil Nadu</u> : Kodaikanal [N. Raman, June, 1997]. Agastyamala [C. Sathish Kumar].		
Distribution from Field Studies:	5,001- 20,000		
Extent of Occurrence (Sq. km.):	10-500		
Area of Occupancy (Sq. km.):	>50/>20. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 90% or more of the total population.		
Number of Subpopulations/Locations:	Decrease in area of habitat >20% in the last 10-20 years and predicted decline >20% in the next 10-20 years. Quality of habitat decreasing due to industrialisation, urbanisation and human interference.		
Habitat status:			
Threats	Human interference, trade of parts, habitat loss, habitat fragmentation and overexploitation are the threats. The influence of threats on the population structure well understood, reversible and not yet ceased to be threats.		
Threats to taxon:	Local, domestic and commercial trade of flowers for ornamental purpose.		
Trade:			
Population	Mature individuals < 2500. Numbers declined in the past by >40-50%. Predicted decline >20-50%. Generation time 4-5 years.		
Numbers/Generation time/trend:	Declining >10% in the last 10 years due to habitat loss, trade and exploitation. Expected decline >20% in the next 10 years.		
Population trend:			
Recent Field Studies:	N. Raman in Kodaikanal, June 1997, Mycorrhizal association. T.A. Rao in Kodagu, Kudremukh, Uttara Kannada, 1996-98, floristics. S. Phatak in Uttara Kannada, Dharwar, Karwar, Londa, Anmode, 1998, orchids of Anmode.		
Data quality:	Assessment based on field studies, informal sighting and literature/herbarium studies.		
Qualifier:	Area and extent estimated based on known locations. Habitat status, threats, mature individuals and population trends observed over many years of field studies.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcde
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Bhimashankar Wildlife Sanctuary, Biligiri Rangaswamy Temple Wildlife Sanctuary, Silent Valley National Park		
Uncertainty	Assessed with 95% confidence based on evidence and consensus and subjective opinion of field biologists.		
Recommendations	Survey, life history studies, genetic research, taxonomic research.		
Research:	Monitoring, sustainable utilisation, cultivation/breeding		
Management:	Cultivation recommended for research, preservation of live genome, commercial/sustainability.		
Cultivation:	Cultivated stocks exist at Kaveri Nisargadhama, Kodagu, Karnatak University, Dharwar, Yercaud, Udhagamandalam. Numbers in cultivation 42. No coordinated species management programme and one is recommended. Initiate cultivation programme within 3 years. Some propagation technique known for the taxon.		
Other comments:	This species was described by Lindley. The reported occurrence of this species in Bihar (Pradhan, 1979; Bose & Bhattacharjee, 1980), Madhya Pradesh (Tiwari & Maheshwari, 1963) and Orissa (Misra, 1980) is due to a misidentification. Christenson who revised the genus <i>Aerides</i> has confirmed the endemic status of this species. It may be used for medicine also (hearsay). Found on the boundaries of the forest as they require dust and pollution for the survival and are common on roadsides and train tracks.		

Sources: Abraham & Vatsala, 1981: 444; Bose & Bhattacharjee, 1980; Cooke, 1958: 203; Henry *et al.*, 1989: 4; Hooker, 1890-94; Keshvamurthy & Yoganarasimhan, 1990: 436; Lindley, 1845: t.58; Mammen & Mammen, 1974: 31-36; Manilal, 1988: 268; Misra, 1980; Nayar, 1996: 224; Pradhan, 1979; Rao, 1986: 417; Rao, 1998: 97, 193; Santapau & Kapadia, 1966: 121-122; Saldanha & Nicolson, 1976: 813; Sathish Kumar, 1999: 194; Sharma *et al.*, 1977: 138; Sharma *et al.*, 1984: 265; Tiwari & Maheshwari, 1963; Vajravelu, 1990: 466; Wight, 1851 5(1): 9.t.1674-75.

Compilers: A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan.

Reviewers: S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao.

Scientific name (author: date):	Brachycorythis splendida Summerh., 1955		
Synonyms:	<i>Platanthera iantha</i> Wight, 1851 <i>Habenaria iantha</i> (Wight) Hook. f., 1890 p.p., excl. syn.		
Habit:	Terrestrial herb		
Habitat:	Montane grasslands		
Niche/ elevation:	> 850 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	On the way to Anamudi from Nyamakad [Abraham & Vatsala, 1981]. Coimbatore, Kanyakumari, Madurai districts [Henry <i>et al.</i> , 1989]. Anamalai, Devikulam, Nilgiris [Nayar, 1996]. Palni Hills, Anamalai, Shembaganur, Kodaikanal - Perumal Malai, Gundar Valley, below Sidcot, Arundina Path, Bear Shola slopes, Lantha Swamp [Seidenfaden, 1999]. Ponmudi [Mohanani & Henry, 1994]. Anaimudi, High Range in Kerala, Umayyamalai [Shetty & Vivekananthan, 1971]. Idukki, Palghat, Trivandrum, Kerala, Coimbatore, Kanniyakumari, Madurai, Tamil Nadu [Rathakrishnan & Chitra, 1984]. High Range, Kerala [Shetty & Vivekananthan, 1991].		
Distribution from Field Studies:	<u>Karnataka</u> : Pushpagiri in Kodagu, Shringeri in Chikkamagalur and Kemmanagundi [T.A. Rao, 1998-99].		
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	<10		
Number of Subpopulations/Locations:	3/3. Fragmented. Continuing decline in the number of locations or subpopulations. All individuals not in one population and it does not hold 90% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years and <20% predicted decline in the next 10 years due to loss of habitat and grazing. Decrease in the quality of the habitat due to grazing.		
Threats			
Threats to taxon:	Grazing, human interference and habitat loss resulting in and may result in population decline. The influence of these factors on the habitat and population well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Number of mature individuals in all populations <250. Decline in their numbers in the past and future decline predicted. Generation time 1 year.		
Population Trends:	Decline in the population <10% in the last 5 years and estimated decline of <10% in the next 10 years.		
Recent Field Studies:	T.A. Rao in Pushpagiri, Shringeri, Kudremukh National Park and Kemmenagundi, 1998-99, floristic survey. K. Ravikumar in High Wavy mountains and Mahendragiri Hills, Tamil Nadu, 1989-94.		
Data quality:	Assessment based on field studies and literature/herbarium studies.		
Qualifier:	Area and extent estimated based on known locations. Habitat status, threats, mature individuals and population trends observed, inferred and projected.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2abcde
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Brahmagiri Wildlife Sanctuary, Kudremukh National Park, Pushpagiri Wildlife Sanctuary.		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologist.		
Recommendations			
Research:	Life history studies, PHVA		
Management:	Habitat management, monitoring		
Cultivation:	Cultivated stocks exist at TBGRI, Palode and Gurukula Botanical Sanctuary, Wayanad. No coordinated species management programme and one is not recommended. Initiate cultivation programme within 3 years. Information on propagation techniques not available.		
Other comments:	Silviculture and grazing lead to habitat loss. Grazing has resulted in soil erosion. Distribution is very restricted and patchy.		
Sources:	Abraham & Vatsala, 1981: 256-258; Henry <i>et al.</i> , 1989: 5; Hooker, 1890 6: 164; Mohanani & Henry, 1994: 449; Nayar, 1996: 224; Rao, 1998: 193; Rathakrishnan & Chitra, 1984: 1002; Seidenfaden, 1999: 1210; Shetty & Vivekananthan, 1971: 39; Shetty & Vivekananthan, 1991: 141; Summerhayes, 1955: 240; Wight, 1851.		
Compilers:	T.A. Rao, K. Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan		
Reviewers:	A. Durai, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, S.S.R. Bennet, B.A. Daniel, M. Mohanani, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty		

Scientific name (author; date):	Brachycorythis wightii Summerh., 1955		
Habit:	Terrestrial tuberous herb.		
Habitat:	Montane grassland		
Niche/elevation:	1500-1800 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Travancore [Summerhayes, 1955]. Munnar [Sathish Kumar, 1991]. Kerala [Pushpangadan & Sathish Kumar, 1995]. Trivandrum [Rathakrishnan & Chitra, 1984]		
Distribution from Field Studies:	<u>Kerala</u> : Munnar, Rajamalai, Silent Valley in Munnar, Eravikulam National Park, Idukki District [P. Pushpangadan & C. Sathish Kumar, 1995-1996].		
Extent of occurrence (Sq. km.):	<100		
Area of occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	3/3. Fragmented. No continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	No change. Predicted decline <20% in the next 10-15 years due to loss of habitat and decrease in the quality of the habitat due to Eucalyptus plantations.		
Threats			
Threats to taxon:	Grazing may result in population decline. The influence on the population well understood. Not reversible and not ceased to be a threat.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations <250. Their numbers not declined in the past and decline in the future not expected. Generation time 1 year.		
Trends:	The population size/numbers of the taxon stable.		
Recent Field Studies:	C. Sathish Kumar in Munnar, 1991-95, Rare and threatened Orchids of Kerala. S.D. Biju in Anamudi slopes and Rajamalai, 1995-97, Flora of Eravikulam.		
Data quality:	Assessment based on field studies, census/monitoring and literature/herbarium studies.		
Qualifier:	Habitat status, threats, mature individuals and population trends observed over many years of field studies and census/monitoring.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2ce
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B1a+b(iii,v), 2a+b(iii,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Eravikulam National Park		
Uncertainty	Assessed with 95% confidence and minimum (population) values based on evidence and consensus of field biologists at the workshop.		
Recommendations			
Research:	Life history studies, PHVA.		
Management:	Habitat management, monitoring, cultivation/breeding.		
Cultivation:	Cultivation recommended for research. Cultivated stocks available at TBGRI, Thiruvananthapuram and Gurukula Botanical Sanctuary, Wayanad. Numbers in cultivation 5-10. No coordinated species management programme for this species and one not recommended. Ongoing cultivation programme intensified or increased. Some propagation techniques known for similar taxa.		
Other comments:	The exact locality from which the species was collected not known, Wight says Travancore. Population fluctuation due to natural causes has been observed. Eucalyptus plantation at the border of Silent Valley (Munnar) where one of the populations is located may result in change in the habitat of the species.		
Sources:	Pushpangadhan & Sathish Kumar, 1995 5: 960; Rathakrishnan & Chitra, 1984: 1003; Sathish Kumar, 1991: 211; Summerhayes, 1955: 242		
Compilers:	S.S.R. Bennet, J.L. Ellis, M. Mohanan, V.S. Menon, C. SathishKumar, S. Seeni, B.V. Shetty, P.S. Udayan, U. Lakshminarayan		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, B.A. Daniel, S. Rajendran, S. Phatak, R. Ingalhali, N.C. Rathakrishnan, B. Arthur, T.A. Rao.		

Scientific name (author: date):	Bulbophyllum acutiflorum A. Rich., 1841		
Synonym:	<i>Cirrhopetalum acutiflorum</i> (A. Rich.) Hook. f., 1890		
Habit:	Epiphytic or lithophytic herb		
Habitat:	Evergreen and shola forests		
Niche/elevation:	1500-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiris, Udhagamandalam and Conoor [Nayar & Sastry, 1987]. Nilgiris [Mohanan & Balakrishna, 1991; Nayar, 1996]. Nilgiri [Rathakrishnan & Chitra, 1984]. Nilgiris [Kunhikrishnan, 1991]		
Distribution from Field Studies:	<u>Kerala</u> : Eravikulam National Park [S.D. Biju, 1995-97]. <u>Tamil Nadu</u> : Nilgiri [K. Vivekanandan, 1971]. Nadugani [V.S. Ramachandran, 1999, P.F. Solomons, 1998, 99]. Lovedale [N. Raman, 1998]. Naduvattam [P.F. Solomons, 1999].		
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	10-30 / 5-15. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10-20 years. Predicted decline >20% in the next 10-20 years due to harvest for timber. Decrease in the quality of the habitat due to harvest for timber (host plant).		
Threats			
Threats to taxon:	Decline of host species due to harvest for timber resulting in and may result in population decline.		The
Trade:	influence of threat on the population structure well understood, not reversible and have not ceased. Not in trade		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations <2,500. Number of mature individuals declined in the past by 10-20% and likely to decline by 10-20 % in the future. Generation time 5-10 years.		
Trends:	The population size of the taxon declining at a rate of >20% in the last 10 years and >20% decline predicted in the next 10 years.		
Recent Field Studies:			
N. Raman in Lovedale, 1998, systematics. P.F. Solomons in Nadugani, 1998, 99, in Naduvattam, 1998, floristics. V.S. Ramachandran in Nadugani, 1999, systematics.			
Data quality: Assessment based on field studies, indirect information and literature/herbarium studies.			
Qualifier: Area and extent estimated based on known locations. Habitat status, threats, mature individuals and population trends inferred from range of opinion.			
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2abcde
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(i,ii,iii,iv,v), 2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Rare [Nayar & Sastry, 1987]	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Eravikulam National Park, Mukurthi National Park		
Uncertainty Assessed based on evidence, inference and range of opinion on the consensus of the field biologists.			
Recommendations			
Research:	Genetic research, life history studies, PHVA.		
Management:	Cultivation/breeding.		
Cultivation:	Cultivation is recommended for research. Cultivated stocks available at Gurukula Botanical Sanctuary, Wayanad. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments: Described by A. Richard (1841) based on G.S. Perrottet's collection from Nilgiris. The decline in the population was estimated based on the harvest for timber from one location in Nadugani.			
Sources: Hooker, 1890; Mohanan & Balakrishnan, 1991: 189; Nayar & Sastry, 1987: 228; Nayar, 1996: 224; Rao, 1998: 193; Rathakrishnan & Chitra, 1984: 1003; Richard, 1841 15: 18.t.7; Subbarayalu & Velumurugan, 1999; Kunhikrishnan, 1991: 118			
Compilers: A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, U. Lakshminarayan, K.G. Selvi.			
Reviewers: S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao.			

Scientific name (author: date):	Bulbophyllum albidum (Wight) Hook. f., 1890		
Synonym:	<i>Cirrhopetalum albidum</i> Wight, 1851		
Habit:	Epiphytic or lithophytic pseudobulbous herb		
Habitat:	Evergreen forests.		
Niche/elevation:	On moist rocks and loamy soil with humus. 800-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiri, Tirunelveli [Henry <i>et al.</i> , 1989]. Nilgiri [Hooker, 1886-1890]. Nilgiri, Kotagiri, St. Catherine Falls, Tirunelveli, Kannikatti, Nilgiri Biosphere Reserve, Agasthyamalai Biosphere Reserve [Nayar & Sastry, 1987]. Nilgiri, Tirunelveli [Rathakrishnan & Chitra, 1984, Mohanan & Balakrishnan, 1991]		
Distribution from Field Studies:	<u>Kerala</u> : Agasthyamala [C. Sathish Kumar, 1993-95]		
Extent of occurrence (Sq. km.):	5,001-20,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	25/5. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Change in habitat not known. Predicted decline <20% in habitat in the next 10 years. Change in the quality of habitat.		
Threats			
Threats to taxon:	Habitat loss.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trends:	Unknown		
Trends:	Unknown		
Recent Field Studies:	C. Sathish Kumar in Agasthyamala, 1993-95		
Data quality:	Assessment based on literature/herbarium studies and indirect information only.		
Qualifier:	The habitat status and threats suspected.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2cd
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Rare [Nayar & Sastry, 1987]	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve, Mukurthi National Park, Neyyar Wildlife Sanctuary.		
Uncertainty	Assessed based on range of opinion and consensus of field biologists.		
Recommendations			
Research:	Survey, taxonomic research, life history studies, PHVA.		
Management:	Habitat management, monitoring, limiting factor management.		
Cultivation:	Not recommended		
Other comments:	Originally proposed by Wight based on a collection from St. Catherine Falls, near Kotergherry in Tamil Nadu. Poorly represented in herbaria.		
Sources:	Henry <i>et al.</i> , 1989; Hooker, 1890: 757; Mohanan & Balakrishnan, 1991: 197; Nayar & Sastry, 1987: 229; Rathakrishnan & Chitra, 1984: 1003; Wight, 1851 5 (1): 7.t.1653		
Compilers:	T.A. Rao, K.Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayanan		
Reviewers:	A. Durai, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalthalli, C. Sathish Kumar, B. Arthur, B.V. Shetty.		

Scientific name (author: date):	Bulbophyllum aureum (Hook. f.) J.J. Smith, 1912
Synonym:	<i>Cirrhopetalum aureum</i> Hook. f., 1890
Habit:	Pseudobulbous epiphytic or lithophytic herb
Habitat:	Moist deciduous forests
Niche/elevation:	800-1000 m.
Distribution	
Historical distribution:	India
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)
Distribution from Literature:	Wayanad, Muthukuzhivayal [Abraham & Vatsala, 1981; Nayar & Sastry, 1987]. Silent Valley dam site [Manilal, 1988]. Valiaparathode and Sairandri [Sathish Kumar]. Silent Valey [Mohanana & Balakrishnan, 1991]. Calicut, Kerala, Kanniyakumari, Tamil Nadu [Rathakrishnan & Chitra, 1984].
Distribution from Field Studies:	<u>Kerala</u> : Valiaparathode and Sairandri in Silent Valley, 1995, Peppara, 1994-96 [C. Sathish Kumar]
Extent of occurrence (Sq. km.):	100-5,000
Area of occupancy (Sq. km.):	10-500
Number of Subpopulations/location:	2. Fragmented.
Habitat status:	Decrease in the habitat <20% in the last 40 years and decrease in the quality of the habitat due to human habitation.
Threats	
Threats to taxon:	Habitat loss resulting in and may result in population decline in Wayanad. The influence of threats on the population well understood, are not reversible and have not ceased.
Trade:	Not in trade
Population	
Numbers/Generation time/Trends:	Unknown
Trends:	The population of the taxon declining.
Recent Field Studies:	C. Sathish Kumar in Silent Valley, 1982-95, Peppara, 1994-96, Orchid flora of Kerala.
Data quality:	Assessment based on field observation, literature/herbarium studies and indirect information only.
Qualifier:	The Area and Extent estimated based on literature. Habitat status and threats on subjective opinion.
Status	
IUCN Red List Criteria (1994):	ENDANGERED Criteria: B1+2c
IUCN Red List Criteria (2000):	ENDANGERED Criteria: B1a+b(iii), 2a+b(iii)
CITES:	Appendix II Indian WL. (P) Act: Not listed
National Red Data Book:	Rare [Nayar & Sastry, 1987] International RDB: Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve, Peppara Wildlife Sanctuary, Silent Valley National Park
Uncertainty	Assessment based on 95% confidence and range of opinion.
Recommendations	
Research:	Survey, life history studies, PHVA.
Management:	Monitoring.
Cultivation:	Not recommended. Cultivation stocks exist at TBGRI, Palode and Gurukula Botanical Sanctuary, Wayanad.
Other comments:	Originally described by Hook. f., based on drawings from Wayanad by Jerdon. It was rediscovered by C. Sathish Kumar from Silent Valley area.
Sources:	Abraham & Vatsala, 1981: 338; Hooker, 1890 5: 777; Manilal, 1988: 270, 271; Mohanan & Balakrishnan, 1991: 191; Nayar & Sastry, 1987: 231; Rathakrishnan & Chitra, 1984: 1003; Sathish Kumar, 1999: 196; Smith, 1912 8: 22
Compilers:	T.A. Rao, K.Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan.
Reviewers:	A. Durai, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarasu, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty.

Scientific name (author; date):	Bulbophyllum elegantulum (Rolfe) J.J. Smith, 1912		
Synonym:	<i>Cirrhopetalum elegantulum</i> Rolfe, 1891		
Habit:	Epiphytic herb		
Habitat:	Evergreen forests		
Niche/elevation:	On wet branches. 1200-1820 m		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Tamil Nadu)		
Distribution from Literature:	Coorg, Nilgiris, Kudini, Mudumalai Wildlife Sanctuary [Nayar & Sastry, 1987]. Coorg [Mohan & Balakrishnan, 1991]. Coorg, Kanniyakumari [Rathakrishnan & Chitra, 1984]. Kudini [Sharma <i>et al.</i> , 1977]		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Naduvattom, Nilgiri [K. Sivabalakrishnan, 1996].		
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	<5 locations. Fragmented. All individuals not in one population and one subpopulations does not hold 95% or more of the total population.		
Habitat status:	No change in the habitat. Predicted decline >20% in the next 5 years due to human interference. Change in the quality of habitat due to felling of host trees.		
Threats			
Threats to taxon:	Decline of host species and habitat loss are the main threats. The influence on the population well understood, not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations <250. The number of mature individuals declined in the past and is likely to decline by 10-20% in the future. Generation time 2 years.		
Trends:	The population size/numbers of the taxon declining at a rate of >10% in the last 3 years and >10% decline predicted in the next 5 years due to habitat loss.		
Recent Field Studies:	K. Sivabalakrishnan in Naduvattom in Nilgiris, 1996, <i>ex situ</i> conservation of orchids of Western Ghats.		
Data quality:	Assessment based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. Habitat status, threats, mature individuals and population trends observed over many years of field studies.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2c
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B2a+b(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Vulnerable [Nayar & Sastry, 1987]	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Mudumalai Wildlife Sanctuary		
Uncertainty	Assessed based on evidence, on a range of opinion and on the consensus of field biologists.		
Recommendations			
Research:	Life history studies, PHVA pending.		
Management:	Habitat management, monitoring and cultivation/breeding.		
Cultivation:	Cultivation recommended for research. Cultivated stocks not available. No coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Information on propagation techniques not available.		
Other comments:	Originally described by Rolfe based on O' Briens collection from Coorg District was rediscovered by Rao <i>et al.</i> , 1976. The species was observed only on three trees [Sivabalakrishnan. K]. Felling of host trees for fuel has caused the decrease in the habitat. It was known only by the type collection from Coorg, until Subba Rao relocated it from Kundini in 1972. This species was collected only once from Nilgiris in 1972, away from the type locality.		
Sources:	Mohan & Balakrishnan, 1991: 192; Nayar & Sastry, 1987: 232; Rao <i>et al.</i> , 1973 (1976) 15 (3&4): 275-276; Rathakrishnan & Chitra, 1984: 1003; Rolfe, 1891 9 : 552; Sharma <i>et al.</i> , 1977: 138; Smith, 1912 8 : 23;		
Compilers:	T.A. Rao, K.Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayanan		
Reviewers:	A. Durai, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarsi, S.S.R. Bennet, B.A. Daniel, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty.		

Scientific name (author: date):	Bulbophyllum fimbriatum (Lindley) Reichb. f., 1861		
Synonym:	<i>Cirrhopetalum fimbriatum</i> Lindley, 1839		
Habit:	Epiphytic or lithophytic herb		
Habitat:	Dry and moist deciduous forests.		
Niche/elevation:	On tree branches and rocks covered with mosses. 300-1000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Uttara Kannada, Kodagu, North and South Wayanad, Thariode forests and on the way to Manantoddy to Koothuparamba [Abraham & Vatsala, 1981]. Upper ghats in Hassan [Saldanha & Nicolson, 1976]. Thariode forests [Ramachandran & Nair, 1988]. Mahabaleshwar, Rotunda Ghat, Pratapgad, Tinai ghat, Anmod, Castle Rock, Astoli-Chandwadi, Astoli, Purandhar [Santapau & Kapadia, 1966]. Konkan, from Bombay southwards [Hooker, 1886-1890]. Jodupala, Meenkolly [Keshvamurthy & Yoganarasimhan, 1990]. Mahabaleshwar, Rotunda Ghat, Koina Valley, Parva Ghat, Supa Ghats of Uttara Kannada [Cooke, 1958]. Konkan to Kanara, Kodagu [Nayar, 1996]. Gunganbavada, Patgaon [Sule, 1991].		
Distribution from Field Studies:	<u>Maharashtra</u> : Mahabaleshwar [S. Phatak, 1982]. <u>Karnataka</u> : Kodagu, Hassan, Chikmagalur [Krishnasamy]. Shimoga, Dakshina Kannada, B.R. Hills [R. Ingalhalli, 1995-2000]. <u>Tamil Nadu</u> : Naduvattom, Nilgiris [P.F. Solomons, 1998, 99]		
Extent of occurrence (Sq. km.):	>20,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	50/ 10. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to habitat destruction. Decrease in the quality of the habitat due to change in the vegetation type.		
Threats			
Threats to taxon:	Decline of host species, human interference, habitat loss, harvest for timber, fire and reproductive problems resulting in and may result in population decline. The influence on the population is well understood, not reversible and have not ceased.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations <2,500. The numbers of mature individuals declined in the past by 10% and likely to decline by 20% in the future. Generation time 3 years.		
Trends:	The population size/numbers of the taxon declining at a rate of <10% in the last 10 years.		
Recent Field Studies:	K. Krishnaswamy in Sringeri, Shimoga, B.R. Hills, 1998, 99, studies on Orchidaceae. T.A. Rao in Kodagu, Hassan, Mysore, Chikmagalur, 1995 floristic survey. S. Phatak in Londa, Anmod, 1998, floristic survey. P.F. Solomons, Naduvattam in Nilgiris, 1998-99.		
Data quality:	Assessment based on field studies, informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies and sightings.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2c
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Billigiri Rangaswamy Temple Wildlife Sanctuary, Brahmagiri Wildlife Sanctuary, Kudremukh National Park.		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists.		
Recommendations			
Research:	Survey, life history studies and limiting factor research.		
Management:	Habitat management, sustainable utilisation, cultivation/breeding and monitoring		
Cultivation:	Cultivation is recommended for research, preservation of live genome and reintroduction. Cultivated stocks available at department of Botany, Mysore University and Carmel College, Goa. Numbers in cultivation 5 at Mysore. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for similar taxa.		
Other comments:	P.F. Solomons has recorded this species for the first time in Nilgiris. This is the first indication of the range extension of this species.		
Sources:	Abraham & Vatsala, 1981: 336-338; Cooke, 1958: 188,189; Hooker, 1886-1890: 774; Keshvamurthy & Yoganarasimhan, 1990: 437; Lindley, 1839: 72; Nayar, 1996: 224; Ramachandran & Nair, 1988: 449; Rao, 1998: 194; Reichenbach, 1861 6: 260; Saldanha & Nicolson, 1976: 815; Santapau & Kapadia, 1966: 198-200; Sharma <i>et al.</i> , 1984; Sule, 1991: 82.		
Compilers:	T.A. Rao, B. Arthur, Krishnaswamy, E. Mohan, R. Ingalhalli, S. Rajendran, R. Hegde, S. Phatak.		

Reviewers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, J.L. Ellis, C. Sathish Kumar, B.V. Shetty.

Scientific name (author: date):	Bulbophyllum fuscopurpureum Wight, 1851		
Habit:	Epiphytic or lithophytic herb		
Habitat:	Shola and evergreen forests.		
Niche/ elevation:	On small rocks with mosses and <i>Commelina</i> species. 900-1800 m.		
Distribution	India		
Historical distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Current Global Distribution:	Coimbatore, Nilgiri [Henry <i>et al.</i> , 1989]. Mysore [Sharma <i>et al.</i> , 1984] Kaitia falls [Hooker, 1886-1890].		
Distribution from Literature:	Naduvattom [Sharma <i>et al.</i> , 1977]. Nilgiris, Muthukuzhivayal and on the way to Shantanparai from Devikulam [Abraham & Vatsala, 1981]. Mysore, Nilgiris [Nayar, 1996]. Mysore, Idukki, Kanniyakumari, Nilgiri [Rathakrishnan & Chitra, 1984]. Muthukuzhivayal, Devikulam, Naduvattom [Mohanani & Balakrishnan, 1991].		
Distribution from Field Studies:	<u>Karnataka</u> : Biligiri Rangan Hills, Honnametti shola - coffee plantation, Attikan [R. Ganesan, 1996-1999]. <u>Kerala</u> : Idukki [Rathakrishnan & Chitra, 1984]. <u>Tamil Nadu</u> : Muthukuzhivayal, Anamalai [R. Gopalan, 1986]. Nilgiris [R. Gopalan, 1996]. Naduvattom, Nilgiris [P.F. Solomons, 1998-2000]. Naduvattom, Ellamalai [Sivabalakrishnan & A. Durai].		
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	4/ <10. Fragmented. No continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in habitat >20% in Ellamalai and Naduvattam. Predicted decline of <20% in the next 10 years all over due to habitat loss and plantations [R. Ganesan, 2000]. No change in the quality of the habitat.		
Threats			
Threats to taxon:	Edaphic changes, habitat loss (future), harvest for medicine (present), pollution and habitat fragmentation resulting in and may result in population decline. The influence on the population well understood, not reversible and not ceased to be threats.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations >2,500. The numbers of mature individuals declined in the past by 10% and likely to decline by 10% in the future. Generation time 3 years. Perennial [R. Ganesan, 2000].		
Trends:	The population size/numbers of the taxon declining at a rate of <10% in the last 5 years (>50% in Naduvattam and Ellamalai).		
Recent Field Studies:	R. Gopalan in Anamalai, Nilgiris, 1996, survey. P.F. Solomons in Naduvattom, 1998, 99, 2000, floristic survey. K. Sivabalakrishnan in Anamalai, 1996, ex <i>situ</i> conservation of orchids of Western Ghats. A. Durai in Nilgiris, June 1995, Naduvattom, establishment of an orchidarium.		
Data quality:	Assessment based on field studies, indirect information and literature/herbarium studies.		
Qualifier:	The Area and Extent of occurrence estimated based on known locations. The threats, mature individuals and population trends observed over many years of field studies		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bce
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii,v), 2a+b(ii,iii,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Biligiri Rangaswamy Temple Wildlife Sanctuary, Kalakad-Mundanthurai Tiger Reserve		
Uncertainty	Assessed on a range of opinion based on evidence and on the consensus of the field biologists		
Recommendations			
Research:	Survey, PHVA pending.		
Management:	Cultivation/breeding		
Cultivation:	Cultivation is recommended for reintroduction. Not in cultivation. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Propagation techniques not known at all.		
Other comments:	Proposed by Wight based on collections by Jerdon from Nilgiris. Encroachments into shola forests at Bilirangan Hills can affect the regeneration of primary forest trees. Once the older trees die the orchids may lose their habitat. Other than the plantations shola forests do not have any threat. There may not be any threat which can wipe way the population at Biligiri Rangaswamy Temple Wildlife Sanctuary. However, this hill range is cut off from the Nilgiris, which may in the long run isolate the population [R. Ganesan, Biological Information Sheet].		
Sources:	Abraham & Vatsala, 1981: 334; Henry <i>et al.</i> , 1989: 5; Hooker, 1886-1890: 760; ; R. Ganesan, 2000, Unpublished Biological Information Sheet; Mohanani & Balakrishnan, 1991: 192; Nayar, 1996: 224; Rathakrishnan & Chitra, 1984: 1003; Sharma <i>et al.</i> , 1977: 138; Sharma <i>et al.</i> , 1984: 265; Wight, 1851 5(1): 6.t.1651.		

Compilers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R.R. Thamilarasi, M.B. Viswanathan.

Reviewers:

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Scientific name (author; date):	Bulbophyllum mysorens (Rolfe) J.J. Smith, 1912		
Synonym:	<i>Cirrhopetalum mysorens</i> Rolfe, 1895		
Habit:	Creeping pseudobulbous epiphytic herb		
Habitat:	Moist deciduous forest		
Niche/ elevation:	On rough bark trees. 800-1000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Kerala)		
Distribution from Literature:	Hassan - Upper Ghats [Saldanha & Nicolson, 1976]. Hassan, Mysore [Sharma <i>et al.</i> , 1984]. Kundalli [Keshvamurthy & Yoganarasimhan, 1990]. Kodagu, Hassan [Rao, 1998; Rathakrishnan & Chitra, 1984]. <u>Karnataka</u> : Coorg [S. Phatak, 1987, 88]. Kodagu [T.A. Rao, 1996]. Shimoga [Krishnaswamy, 1998]. <u>Kerala</u> : Periyar Tiger Reserve [N. Sasidharan, 1998].		
Distribution from Field Studies:			
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	15/3. Fragmented. There is a continuing decline in the number of locations or subpopulations. All individuals are not in one population and one subpopulations does not hold 95% or more of the total population		
Habitat status:	Decrease in the habitat predicted <20% in the next 10 years due construction of roads, tourism and human interference. Decrease in quality due to harvest of host trees.		
Threats			
Threats to taxon:	Decline in the host species (harvest for timber), habitat fragmentation, fire, reproductive problems and propagation difficulties are resulting in and may result in population decline. The influence on the population structure is well understood, are not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations are >2,500. The number of mature individuals declined in the past by 10% and are likely to decline by 10% in the future. Generation time 3 years.		
Trends:	The population size/numbers of the taxon is declining at a rate of <10% in the last 10 years. Predicted decline <10% in the next 10 due to habitat loss.		
Recent Field Studies:	Krishnaswamy in Sringeri, Agumbe Ghat, 1998, studies on orchidaceae. T.A. Rao in Kodagu, 1996-98, floristic survey.		
Data quality:	Assessment based on field studies, and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies. Some threats are suspected.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2abcde
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(i,ii,iii,iv,v), 2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Brahmagiri Wildlife Sanctuary, Kuduremukh National Park, Periyar Tiger Reserve, Rajiv Gandhi National Park		
Uncertainty	Assessed with 95% confidence based on evidence (some precaution) and on the consensus of the field biologists at the workshop		
Recommendations			
Research:	Life history studies.		
Management:	Not recommended		
Cultivation:	Cultivated stocks available at Cauvery Nisargadhama in Kushalnagar, Kodagu. Numbers in cultivation 100. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	This species was originally proposed by Rolfe based on O' Brien's collections from Mysore. Collection of this species from the wild is only passive or accidental; rarely for ornamental value.		
Sources:	Keshvamurthy & Yoganarasimhan, 1990: 437; Rao, 1998: 105, 194; Rathakrishnan & Chitra, 1984: 1003; Rolfe, 1895 9:34; Saldanha & Nicolson, 1976: 815; Sharma <i>et al.</i> , 1984: 265; Smith, 1912 8: 26;		
Compilers:	T.A. Rao, B. Arthur, K. Krishnaswamy, E. Mohan, R. Ingalthalli, S. Rajendran, R. Hegde, S. Phatak		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Viswanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, B.V. Shetty.		

Scientific name (author; date):	Bulbophyllum proudlockii (King & Pantl.) J.J. Smith, 1912		
Synonym:	<i>Cirrhopetalum proudlockii</i> King & Pantl., 1897		
Habit:	Lithophytic and epiphytic herb		
Habitat:	Evergreen forests.		
Niche/ elevation:	Moist branches and rocks associated with mosses and <i>Commelina species</i> . 1200-1600m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Tamil Nadu)		
Distribution from Literature:	Hassan, Hullahalli, Hebbsali in the upper ghats [Saldanha & Nicolson, 1976]. Chikmagalur, Hassan, Mysore [Sharma <i>et al.</i> , 1984]. Nilgiri [Henry <i>et al.</i> , 1989]. Thadiandamol [Keshvamurthy & Yoganarasimhan, 1990]. Chickmagalur, Hassan, Mysore, Nilgiri [Rathakrishnana & Chitra, 1984]. Naduvattom, Gudalur [Sharma <i>et al.</i> , 1977]		
Distribution from Field Studies:	<u>Karnataka</u> : Thadiandamol [T.A. Rao, 1984]. Chikkamagalur [Keshvamurthy, 1991]. <u>Tamil Nadu</u> : Naduvattom and Ellamalai in Nilgiri [K. Sivabalakrishnan, 1996].		
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	<10/4. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Change in habitat unknown. Predicted decline of <20% in the next 5 years due to habitat loss. No change in the quality of habitat.		
Threats			
Threats to taxon:	Human interference and habitat loss may result in population decline. The influence on the population not well understood, not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations <2,500. The number of mature individuals likely to decline by >20% in the future. Generation time 2 years.		
Trends:	The rate of decline of population size/numbers not known. Predicted decline >20% in the next 10 due to habitat loss.		
Recent Field Studies:	K. Sivabalakrishnan in Naduvattom, Ellamalai, 1996, 97, <i>ex situ</i> conservation of orchids of Western Ghats.		
Data quality:	Assessment based on field studies and literature/herbarium studies.		
Qualifier:	Area and extent estimated based on known locations; habitat status, threats, mature individuals and population trends observed, inferred, suspected and projected.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2bde
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B1a+b(ii,iv,v), 2a+b(ii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:			
Uncertainty	Assessed with 95% confidence based on precaution and some evidence, on a range of opinion and the consensus of field biologists. Assessment based on the field study at Nilgiris, with the situation extrapolated for other regions.		
Recommendations			
Research:	Survey, genetic research, taxonomic research, PHVA pending.		
Management:	Habitat management, cultivation/breeding.		
Cultivation:	Cultivation recommended for research. Cultivated stocks not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Propagation techniques not known at all.		
Other comments:	Originally proposed by King & Pantling based on specimen collected by R.L. Proudlock from Nilgiris. The causes for habitat loss have not been studied properly. The number of mature individuals was observed to be 300-500 in Nilgiris only.		
Sources:	Henry <i>et al.</i> , 1989: 6; Keshvamurthy & Yoganarasimhan, 1990: 438; King & Pantling, 1897: 588; Rathakrishnana & Chitra, 1984: 1003; Saldanha & Nicolson, 1976: 815, 816; Sharma <i>et al.</i> , 1977: 139; Sharma <i>et al.</i> , 1984: 266; Smith, 1912 8 : 27.		
Compilers:	T.A. Rao, K.Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan		
Reviewers:	A. Durai, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty.		

Scientific name (author: date):	Bulbophyllum silentvalliensis Sharma & Srivatsava, 1993		
Habit:	Epiphytic herb		
Habitat:	Evergreen forests		
Niche/ elevation:	Moss clad branches. 850-950 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Silent Valley [Rao, 1998]. Panthanathode, Sairandri [Sathish Kumar, 1999].		
Distribution from Field Studies:	<u>Kerala</u> : Panthanathode and Sairandri in Silent Valley [C. Sathish Kumar, 1982].		
Extent of occurrence (Sq. km.):	<100		
Area of occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	2/2. Fragmented.		
Habitat status:	No change in the habitat and its quality.		
Threats			
Threats to taxon:	Unknown		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations <250. Generation time - perennial.		
Trends:	Unknown		
Recent Field Studies:	W.D. Theuerkauf in Sairandri, Sept, 1995, germplasm collection studies.		
Data quality:	Assessment based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations in Silent Valley.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	D
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Silent Valley National Park.		
Uncertainty	Assessed with 95% confidence based on evidence, on the consensus of the field biologists and on subjective opinion.		
Recommendations			
Research:	Life history studies, PHVA pending.		
Management:	Monitoring, cultivation/breeding.		
Cultivation:	Cultivation recommended for research. Cultivated stocks available at TBGRI, Palode and Gurukula Botanical Sanctuary, Wayanad. Numbers in cultivation <10. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Some propagation techniques known for the taxa.		
Other comments:	Data on population trends and threats not available.		
Sources:	Rao, 1998: 194; Sathish Kumar, 1999: 196; Sharma & Srivastava 1993 68: 209-210;		
Compilers:	S.S.R. Bennet, J.L. Ellis, M. Mohanan, V.S. Menon, C. Sathish Kumar, S. Seeni, B.V. Shetty, P.S. Udayan, U. Lakshminarayan.		
Reviewers:	A. Durai, P.F. Solomons, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Ingalhalli, N. Raman, B. Arthur, T.A. Rao, K.G. Selvi.		

Scientific name (author: date):	Bulbophyllum tremulum Wight, 1851		
Habit:	Epiphytic herb		
Habitat:	Moist deciduous forest		
Niche/ elevation:	Wet branches on trees. 1000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Kodagu, Mysore, Nilgiris, Anamalai hills, Wayanad, Western ghats of Kerala, Ponmudi, Mahendragiri, Chengaltheri on the way to Naterikal, Muthukuzhivayal [Abraham & Vatsala, 1981]. Silent Valley - Valliyaparathode [Manilal, 1988]. Kannur - Chandanathode, Kakkayangade [Ramachandran & Nair, 1988]. Near Uchangi, Hassan, Kodagu [Rao, 1998]. Ponmudi [Mohanan & Henry, 1994]. Kodagu, Mysore [Saldanha & Nicolson, 1976]. Coimbatore, Nilgiri, Tirunelveli [Henry <i>et al.</i> , 1989]. Palghat – lower ghats, Kaikatty forest – Nelliampathy ghats [Vajravelu, 1990]. Wayanad, Nilgiri hills [Hooker, 1886-1890]. Tadiandamol [Keshvamurthy & Yoganarasimhan, 1990]. Nilgiris [Sharma <i>et al.</i> , 1977]. Coorg, Hassan, Idukki, Cannore, Coimbatore, Nilgiri, Tirunelveli [Rathakrishnan & Chitra, 1984]. Valliaparathode [Sathish Kumar, 1999].		
Distribution from Field Studies:	<u>Karnataka</u> : Kodagu, Hassan [T.A. Rao, 1996-98].		
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	10-20/<10. Fragmented. There is continuing decline in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decline in the habitat of the taxon. Predicted decline of <20% in the next 10 years due to vandalism and habitat loss. No change in the quality of the habitat.		
Threats			
Threats to taxon:	Habitat loss, habitat fragmentation and human interference resulting in and may result in population decline. The influence on the population well understood, not reversible and not ceased to be threats.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Number of mature individuals unknown. Annual herb. Decline in numbers by 10% in the past and likely to continue decline at the same rate in the future.		
Trends:	Declining by <10% in last 10 years due to habitat loss and predicted decline <10% in the next 10 years.		
Recent Field Studies:	T.A. Rao in Kodagu, Hassan, 1996-98, conservation of wild orchids of Kodagu in the Western Ghats. C. Sathish Kumar in Silent Valley National Park, 1982-88.		
Data quality:	Assessment based on field studies and literature/herbarium studies.		
Qualifier:	Area and extent estimated based on known locations; habitat status and threats observed, suspected and projected.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2de
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B1a+b(iv,v), 2a+b(iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Silent Valley National Park, Wayanad Wildlife Sanctuary		
Uncertainty	Assessed on a range of opinion based on evidence and on the consensus of the field biologists.		
Recommendations			
Research:	Survey		
Management:	Not recommended		
Cultivation:	Cultivated stocks not available. There is no coordinated species management programme for this species and one is not recommended. Propagation techniques not known at all.		
Other comments:	Proposed by Wight based on his collections from Nilgiris. It also occurs in Idukki, Conoor, Coimbatore, Tirunelveli. There is no need for cultivation/breeding as it is an innocuous orchid.		
Sources:	Abraham & Vatsala, 1981: 331; Henry <i>et al.</i> , 1989: 6; Hooker, 1886-1890: 763, 764; Keshvamurthy & Yoganarasimhan, 1990: 438; Manilal, 1988: 271; Mohanan & Henry, 1994: 450; Rao, 1998: 108, 194; Ramachandran & Nair, 1988: 448; Rathakrishnan & Chitra, 1984: 1003; Saldanha & Nicolson, 1976: 816; Sathish Kumar, 1999: 196; Sharma <i>et al.</i> , 1977: 138; Sharma <i>et al.</i> , 1984: 266; Vajravelu, 1990: 469; Wight, 1851 5(1): 20.t.1749;		
Compilers:	T.A. Rao, K. Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan		
Reviewers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarsi, J.L. Ellis, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty.		

Scientific name (author; date):	Cheirostylis seidenfadeniana Sathish & F. Rasm., 1987		
Habit:	Terrestrial herbs		
Habitat:	Forest Floor in deep shade		
Niche/ elevation:	850-950m		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Ponmudi; way to Agasthyamala near Attayar; Chemunji		
Distribution from Field Studies:	<u>Kerala</u> ; Agasthyamala		
Extent of Occurrence (Sq. km.):	101-5,000		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	3/3. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Ponmudi (Type locality) changed due to tourism activity, but Agasthyamala and Chemunji populations intact.		
Threats			
Threats to taxon:	Habitat loss		
Trade:	Not in trade		
Population			
Numbers/Generation time/trend:	Mature individuals in all populations <50. Annual.		
Population trend:	Unknown.		
Recent Field Studies:	C. Sathish Kumar in Agasthyamala, 1995.		
Data quality:	General field studies, informal sightings, indirect information		
Qualifier:	Area and Extent estimated and habitat status observed. Population estimated based on field studies.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2bcd
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B2a+b(ii,iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Neyyar Wildlife Sanctuary		
Uncertainty	95% confidence but the assessment is exclusive to the below listed compilers and reviewers.		
Recommendations			
Research:	Life History studies, PHVA		
Management:	Monitoring		
Cultivation:	Cultivated stocks exist in TBGRI. There is no coordinated species management programme for this species and one is recommended within 3 years. Propagation techniques not known at all.		
Other comments:	Described based on a collection made by Sathish Kumar from Ponmudi in 1983, It is closely related to <i>C. parvifolia</i> Lindl. and <i>C. thailandica</i> Seidenf. Under cultivation, this species frequently produces flowers and fruits and seedlings naturally come up among other orchids.		
Sources:	Sathish Kumar & Rasmussen, 1987: 409		
Compilers:	C. Sathish Kumar		
Reviewers:	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author; date):	Chiloschista glandulosa Blatter & McCann, 1932		
Habit:	Epiphytic herbs.		
Habitat:	Evergreen forests		
Niche/ elevation:	Riverine. 900-1200m.		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Karnataka [Blatter & McCann, 1932]. Ponnudi [Abraham & Vatsala, 1981]. Uttara Kannada, Kodagu [Rao, 1998].		
Distribution from Field Studies:	<u>Karnataka</u> : Bhagamandala [T.A. Rao] <u>Kerala</u> : Neyyar Wildlife Sanctuary [C. Sathish Kumar & Ganga Prasad] <u>Tamil Nadu</u> : Muthukuzhivayal		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	5/5. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in quality of habitat. Decline in area.		
Threats			
Threats to taxon:	Human interference, tourism, developmental activities		
Trade:	Not in trade		
Population			
Numbers/Generation time/trend:	Unknown		
Population trend:	Declining		
Recent Field Studies:	Rao in Bhagamandala, 1998-2000. C. Sathish Kumar and Ganga Prasad in Athirumala, Neyyar Wildlife Sanctuary, 1994-1995.		
Data quality:	Field studies, informal sightings, literature/herbarium studies		
Qualifier:	Area and Extent estimated and habitat status observed. Population estimated based on observation.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcd
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(ii,iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Neyyar Wildlife Sanctuary		
Uncertainty	Assessment based on precaution due to changes expected in habitat. Assessment is exclusive to the below listed compilers and reviewer.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	No cultivated stocks available. No recommendations made at the workshop.		
Other comments:	Proposed by Blatter & McCann based on Miss. T.R. Bell's manuscript notes and specimens from Karwar, Dandulli and Yellapur in North Kanara. Rediscovered from Muthukuzhivayal in Tamil Nadu and Ponnudi in Kerala [Sathish Kumar, 1991]. Epiphytic on <i>Veronia travancorica</i> in Athirumala [C. Sathish Kumar]. Very difficult to locate. It has a bunch of roots with central stem, no leaves. Roots are green and perform the function of leaves. Species found on branches hanging over the river or water bodies. Ponnudi population critical. Difficult to locate this species in Athirumala since the riverine trees of <i>Veronia travancorica</i> were cut to construct a dormitory for rafters.		
Sources:	Abraham & Vatsala, 1991; Blatter & Mc Cann, 1932; Rao, 1998: 108; Sathish Kumar, 1991: 211.		
Compilers:	C. Sathish Kumar		
Reviewers:	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author; date):	Coelogyne glandulosa Lindley var. bournei S.J. Das & Jain, 1978		
Habit:	Epiphyte or lithophyte		
Habitat:	Evergreen and deciduous forests.		
Niche/ elevation:	Moss clad side branches and exposed rocks. 500-1500 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Tamil Nadu)		
Distribution from Literature:	Madurai [Henry <i>et al.</i> , 1989]. Poombarai in Palni Hills [Seidenfaden, 1999]. Madurai [Rathakishnan & Chitra, 1984].		
Distribution from Field Studies:	None		
Extent of occurrence (Sq. km.):	<100		
Area of occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	2/2. Fragmented.		
Habitat status:	Decrease in the habitat >50% in the last 20 years. >50% predicted decline in the next 10 years due to coffee plantations. There is decrease in the quality of habitat.		
Threats			
Threats to taxon:	Habitat loss		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	Assessment based on literature/herbarium studies.		
Qualifier:	The Area and Extent inferred from literature.		
Status			
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2c
IUCN RED LIST CRITERIA (2000):	CRITICALLY ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None.		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists.		
Recommendations			
Research:	Survey, taxonomic research, genetic studies		
Management:	Monitoring		
Cultivation:	Cultivated stocks not available. There is no coordinated species management programme for this species and one is recommended to be initiated within 3 years. Propagation techniques not known at all.		
Other comments:	This variety was proposed by Das and Jain based on a collection made by A.G. Bourne from Poombari, Palni Hills. Record of its occurrence elsewhere (e.g. Nilgiris – Mohanan & Balakrishnan, 1991) is erroneous.		
Sources:	Das & Jain, 1978 86 (1070); Das & Jain, 1976 (1979) 18 (1-4); Henry <i>et al.</i> , 1989: 7; Mohanan & Balakrishnan, 1991: 193; Rathakrishnan & Chitra, 1984: 1003; Seidenfaden, 1999: 1234;		
Compilers:	T.A. Rao, K. Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan		
Reviewers:	A. Durai, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, K.G. Selvi.		

Scientific name (author: date):	Coelogyne glandulosa Lindley var. glandulosa 1854		
Habit:	Terrestria and lithophytic herb		
Habitat:	Evergreen and deciduous forests		
Niche/ elevation:	Moist areas near river and streams. 2200 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Tamil Nadu)		
Distribution from Literature:	Nilgiri hills [Abraham & Vatsala, 1981]. Kodaikanal, Vilpatty path, Pambai shola, Church Cliff, Kodaikanal Poombarai Road [Seidenfaden, 1999]. Coimbatore, Madurai, Nilgiri [Henry <i>et al.</i> , 1989]. Pykara [Mohan & Balakrishnan, 1991], Kodaikanal, Palni, Pamban stream [Fyson, 1974]. Madurai, Nilgiri [Rathakrishnana & Chitra, 1984].		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Mukurthi National Park [P.F. Solomons, 1998–2000]. Bangitappal, Mukurthi National Park [S. Paulraj].		
Extent of occurrence (Sq. km.):	100-5,000 sq.km.		
Area of occupancy (Sq. km.):	100-500 sq.km.		
Number of Subpopulations/location:	4/<10. Fragmented. There is continuing decline in the number of locations or subpopulations. All individuals are not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	There is no decrease in the habitat but landslides and fire are causes of decline in quality of habitat.		
Threats			
Threats to taxon:	Fire, landslide and habitat loss (in the past) resulting and may result in future population decline. The factor influencing the status of the taxon well understood, not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Numbers unknown, there has been no change in the numbers of mature individuals and are not likely to decline in the future. Generation time 1 year.		
Trends:	Population size stable and there may be decline in the future if threats continue.		
Recent Field Studies:	P.F. Solomons in Mukurthi National Park, 1998-2000, conservation studies.		
Data quality:	Assessed based on field studies and informal sightings of the population in Mukurthi National Park.		
Qualifier:	Extent and Area estimated; habitat status and threats observed.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2cd
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B1a+b(iii,iv), 2a+b(iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Mukurthi National Park		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists		
Recommendations			
Research:	Genetic research		
Management:	Monitoring, Cultivation/breeding		
Cultivation:	Commercial/sustainability. Cultivated stocks not available. There is no coordinated species management programme for this species and one is recommended after 3 years. Propagation techniques not known at all.		
Other comments:	Described by Lindley based on Wight's collection from south India (without precise locality). Record of its occurrence outside Palnis is doubted (C. Sathish Kumar pers. comm.). It was reported in Pykara earlier. The population in Mukurthi National Park was studied to identify the variety. Since Mukurthi National Park is a protected area there is no change in the habitat and hopefully the species will increase, but landslides and fire can be a threat in this area. Barring the human-induced calamities, the population has a good chance of increasing considerably. The propagation programme will be taken up by the wildlife wing of the Tamil Nadu Forest Department and reintroduced in the wild in suitable areas.		
Sources:	Abraham & Vatsala, 1981: 275-277; Fyson, 1974: 391; Henry <i>et al.</i> , 1989: 7; Lindley, 1854: 6; Mohan & Balakrishna, 1991: 193; S. Paulraj, 2000, Unpublished Biological Information Sheet; Rathakrishnana & Chitra, 1984: 1003; Seidenfaden, 1999: 1233-1234.		
Compilers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan.		
Reviewers:	S.S.R. Bennet, B.A. Daniel, M. Mohan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalthalli, N. Raman, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, K.G. Selvi, U. Lakshminarayan.		

Scientific name (author; date):	Coelogyne glandulosa Lindley var. sathyanarayanae S.J. Das & Jain, 1978		
Synonym:	<i>Coelogyne mossiae</i> Rolfe, 1894		
Habit:	Epiphyte		
Habitat:	Moist deciduous, evergreen and shola forests.		
Niche/ elevation:	1000-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Tamil Nadu)		
Distribution from Literature:	Madurai [Henry <i>et al.</i> , 1989]. Palni hills, Kodaikanal [Seidenfaden, 1999].		
Distribution from Field Studies:	None		
Extent of occurrence (Sq. km.):	<100		
Area of occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	1/1.		
Habitat status:	Decrease in the habitat >20% in the last 10 years. Predicted decline >20% in the next 10 years and decrease in the quality due to plantations of guava and pomegranate.		
Threats			
Threats to taxon:	Habitat loss is resulting in and may result in future population decline. The influence on the population is well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend:	Unknown		
Trends:	Unknown		
Recent Field Studies:	None.		
Data quality:	Assessed based on literature/herbarium studies only.		
Qualifier:	Area and extent estimated based on published locations; habitat status known from ecological studies and from developmental activities of the area.		
Status			
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2c
IUCN RED LIST CRITERIA (2000):	CRITICALLY ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty	Assessed based on a range of opinion, precaution and on the consensus of the field biologists.		
Recommendations			
Research:	Survey		
Management:	Monitoring, Cultivation		
Cultivation:	Conservation		
Other comments:	Proposed by Das and Jain based on a lone collection made by Saldanha in 1965 from Kodaikanal. And it was not subsequently recollected from anywhere.		
Sources:	Das & Jain, 1978: 195; Henry <i>et al.</i> , 1989: 7; Seidenfaden, 1999: 1235.		
Compilers:	T.A. Rao, K.Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan.		
Reviewers:	A. Durai, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingallhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, K.G. Selvi.		

Scientific name (author; date):	Coelogyne mossiae Rolfe, 1894		
Habit:	Epiphyte and lithophyte.		
Habitat:	Evergreen and shola forests, and grasslands		
Niche/ elevation:	Associated with mosses on rocky slopes. 1600-2500 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Tamil Nadu & Kerala)		
Distribution from Literature:	Nilgiris, Palni Hills, on the way to Nyamakkad, Kodaikanal Hills near Shembaganur [Abraham & Vatsala, 1981]. Madurai, Nilgiri [Henry <i>et al.</i> , 1989]. Silent Valley - Walakkad [Manilal, 1988]. Nilgiris [Sharma, <i>et al.</i> , 1977; Fyson, 1974]. Palni Hills, Kodaikanal [Seidenfaden, 1999]. Palni Hills, Idukki District [Nayar & Sastry, 1988; Mohanan & Balakrishnan, 1991]. Madurai, Nilgiris [Rathakrishnan & Chitra, 1984]. Munnar [Sathish Kumar, 1991]. High Range [Shetty & Vivekananthan, 1991]. Walakkad [Sathish Kumar, 1999]. <u>Tamil Nadu</u> : Avalanche, Nilgiris, Western Catchment area [T. Chabra, 1997-2000]. Ellamalai, Gudalur [K. Sivabalakrishnan, 1995-99]. Nilgiris [A. Durai]. Kodanadu, Nilgiris [P.S. Udayan, 1992]. Mukurthi National Park, Western Catchment area [P.F. Solomons, 1998]. Bangitappal, Avalanche, Mukurthi National Park, High Range, Kerala, Rajamalley [B.V. Shetty]. Nilgiri Shola, Walakkad, Idukki [M. Mohanan].		
Distribution from Field Studies:			
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	>10/6. Fragmented. No continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population		
Habitat status:	There is no change in the habitat of the taxon. Predicted decline of <20% in the next 10 years due to tea plantations, overexploitation for ornamental cultivation [M. Mohanan]. There is change in the quality of the habitat.		
Threats			
Threats to taxon:	Edaphic changes, harvest for medicine, habitat loss, habitat loss due to exotic plants, trade for market or medicine and landslides are resulting in and may result in population decline. The influence on the population well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <2,500. The number of mature individuals declined in the past by >20% and likely to decline by <20% in the future. Generation time 3 years.		
Trends:	The population size/numbers of the taxon declining at a rate of >20% in the last 10 years. Predicted decline <10% in the next 10 due to habitat loss.		
Recent Field Studies:	T. Chabra in western Catchment area, Nilgiris, 1995, conservation. P.F. Solomons in Avalanche, Mukurthi National Park, 1998-2000, field studies. K. Sivabalakrishnan and A. Durai in Ellamalai, 1996. P.S. Udayan in Kodanadu in 1992, field studies.		
Data quality:	Assessment based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on the known locations. The habitat status, threats, mature individuals and population trends observed and projected.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2abce
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B1a+b(i,ii,iii,v), 2a+b(i,ii,iii,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Vulnerable [Nayar & Sastry, 1988]		
Known presence in Protected Areas:	Mukurthi National Park		
Uncertainty:	Assessed with 95% confidence based on evidence, some precaution and on the consensus of the field biologists.		
Recommendations			
Research:	Life history studies, genetic research, PHVA.		
Management:	Cultivation/breeding		
Cultivation:	Cultivation recommended for research. Cultivated stocks available at the National Orchidarium, Yercaud. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Information on propagation techniques not available.		
Other comments:	Proposed by Lindley based on a collection by Mr. Moss from Nilgiris. Monoculture plantations in Nilgiris should be prevented to retain the present habitat of the species. This species is collected by locals for medicinal purpose. The bulbs are used to treat burn wounds by Kurumbas. Flowers are double the size of Fysons (1974) observations.		
Sources:	Seidenfaden, 1999: 1235; Abraham & Vatsala, 1981: 285; Henry <i>et al.</i> , 1989: 7; Manilal, 1988: 273; Nayar & Sastry, 1987: 234; Fyson, 1974: 391; Mohanan & Balakrishnan, 1991: 193; Sharma <i>et al.</i> , 1977: 139; Rolfe, 1894: 156; Rathakrishnan & Chitra, 1984: 1003; B.V. Shetty, M. Mohanan (Biological Information Sheets, 2000); Sathish Kumar, 1991: 211; Sathish Kumar, 1999: 198; Shetty & Vivekananthan, 1991: 140.		

Compilers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan.

Reviewers:

S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.

Scientific name (author: date):	Coelogyne nervosa A. Rich., 1841		
Synonym:	<i>Coelogyne corrugata</i> Wight, 1851		
Habit:	Lithophyte or epiphyte		
Habitat:	Montane grasslands		
Niche/ elevation:	1000-2500m		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Mysore to Thirunelveli, Nilgiri hills, Munnar, Kiothayar, Muthukuzhivayal and on top of Mahendragiri Peak [Abraham & Vatsala, 1981]. Silent Valley - Poochapara [Manilal, 1988]. Mysore [Sharma <i>et al.</i> , 1984]. Coimbatore, Kanyakumari, Madurai, Nilgiris, Tirunelveli [Henry <i>et al.</i> , 1989]. Kannur on the way to Brahmagiri [Ramachandran & Nair, 1988]. Kodaikanal, Bear Shola, Palni Hills [Seidenfaden, 1999]. Anaimudi, Mahendragiri [BVS]. Doddabetta, Coonoor [VR]. Kodanad, Kotagiri, Naduvattom, Pykara, Ootacamund [Sharma <i>et al.</i> , 1977]. Kodagu [Nayar, 1996]. Kodaikanal, Nilgiri, Coonoor, Palani [Fyson, 1974]. Tadiandamol [Keshvamurthy & Yoganarasimhan, 1990]. High Range [Shetty & Vivekananthan, 1991]. Mysore, Idukki, Trivandrum, Coimbatore, Kanniyakumari, Madurai, Nilgiri, Tirunelveli [Rathakrishnan & Chitra, 1984]. Poochapara [Sathish Kumar, 1999].		
Distribution from Field Studies:	<u>Karnataka</u> : Kodagu Kotagiri, Madikeri, Brahmagiri range [T. A. Rao, 1996-98]. <u>Kerala</u> : Silent Valley (1982-1988); Eravikulam National Park, Neyyar Wildlife Sanctuary (1993-1997) [Sathish Kumar] <u>Tamil Nadu</u> : Doddabetta, Coonoor [VR]. Bikkapathimund Reserve Forest, Pandiar [T. Chabra]. Mukurthi National Park, Naduvattom [P.F. Solomons]. Anamalais [K. Sivabalakrishnan, A. Durai]. Pykara, Nilgiris [P.S. Udayan, 1996].		
Extent of occurrence (Sq. km.):	5,001-20,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	>100/>10. Fragmented. There is continuing decline in the number of locations or subpopulations. All individuals are not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years. Predicted decline <20% in the next 10 years due to loss of habitat and plantations. There is decrease in the quality of habitat.		
Threats			
Threats to taxon:	Habitat loss, habitat fragmentation, grazing, fire, drought and demographic instability resulting in and may result in population decline. The influence of threats on the population well understood, not reversible and have not ceased to be a threat.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations >2,500. Continuing decline in mature individuals and predicted decline. Generation time 3 years.		
Trends:	The population size/numbers of the taxon declining at a rate of >20% in the last 10 years. Predicted decline >20% in the next 10 years due to habitat loss. The threats influencing the population structure well understood, not reversible and not ceased to be a threat.		
Recent Field Studies:	T. Chabra in Bikkapathimund and Pandiar. P.F.Solomons in Mukurthi National Park, Naduvattom. K. Sivabalakrishnan and A. Durai in Anamalai, 1995, establishment of orchidarium. T.A. Rao in Kodagu, floristic studies. P.S. Udayan in Pykara and Naduvattom, 1992-95, documentation of vegetation. K. Ravikumar in High Wavy mountains, 1989-1994. Sathish Kumar in Eravikulam National Park and Neyyar Wildlife Sanctuary, 1993-1997, Orchid species of Kerala and Flora of Neyyar Wildlife Sanctuary.		
Data quality:	Assessment based on field studies, and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies and also inferred from a range of opinion.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2abcde
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Eravikulam National Park, Kalakad-Mundanthurai Tiger Reserve, Mukurthi National Park, Neyyar Wildlife Sanctuary, Silent Valley National Park		
Uncertainty:	Assessed with 95% confidence based on evidence, range of opinion and on the consensus of the field biologists.		
Recommendations			
Research:	Genetic research, life history studies, PHVA pending.		
Management:	Cultivation/breeding		
Cultivation:	Cultivation recommended for research. Cultivated stocks available at home gardens in Ooty. Numbers in cultivation 25. There is no coordinated species management programme for this species and one is		

not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.

Other comments:

It was proposed by A. Richard based on Perrottet's collection from Nilgiris. Flowers have mild fragrance and are attractive. Selective felling of trees, shade lopping are the main threats in High Wavy Mountains [K. Ravikumar, pers. comm.].

Sources:

Abraham & Vatsala, 1981: 285-288; Nayar, 1996: 111; Seidenfaden, 1999: 123; Rao, 1998: 196; Manilal, 1988: 273; Sharma *et al.*, 1984: 266; Henry *et al.*, 1989: 7, 8; Ramachandran & Nair, 1988: 449; Mohanan & Henry, 1994: 451, 452; Fyson, 1974: 390; Hooker, 1886-1890: 835; Keshavmurthy & Yoganarasimhan, 1990: 439; Sharma *et al.*, 1977: 139; Richard, 1841: 15; Wight, 1851 5(1): 5.t.1639; B.V. Shetty, V. Ramachandran, 2000, Unpublished Biological Information Sheet; Shetty & Vivekananthan, 1991: 140; Rathakrishnan & Chitra, 1984: 1003; Sathish Kumar, 1999: 198

Compilers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan.

Reviewers:

S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, NC. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.

Scientific name (author: date):	Dendrobium barbatulum Lindley, 1830		
Habit:	Epiphytic or lithophytic herbs		
Habitat:	Moist and dry deciduous, moist evergreen forests.		
Niche/ elevation:	On tree branches and dry rocks. 500-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Gujarat, Maharashtra, Goa, Karnataka & Tamil Nadu)		
Distribution from Literature:	Kodagu, Utara Kannada, Maharashtra, Gujarat, Silent Valley [Rao, 1998]. Gujarat to Konkan to [Nayar, 1996]. Coimbatore, Kanyakumari, Nilgiri [Henry <i>et al.</i> , 1989]. Goa, Colem Ghat area [Rao, 1986]. Dangs, Ahwa, Khandesh, Konkan, Thana, Kanheri caves, Chiplun, Ratnagiri, Western Ghats – Kasara, Igatpuri, Khandala, Mahabaleshwar, Deccan – Purandhar, Dapoli, Bhimashankar, Radhanagari, Kolhapur, Koyana Nagar, Uttara Kannada, Tinai Ghat, Anmod, Castle Rock [Santapau & Kapadia, 1966]. Chickamagalur, Hassan, Mysore, Uttara Kannada, Shimoga [Sharma <i>et al.</i> , 1984]. Mukkali Forest, Valiyaparathode [Vajravelu, 1990]. Konkan, Kodagu [Hooker, 1886-1890]. Anakad, Mercara, Talacauvery [Keshvamurthy & Yoganarasimhan, 1990]. Kariashola [Sharma, <i>et al.</i> , 1977]. Sairandhri, Poochapara, Aruvanpara [Sathsh Kumar, 1999].		
Distribution from Field Studies:	<u>Maharashtra</u> : Devarai, Londa, Haliyal [S. Phatak & R. Ingalhalli, 1980, 98]. <u>Karnataka</u> : Thalakaveri Medicinal Plants Conservation Area, Kodagu, Kemmanagundi, Uttara Kannada [T.A. Rao, 1996-98, 2000]. <u>Tamil Nadu</u> : Valparai, Anamalai, Rottikadai, Cherampadi, Nilgiris, Devala [K. Sivabalakrishnan, 1997, 98]. Rottikadai, Valparai in Anamalai Hills [A. Durai].		
Extent of occurrence (Sq. km.):	5,001-20,000		
Area of occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	32/11. Fragmented. There is continuing decline in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years. Predicted decline <20% in the next 10 years due to loss of habitat and vandalism. Decrease in the quality of habitat in certain locations.		
Threats			
Threats to taxon:	Hybridization, human interference, climate, harvest, habitat loss and pollution resulting in and may result in population decline. The influence on the population well understood, not reversible and not ceased.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trade:	Mature individuals in all populations >2,500. The numbers of mature individuals declined in the past by 10% and likely to decline by 10% in the future. Generation time - annual / perennial.		
Trends:	The population size/numbers of the taxon declining at a rate of >10% in the last 10 years. Predicted decline >20% in the next 10 years due to habitat loss.		
Recent Field Studies:	T.A. Rao in Kodagu, Kemmanagundi and Kudremukh, 1996-2000, <i>ex situ</i> conservation, establishment of orchidarium at Bannerghata, Bangalore. K. Sivabalakrishnan and A. Durai in Cherampadi, Nilgiris, 1995-98, <i>ex situ</i> conservation. P.F. Solomons in Silent Valley, 1998-99, conservation studies. S. Phatak in Anmode, Londa, 1998-99, orchids of Anmode. A. Durai in Anamalai Hills, June 1995, establishment of orchidarium.		
Data quality:	Assessment based on field studies and literature/herbarium.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies and census/monitoring and projected.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	A2ce; B1+2abcde
IUCN RED LIST CRITERIA (2000):	VULNERABLE	Criteria:	B1a+b(i,ii,iii,iv,v), 2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Brahmagiri National Park, Kudremukh National Park, Silent Valley National Park, Talakaveri Wildlife Sanctuary, Bhimashankar Wildlife Sanctuary, Radhanagari Wildlife Sanctuary, Koyana Wildlife Sanctuary		
Uncertainty	Assessed with 95% confidence based on evidence and precaution (prediction), with a range of opinion and on the consensus of field biologists.		
Recommendations			
Research:	Survey, genetic research, life history studies and PHVA.		
Management:	Habitat management, monitoring, cultivation/breeding, genome resource banking.		
Cultivation:	Cultivation recommended for research. Cultivated stocks available at local green house; Numbers in cultivation 5. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Proposed by Lindley based on Heyne's collection from India (without precise locality). Its distribution in Silent Valley, Kerala (Manilal, 1988) is erroneously reported.		

Sources:

Rao, 1998: 197; Nayar, 1996: 224; Rao, 1986: 417; Henry *et al.*, 1989: 9; Manilal, 1988: 276; Santapau & Kapadia, 1966: 95,96; Sharma *et al.*, 1984: 267; Saldanha & Nicolson, 1976: 819, 820; Vajravdu, 1990: 473; Hooker, 1886-1890: 719; Sharma *et al.*, 1977: 139; Keshvamurthy & Yoganarasimhan, 1990: 441; Lindley, 1830: 84; Sathish Kumar, 1999: 200

Compilers:

T.A. Rao, K. Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan

Reviewers:

A. Durai, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhali, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, K.G. Selvi.

Scientific name (author; date):	Dendrobium diodon Reichb. f. ssp. kodayarensis Gopalan & A.N. Henry, 1988		
Habit:	Epiphyte or lithophytic herbs		
Habitat:	Evergreen forests		
Niche/ elevation:	1000-1200 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Muthukuzhivayal [Nayar, 1996]		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Muthukuzhivayal in Kanyakumari District [R. Gopalan, 1982]. Agastyamala [C. Sathish Kumar, 1993 onwards]		
Extent of occurrence (Sq. km.):	<100 sq. km.		
Area of occupancy (Sq. km.):	<10 sq.km.		
Number of Subpopulations/location:	1/1. All individuals are in one population.		
Habitat status:	There is decline in habitat but trends not known. Predicted decline <20% in the next 10 years due to habitat destruction. There is change in the quality of habitat due to decline in host species.		
Threats			
Threats to taxon:	Decline of host species, edaphic changes, habitat loss and habitat fragmentation resulting in and may result in population decline. The influence on the population well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations <250. The numbers of mature individuals declined in the past by 5% and likely to decline by 5% in the future. Generation time 2 years.		
Trends:	The population size/numbers of the taxon declining at a rate of <10% in the last 10 years. Predicted decline <10% in the next 10 years due to habitat loss.		
Recent Field Studies:	C. Sathish Kumar in Agastyamala, 1993 onwards.		
Data quality:	Assessed based on indirect information based on habitat and quality, and from literature/herbarium studies. The Area and Extent estimated based on the known location. The habitat status and threats to the habitat observed over years. Mature individuals and population trends inferred and estimated based on habitat information.		
Status			
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2ce; C2b
IUCN RED LIST CRITERIA (2000):	CRITICALLY ENDANGERED	Criteria:	B1a+b(iii,v), 2a+b(iii,v); C2a(ii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Kalakad-Mundanthurai Wildlife Sanctuary, Neyyar Wildlife Sanctuary		
Uncertainty	Assessed on consensus with 95% confidence.		
Recommendations			
Research:	Survey, life history studies, PHVA.		
Management:	Habitat management		
Cultivation:	Cultivated stocks not available. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Propagation techniques not known at all.		
Other comments:	It is a newly described subspecies. The subspecies is found in the protected area. Further survey is recommended for this taxon.		
Sources:	Gopalan & Henry, 1988 (1989) 12 (2): 487; Nayar, 1996: 224		
Compilers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan.		
Reviewers:	S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, U. Lakshminarayan, K.G. Selvi, T.A. Rao.		

Scientific name (author: date):	Dendrobium heyneanum Lindley, 1830		
Habit:	Epiphyte		
Habitat:	Wet evergreen forest		
Niche/ elevation:	On branches of trees bordering the grasslands. 200-1600 m.		
Distribution	India		
Historical distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Current Global Distribution:	Nilgiris, Courtallum, Ponnudi, Bonaccord, Muthukuzhivayal, Kathayae and Chengaltheri on the way to Naterikal [Abraham & Vatsala, 1981]. Hassan, Shimoga [Sharma <i>et al.</i> , 1984]. Hassan, Vanagur, Mankanahalli in Upper Ghats [Saldanha & Nicolson, 1976]. Silent Valley – Valiyaparathode [Manilal, 1988]. Mysore, Coimbatore, Nilgiri, Tirunelveli [Henry <i>et al.</i> , 1989]. Kannur – on the way to Chandanathode, Thirunalli [Ramachandran & Nair, 1988]. Silent Valley [Vajravelu, 1990]. Ghats of Malabar [Hooker, 1886-1890]. Pushpagiri [Keshvamurthy & Yoganarasimhan, 1990]. Sairandhri [Manoharan, 1999]. Nilgiris [Sharma, 1977]. Thadiandamol [Rao, 1998]. Coorg, Hassan, Cannore, Idukki, Palghat, Trivandrum, Coimbatore, Kanniyakumari, Nilgiri, Thirunelveli [Rathakrishnan & Chitra, 1984]. Valiaparathode, Sairandhri [Sathish Kumar, 1999].		
Distribution from Literature:			
Distribution from Field Studies:	<u>Karnataka</u> : Kodagu [Keshavamurthy]. <u>Kerala</u> : Silent Valley [Sathish Kumar 1982-1988]. <u>Tamil Nadu</u> : Naduvattom, Nilgiris, Cherampdi [K. Sivabalakrishnan, 1995-98]. Kalakad-Mundanthurai Tiger Reserve, Tirunelveli [M.B. Vishwanathan, 1996-2000].		
Extent of occurrence (Sq. km.):	5,001-20,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	30/5. Fragmented. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 4 years. Predicted decline >20% in the next 10 years due to loss of habitat and felling of trees. There is decrease in the quality of habitat.		
Threats			
Threats to taxon:	Decline of host species, habitat loss and habitat loss due to exotic plants resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased to be threats.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	The number of mature individuals have declined in the past by 10% and are likely to decline by >20% in the future. Generation time 1 year.		
Trends:	Continuing decline observed in areas other than Kodagu and Kalakad-Mundanthurai Tiger Reserve, where the population is increasing.		
Recent Field Studies:	K. Sivabalakrishnan in Naduvattom and Cherampadi, 1995-98, <i>ex situ</i> conservation on orchids of Western Ghats. M.B. Vishwanathan and U. Manikandan in Kalakad Mundandurai Tiger Reserve, Tirunelveli, 1996-2000, conservation of orchids.		
Data quality:	Assessed based on field studies, informal sightings and literature/herbarium studies. The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies and census/monitoring.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies and census/monitoring.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2ce
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B2a+b(iii,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve, Pushpagiri Wildlife Sanctuary, Silent Valley National Park		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists.		
Recommendations			
Research:	Genetic research, life history studies, PHVA.		
Management:	Habitat management, monitoring, cultivation/breeding.		
Cultivation:	Cultivation is recommended for research. No cultivated stocks. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Proposed by Lindley based on Heyne's collection from India (without precise locality). No change in the habitat in Kalakad-Mundanthurai Tiger Reserve as it is a protected area. Population numbers are increasing and no future decline is predicted in KMTR [M.B. Vishwanathan]. In Nilgiris, since the host trees are in the private estates, they can be felled anytime [K. Sivabalakrishnan]. Decline in individuals in Nilgiris not known [K. Sivabalakrishnan]. Population numbers are increasing in Kodagu [T.A. Rao].		
Sources:	Abraham & Vatsala, 1981: 358, 361. Henry <i>et al.</i> , 1989: 9; Hooker, 1886-1890: 718; Jain & Mehrotra, 1984: 46; Keshvamurthy & Yoganarasimhan, 1990: 442; Lindley, 1830: 78; Manilal, 1988: 277; Manoharan <i>et al.</i> , 1999: 200; Ramachandran & Nair, 1988: 452; Rao, 1998: 198; Rathakrishnan & Chitra,		

1984: 1003; Saldanha & Nicolson, 1976: 820, 821; Sharma *et al.*, 1977: 139; Sharma *et al.*, 1984: 267; Vajravelu, 1990: 474; Sathish Kumar, 1999: 200.

Compilers:

T.A. Rao, K. Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan

Reviewers:

A. Durai, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarsi, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty, K.G. Selvi.

Scientific name (author; date):	Dendrobium jerdonianum Wight, 1851		
Synonyms:	<i>Dendrobium villosum</i> Lindley, 1852 non Wallich, 1830. <i>Dendrobium mutantiiflorum</i> Hook. f., 1900		
Habit:	Epiphytic herb		
Habitat:	Evergreen forests		
Niche/ elevation:	1300-1400m		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Kerala)		
Distribution from Literature:	Kodagu, Hassan [Rao, 1998]. Tellicherry [Hooker, 1900]		
Distribution from Field Studies:	<u>Karnataka</u> : Kodagu, Hassan [T.A. Rao] <u>Kerala</u> : Pakshipatalum, Wayanad [Sathish Kumar]		
Extent of Occurrence (Sq. km.):	101-5,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	5/5. Fragmented. There is a predicted decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Declining and predicted to decline in its area of occupancy due to human interference and development. Decline in quality of habitat.		
Threats			
Threats to taxon:	Habitat loss, human interference.		
Trade:	Currently not in trade; plants were exported to England in 1890s.		
Population			
Numbers/Generation time/trend:	Mature individuals <500 in all populations. Perennial epiphytes		
Population trend:	Decline predicted in the near future.		
Recent Field Studies:	C. Sathish Kumar, T.A. Rao, 1990s in Pakshipatalum, Wayanad; T.A. Rao, 1990s in Kodagu, Karnataka		
Data quality:	General field studies, literature/herbarium studies		
Qualifier:	Area and Extent estimated and habitat status observed. Population estimated based on observation.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcd
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii,iv), B2a+b(ii,iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty	Assessment based on precaution due to changes expected in habitat. Assessment is exclusive to the below listed compilers and reviewers.		
Recommendations			
Research:	Detailed Survey and pollination biology studies recommended		
Management:	Monitoring		
Cultivation:	Cultivated stocks exist at Gurukula Botanical Sanctuary, Wayanad. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Proposed by Wight based on Jerdon's collection from Coorg. This was mixed up with <i>D. nutantiiflorum</i> from Iyamally hills in Tamil Nadu. Reichenbach f. united the two species, while Hook. f. reinstated <i>D. jerdonianum</i>		
Sources:	Hooker, 1900: t.7741; Rao, 1988: 198; Wight, 1851; Lindley, 1852		
Compilers:	C. Sathish Kumar		
Reviewers:	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author; date):	Dendrobium ovatum (L.) Kranzlin, 1910		
Synonyms:	<i>Epidendrum ovatum</i> L., 1753; <i>Dendrobium chloraps</i> Lindley, 1890; <i>Dendrobium barbatulum</i> Wight, 1851 non Lindley, 1830; <i>Cymbidium ovatum</i> Willd., 1805		
Habit:	Epiphyte		
Habitat:	Deciduous forest		
Niche/ elevation:	Fissured barks of mid elevation trees. 300-1200 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Nagarhaveli, Goa, Karnataka & Kerala)		
From Literature:	Ayyapancoil Forest - Nelliampathy Ghats, Palghat [Vajravelu, 1990]. Kodagu [Keshvumrthy & Yoganarasimhan, 1990]. Khuntly Forest, Nagarhaveli [Rao, 1986]. Kolhapur, Nasik, Pune, Raigadh, Rathnagiri, Satara, Sindhudurg, Thane [Lakshminarasimhan, 1996].		
From Field Studies:	<u>Nagarhaveli</u> [R. Ingalhalli, 1996]. <u>Goa</u> : Mollem, Anmode [S. Phatak, 1972-2000]. <u>Karnataka</u> : Thandiandamol, Sampaje, Madikeri, Bhagamandala, Talakaveri, Kundapur [T.A. Rao, 1996-2000]. <u>Kerala</u> : Bonaccord, Silent Valley, Thiruvalla [Sathish Kumar, 1983, 1986, 1992, 1994].		
Extent of occurrence (Sq. km.):	>20,000		
Area of occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	50/25. Fragmented. There is continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years. Predicted decline <20% in the next 10 years due to loss of habitat and demographic instability. Decrease in the quality of the habitat due to harvest.		
Threats			
Threats to taxon:	Harvest, habitat loss and trade of parts are resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and not ceased.		
Trade:	Local, domestic and ornamental trade of flowers. Scientific collections and trade resulting in a perceived or inferred population decline.		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations >2,500. The numbers of mature individuals declined in the past by 20% and likely to decline by 20% in the future. Generation time 5-6 years.		
Trends:	The population size/numbers of the taxon declining at a rate of <10% in the last 10 years. Predicted decline <10% in the next 10 due to habitat loss.		
Recent Field Studies:	C. Sathish Kumar in Bonaccord, 1994, case study on orchids of Kerala. S. Phatak in Goa, Molem, Anmode, 2000, informal sighting. T.A. Rao in Kodagu, Kundapur 1996-2000, conservation of wild orchids in the Western Ghats.		
Data quality:	Assessed based on field studies, indirect information, informal sightings and literature/herbarium studies.		
Qualifier:	Area and extent estimated based on known locations; habitat status, threats, mature individuals and population trends observed or inferred and predicted based on the threats.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	B1+2abcde
IUCN RED LIST CRITERIA (2000):	VULNERABLE	Criteria:	B2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Silent Valley National Park, Mollem Wildlife Sanctuary, Talakaveri Wildlife Sanctuary		
Uncertainty	Assessed with 95% confidence based on evidence, precaution, range of opinion and on the consensus of the field biologists.		
Recommendations			
Research:	Survey, genetic research, life history studies, PHVA.		
Management:	Habitat management, cultivation		
Cultivation:	Cultivation recommended for research. Cultivated stocks available at Cauvery Nisargadhama orchidarium. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Some propagation techniques known for similar taxa.		
Other comments:	Originally described by Linnaeus based on Rheed's plate in <i>Hortus malabaricus</i> . The flowers are conspicuous and are found in clusters of about 75 flowers. This species is more susceptible to overexploitation as they last longer [one and a half months] and remain fresh. The decline in the population may be due to its scented, long lasting flowers. Medicinal properties of this species is well known [P.S. Udayan].		
Sources:	Vajravelu, 1990: 474; Kranzlin, 1910: 71; Lindley, 1753; Wight, 1851; Lakshminarasimhan, 1996: 24; Rao, 1986: 418; Keshvumrthy & Yoganarasimhan, 1990: 443; Willdenow, 1805		

Compilers:

J.L. Ellis, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur.

Reviewers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, U. Lakshminarayan, K.G. Selvi, T.A. Rao.

Scientific name (author; date):	Diplocentrum congestum Wight, 1851		
Habit:	Epiphytic herbs		
Habitat:	Evergreen forests		
Niche/ elevation:	750-1100m		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Kerala)		
Distribution from Literature:	Iyamally [Wight, 1851]		
Distribution from Field Studies:	<u>Karnataka</u> : Kodagu [T.A. Rao, 1999]. Hassan [Saldanha]		
	<u>Kerala</u> : Kodayangadi, Wayanad [C. Sathish Kumar, 1998]		
Extent of Occurrence (Sq. km.):	101-5,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	5/5. Fragmented. There is a predicted decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease of habitat quality and predicted decline in habitat.		
Threats			
Threats to taxon:	Habitat loss, human interference		
Trade:	Not in trade		
Population			
Numbers/Generation time/trend:	Mature individuals <500.		
Population trend:	Unknown		
Recent Field Studies:	C. Sathish Kumar in Kodayangadi, Wayanad, 1990s. T.A. Rao in Kodagu, 1990s.		
Data quality:	General field studies, literature/herbarium studies		
Qualifier:	Area and Extent estimated and habitat status observed. Population estimated based on observation.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcd
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii,iv), B2a+b(ii,iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty	Assessment based on precaution due to changes expected in habitat. Assessment is exclusive to the below listed compilers and reviewers.		
Recommendations			
Research:	Detailed reproductive biology study, survey		
Management:	Monitoring		
Cultivation:	Cultivated stocks exist at Gurukula Botanical Sanctuary, Wayanad. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Some propagation techniques known for similar taxa		
Other comments:	Described by Wight based on his collection from Iyamally		
Sources:	Rao, 1998: 199; Wight, 1851 5(1): 10.t.1682		
Compilers:	C. Sathish Kumar		
Reviewers:	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author; date):	Disperis neilgherrensis Wight, 1851		
Habit:	Tuberous ground herbs.		
Habitat:	Evergreen forest, periphery of grassland and adjoining shola forest.		
Niche/ elevation:	Moist humus-rich forest floor, thick shade with marsh. 1000-2200 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Kummathanod, Silent Valley [Sathish Kumar, 1999]. Avalanche, Conoor Ghat, Naduvattom, Ootacamund, Oucherlony Valley, T.R. Bazar, Nilgiris [Sharma <i>et al.</i> , 1977]. Koothi, Reserve Forest of Somwarpet and Meenkolly, Kodagu [Keshavmurthy & Yoganarasimhan, 1990]. Kummathanod [Sathish Kumar, 1990]		
Distribution from Field Studies:	<u>Kerala</u> : Silent Valley, 1983, 1984; Agastyamala, Eravikulam, 1995-97 [C. Sathish Kumar]. <u>Tamil Nadu</u> : Doddabetta [K. Sivabalakrishnan, 1995]. Glenmorgan [P.S. Udayan, 1992-94]. Avalanche, Mukurthi National Park [P.F. Solomons, 1997-99].		
Extent of occurrence (Sq. km.):	5,000-20,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	10/6. Fragmented. There is continuing decline in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years. Predicted decline <20% in the next 10 years due to loss of habitat, grazing and deforestation. There is decrease in the quality of the habitat due to grazing and deforestation.		
Threats			
Threats to taxon:	Edaphic changes, nutritional disorders, grazing, habitat loss, pesticides, poisoning, trampling, drought, landslides and propagation difficulties resulting in and may result in population decline. The influence of threats on the population well understood, not reversible and not ceased to be threats.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations <250. The number of mature individuals declined in the past by 10% and likely to decline by 10% in the future. Generation time 5-6 years.		
Trends:	Declining >10% in last 10 years. Predicted decline <10% in next 10 years.		
Recent Field Studies:	C. Sathish Kumar in Agastyamalai and Eravikulam 1995-97, case study on orchids of Kerala. P.F. Solomons in Avalanche, Mukurthi National Park, 1997, 99, field studies. K. Sivabalakrishnan in Doddabetta, 1995, <i>ex situ</i> conservation of orchids of Western Ghats. P.S. Udayan in Glenmorgan, 1992-96, documentation of vegetation. T.A. Rao in Sampajee, Kodagu, 1998. K. Ravikumar in High Wavy mountains, 1993 and Bababudan Hills, 1995, field survey		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2abcde; D
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B2a+b(i,ii,iii,iv,v); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Mukurthi National Park, Silent Valley National Park, Eravikulam National Park		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists.		
Recommendations			
Research:	Survey, life history studies, limiting factor research, PHVA.		
Management:	Habitat management, monitoring, limiting factor management, cultivation.		
Cultivation:	Cultivation is recommended for species recovery and preservation of live genome. Cultivated stocks available at TBGRI, Thiruvananthapuram, Gurukula Botanical Sanctuary and home garden of T. Chhabra. Numbers in cultivation 10. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Stable in Mukurthi. <i>Ex situ</i> cultivation should be intensified.		
Sources:	Abraham & Vatsala, 1981: 208, 210; Hooker, 1890-1894: 168, 169; Seidenfaden, 1983: 1569; Seidenfaden, 1999: 1226; Wight, 1851: 5(1).t.1710; Keshavmurthy & Yoganarasimhan, 1990: 443; Sathish Kumar, 1999: 201; Sharma <i>et al.</i> , 1977: 139; Sathish Kumar, 1990: 201.		
Compilers:	J.L. Ellis, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur		
Reviewers:	A. Durai, P.F. Solomons, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, U. Lakshminarayan, K.G. Selvi, T.A. Rao.		

Scientific name (author: date):	Eria albiflora Rolfe, 1893		
Habit:	Pseudobulbous epiphytic herb		
Habitat:	Evergreen forests and sholas		
Niche/ elevation:	1000-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Sairandri and Karivara, Silent Valley [Sathish, 1999]. Ootacamund and T.R. Bazar, Nilgiris [Sharma <i>et al.</i> 1977]. Silent Valley [Vajravelu, 1990]. Nilgiris, Silent Valley [Mohanan & Balakrishnan, 1991]		
Distribution from Field Studies:			
Extent of occurrence (Sq. km.):	5,001-20,000		
Area of occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	20/10. Fragmented. There is a continuing decline in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10 years due to loss of habitat. There is decrease in the quality of the habitat due to human interference.		
Threats			
Threats to taxon:	Habitat loss and habitat fragmentation resulting in and may result in population decline. The influence of threats on the population well understood, not reversible and not ceased		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations <2,500. The numbers of mature individuals declined in the past by 10% and likely to decline by 10% in the future. Generation time 3 years.		
Trends:	The population size/numbers of the taxon declining at a rate of >10% in the last 10 years.		
Recent Field Studies:	None since 1990.		
Data quality:	Assessed based on past field studies, indirect information and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed and inferred from a range of opinions.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	B1+2abcde
IUCN RED LIST CRITERIA (2000):	VULNERABLE	Criteria:	B1a+b(i,ii,iii,iv,v), 2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Silent Valley National Park		
Uncertainty	Assessed with precaution based on a range of opinion.		
Recommendations			
Research:	Survey, life history studies, PHVA.		
Management:	Habitat management, monitoring, genome resource banking and limiting factor management, cultivation		
Cultivation:	There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments:			
Sources:	Mohanan & Balakrishnan, 1991: 194; Rolfe, 1893: 170; Sathish Kumar, 1999: 201; Sharma, <i>et al.</i> 1977: 140; Vajravelu, 1990: 477.		
Compilers:	J.L. Ellis, R. Ingallhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur.		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, U. Lakshminarayan, K.G. Selvi, T.A. Rao.		

Scientific name (author: date):	Eria dalzellii (Hook.) Lindley, 1858
Synonyms:	<i>Dendrobium dalzellii</i> Hook., 1852; <i>Eria dalzellii</i> (Hook.) Lindley. var. <i>fimbriata</i> Hook. f., 1890
Habit:	Herb, epiphyte or lithophyte
Habitat:	Evergreen forest, sholas
Niche/ elevation:	Shady wet tree trunks. 800-2000 m.
Distribution	
Historical distribution:	India
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra, Karnataka, Kerala & Tamil Nadu)
Distribution from Literature:	Bhagamandala, Kallur Betta, Talacauvery, Koothi Reserve Forests of Somavarpet [Keshavmurthy & Yoganarasimhan, 1990]. Aruvanpara & Sairandhri [Sathish Kumar, 1999]. Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane [Lakshminarasimhan, 1996]. Nadugani [Sharma <i>et al.</i> , 1977]. Kunthipuzha dam site [Vajravelu, 1990]. Way to Brahmagiri, Chandanathode [Ramachandran & Nair, 1988] <u>Karnataka</u> : Yellapur, Hassan, Konkan [R. Ingalhalli, 1980-85]. <u>Kerala</u> : Silent Valley [Sathish Kumar, 1983, 92]
Distribution from Field Studies:	
Extent of occurrence (Sq. km.):	>20,000
Area of occupancy (Sq. km.):	>2,000
Number of Subpopulations/location:	100/50. Fragmented. There is continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.
Habitat status:	Decrease in the habitat <20% in the last 10 years and decrease in the quality due to landslides.
Threats	
Threats to taxon:	Habitat loss and landslides resulting in and may result in population decline. The influence on the population well understood, not reversible and not ceased.
Trade:	Not in trade
Population	
Numbers/Generation time/Trend:	Mature individuals in all populations >2,500. The numbers of mature individuals declined in the past by 10-20% and likely to decline by 10-20% in the future. Generation time 5-6 years.
Trends:	The population size/numbers of the taxon declining at a rate of >10% in the last 10 years.
Recent Field Studies:	Sathish Kumar in Silent Valley, 1992, case study on orchids of Kerala. K. Ravikumar in High Wavy Mountains, 1986-1992, floristic survey
Data quality:	Assessment based on field studies, indirect information and literature/herbarium studies.
Qualifier:	Area and extent estimated based on known locations; habitat status, threats, mature individuals and population trends observed and inferred.
Status	
IUCN RED LIST CRITERIA (1994):	LOWER RISK NEAR THREATENED
IUCN RED LIST CRITERIA (2000):	NEAR THREATENED
CITES:	Appendix II
National Red Data Book:	No
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.
Known presence in Protected Areas:	Silent Valley National Park, Kalakad-Mundanthurai Tiger Reserve
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists.
Recommendations	
Research:	Survey, PHVA
Management:	Monitoring, habitat management, cultivation
Cultivation:	Cultivation recommended for research. Cultivated stocks available at Karnatak University, Dharwar and Gurukula Botanical Gardens, Wayanad. Numbers in cultivation 20. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for similar taxa.
Other comments:	
Sources:	Hooker, 1852 4:292; Hooker, 1886-1890: 789; Keshavmurthy & Yoganarasimhan, 1990: 444; Lakshminarasimhan, 1996: 25; Lindley, 1858: 47; Ramachandran & Nair, 1988: 454; Rao, 1998: 200; Sathish Kumar, 1999: 201; Sharma <i>et al.</i> , 1977: 140; Vajravelu, 1990: 477.
Compilers:	J.L. Ellis, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur.
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.

Scientific name (author; date):	Eria exilis Hook. f., 1890		
Synonyms:	<i>Eria minima</i> Blatter & McCann, 1931 <i>Porpax chandrasekharanii</i> Bhargavan & C.N. Mohanan, 1982		
Habit:	Epiphytic herbs		
Habitat:	Evergreen forests		
Niche/ elevation:	Moss clad branches of evergreen vegetation and moist rocks. 850-1000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra, Goa, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Valiaparathode, Silent Valley [Sathish Kumar, 1999]. Satara [Lakshminarasimhan, 1996].		
Distribution from Field Studies:	<u>Maharashtra</u> : Konkan [S. Phatak]. <u>Kerala</u> : Valiaparathode, Silent Valley [Sathish Kumar, 1995].		
Extent of occurrence (Sq. km.):	>20,000		
Area of occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	200/50. Fragmented. There is continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to loss of habitat. There is decrease in the quality of the habitat due to human interference.		
Threats			
Threats to taxon:	Habitat loss and habitat fragmentation resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations <2,500. The number of mature individuals declined in the past 10 years by 10% and likely to decline by 10% in the future. Generation time 4-5 years.		
Trends:	The population size/numbers of the taxon declining at a rate of <10% in the last 10 years.		
Recent Field Studies:	C. Sathish Kumar in Valiaparathode, 1995, field studies.		
Data quality:	Assessment based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed and inferred.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	B1+2abcde; C1+2a
IUCN RED LIST CRITERIA (2000):	VULNERABLE	Criteria:	B2a+b(i,ii,iii,iv,v); C1
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Silent Valley National Park		
Uncertainty	Assessed with 95% confidence based on evidence, range of opinion and on the consensus of the field biologists.		
Recommendations			
Research:	Survey, limiting factor research and PHVA		
Management:	Habitat management, monitoring and cultivation.		
Cultivation:	Cultivation recommended for species recovery and preservation of live genome. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for similar taxa.		
Other comments:	--		
Sources:	Bhargavan & Mohanan, 1982; Blatter & McCann, 1931 35: 274; Hooker, 1890: 788; Sathish Kumar, 1999: 201; Lakshminarasimhan, 1996: 25		
Compilers:	J.L. Ellis, R. Ingalhali, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur.		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, T.A. Rao.		

Scientific name (author: date):	Eria microchilos (Dalz.) Lindley, 1858		
Synonym:	<i>Dendrobium microchilos</i> Dalz., 1851		
Habit:	Epiphyte		
Habitat:	Evergreen and moist deciduous forest		
Niche/ elevation:	100-1500 m.		
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra, Goa, Karnataka & Kerala)		
From Literature:	Amberem in Pernem, Nagargao in Satari and Molem in Sanguem [Rao, 1986]. Kolhapur, Nasik, Pune, Raigad, Satara, Thane [Lakshminarasimhan, 1996]		
From Field Studies:	<u>Goa</u> [S. Phatak, 1999]. [R. Ingalhalli, 2000]. <u>Maharashtra</u> : Mahabaleshwar [S. Phatak, 1980, 1999]. <u>Karnataka</u> : Yellapur [Jorapur, 1960]. Brahmagiri, Thadiandamol, Thalakaveri, Madikeri, Virajpet, Kodagu [T.A. Rao]. Kudremukh [T.A. Rao, 2000] <u>Kerala</u> : Silent Valley [C. Sathish Kumar, 1982]		
Extent of occurrence (Sq. km.):	5,001-20,000		
Area of occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	50/10. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10 years. Predicted decline <20% in the next 10 years due to loss of habitat. Decrease in the quality of the habitat due to human interference.		
Threats			
Threats to taxon:	Habitat loss and human interference resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations >2,500. The numbers of mature individuals declined in the past by >20% and likely to decline by >20% in the future. Generation time 3 months.		
Trends:	The population size/numbers of the taxon declining at a rate of >20% in the last 10 years. Predicted decline <10% in the next 10 due to habitat loss.		
Recent Field Studies:	S. Phatak in Goa, 1998, Floristic survey. R. Ingalhalli in Goa 2000, Hobby. T.A. Rao in Kodagu (1996-98), Kudremukh (2000), Conservation of wild orchids of Kodagu.		
Data quality:	Assessment based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on the known locations. The habitat status, threats, mature individuals and population trends observed over many years and inferred.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	A1c, B1+2bcd.
IUCN RED LIST CRITERIA (2000):	VULNERABLE	Criteria:	B1a+b(ii,iii,iv), 2a+b(ii,iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Brahmagiri Wild life Sanctuary, Talakaveri Wildlife Sanctuary, Silent Valley National Park		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists.		
Recommendations			
Research:	Survey, genetic research, life history studies and PHVA.		
Management:	Habitat management and monitoring.		
Cultivation:	Cultivated stocks available at Kaveri Nisargadhama, Kushalnagar. Numbers in cultivation 7. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments:			
Sources:	Dalzell, 1851 3: 3-5; Lakshminarasimhan, 1996: 26; Lindley, 1858 3: 47; Rao, 1986: 418;		
Compilers:	J.L. Ellis, R. Gopalan, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, S. Phatak, B. Arthur		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, B.V. Shetty, T.A. Rao.		

Scientific name (author: date):	Eria muscicola (Lindley) Lindley var. brevilinguis Joseph & Chandras., 1973 (1976)		
Habit:	Epiphytic or lithophytic herb.		
Habitat:	Evergreen forests		
Niche/ elevation:	Above 1200 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
From Literature:	Agastyamalai [Karunakaran, 1991].		
From Field Studies:			
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	Unknown		
Number of Subpopulations/location:	Unknown		
Habitat status:	Unknown		
Threats			
Threats to taxon:	Unknown		
Trade:	None		
Population			
Numbers/Generation time/Trend:	Unknown		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	None		
Qualifier:			
Status			
IUCN RED LIST CRITERIA (1994):	DATA DEFICIENT	Criteria:	-
IUCN RED LIST CRITERIA (2000):	DATA DEFICIENT	Criteria:	-
CITES:	Appendix II	Indian WL. (P) Act	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:			
Uncertainty			
Recommendations			
Research:	Survey, life history studies, PHVA		
Management:	Monitoring		
Cultivation:	Not recommended.		
Other comments:	It does not occur outside its type locality (Agastyamala) and the reported occurrence in Mysore and in Idukki by Rathakrishnan & Chitra, 1984 is erroneous.		
Sources:	Joseph & Chandrashekar, 1973 (1976) 15: 267-269; Karunakaran, 1991: 326; Rathakrishnan & Chitra, 1984: 1004.		
Compilers:	J.L. Ellis, R. Gopalan, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, S. Phatak, B. Arthur		
Reviewers:	A. Durai, P.F. Solomons, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date):	Eria mysorensis Lindley, 1858		
Synonyms:	<i>Eria polystachya</i> Wight, 1851 non A. Rich., 1841 <i>Eria pubescens</i> Wight, 1851 non Lindley		
Habit:	Epiphyte		
Habitat:	Moist Deciduous forests		
Niche/ elevation:	1000-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Aruvanpara, Silent Valley [Sathish Kumar, 1999]. Koothi Reserve Forest, Somvarpet, Coorg [Keshavmurthy & Yoganarasimhan, 1990]. Naduvattom, Nilgiris [Sharma <i>et al.</i> , 1977]. Konkan, Satara [Lakshminarasimhan, 1996]		
Distribution from Field Studies:	<u>Maharashtra</u> : Mahabaleshwar [S. Phatak, 1979, 83]. <u>Karnataka</u> : Uttara Kannada [S. Phatak, 1979, 83]. Thadiandamol, Sampaji, Brahmagiri, Kodagu, Talakaveri, Bhagamandala, Kudremukh [T.A. Rao, 1996-98, 2000]. <u>Kerala</u> : Aruvanpara in Silent Valley [Sathish Kumar].		
Extent of occurrence (Sq. km.):	5,001-20,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	<100/50. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulations does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10 years due to loss of habitat. There is decrease in the quality of the habitat due to human interference.		
Threats			
Threats to taxon:	Habitat loss and human interference resulting in and may result in population decline. The influence of threats on the population structure well understood, are not reversible and not ceased.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <250. The numbers of mature individuals declined in the past by 10% and likely to decline by 10% in the future. Number of mature individuals in each subpopulation not known. Generation time 3 years.		
Trends:	The population size/numbers of the taxon is declining at a rate of >20% in the last 10 years. Predicted decline <10% in the next 10 years due to habitat loss.		
Recent Field Studies:	T.A. Rao in Kodagu and Uttara Kannada, 1996, 98, Conservation of wild orchids of Kodagu.		
Data quality:	This species is assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent are estimated based on the known locations. The habitat status, threats, mature individuals and population trends are observed and inferred.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2bcde; D
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B2a+b(ii,iii,iv,v); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Brahmagiri Wildlife Sanctuary, Kudremukh National Park, Silent Valley National Park, Talakaveri Wildlife Sanctuary		
Uncertainty	<i>E. mysorensis</i> is assessed based on a range of opinion, evidence and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey and life history studies,		
Management:	Monitoring and cultivation/breeding.		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are available at Kaveri Nisargadhama and Kudremukh National park orchidarium. Numbers in cultivation not known. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Described by Lindley based on Law's collection from Mysore.		
Sources:	Richard, 1841; Keshavmurthy & Yoganarasimhan, 1990: 445; Lindley, 1858 3: 54; Wight, 1851; Sathish Kumar, 1999: 202; Sharma <i>et al.</i> , 1977: 140; Lakshminarasimhan, 1996: 26		
Compilers:	J.L. Ellis, R. Ingalthalli, S. Phatak, B. Arthur.		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, B.V. Shetty, T.A. Rao, U. Lakshminaray an, K.G. Selvi.		

Scientific name (author: date):	Eria pseudoclavicaulis Blatter, 1928		
Habit:	Epiphytic herb		
Habitat:	Evergreen forests		
Niche/ elevation:	900-1500m.		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Idukki, Madurai [Rathakrishnan & Chitra, 1984].		
Distribution from Field Studies:	Kerala: Munnar, Agastyamala [C. Sathish Kumar, 1995]. Periyar Tiger Reserve [N. Sasidharan, 1997].		
Extent of Occurrence (Sq. km.):	101-5000		
Area of Occupancy (Sq. km.):	11-100		
Number of Subpopulations/location:	4/4. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	No change.		
Threats			
Threats to taxon:	No threat		
Trade:	Not in trade.		
Population			
Numbers/Generation time/trend:	Unknown		
Population trend:	Unknown		
Recent Field Studies:	C. Sathish Kumar in Munnar, Agastyamala, 1995. N. Sasidharan in Periyar Tiger Reserve, 1997.		
Data quality:	Field studies, informal sightings, literature/herbarium studies		
Qualifier:	Area and Extent estimated and habitat status observed.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	D2
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	D2
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Neyyar Wildlife Sanctuary, Periyar Tiger Reserve, Eravikulam National Park, Meghamala Wildlife Sanctuary		
Uncertainty	Assessment based on precaution due to changes expected in habitat. Assessment is exclusive to the below listed compilers and reviewer.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	No cultivated stocks available. No recommendations made at the workshop.		
Other comments:	Originally described by Blatter based on a collection from High Wavy Mountains. In Agastyamala, this species is often seen growing on <i>Cullenia exarillata</i> as conspicuous clumps with more than 100 individuals in each clump.		
Sources:	Rathakrishnan & Chitra, 1984: 1004; Blatter, 1928 32: 519.		
Compilers:	C. Sathish Kumar		
Reviewers:	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author: date):	Eria tiagii Manilal <i>et al.</i> , 1984.		
Habit:	Lithophytic herb		
Habitat:	Montane grassland rocky outcrops		
Niche/ elevation:	800-1100m.		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Aruvanpara, Silent Valley (Manilal <i>et al.</i> , 1984)		
Distribution from Field Studies:	Kerala: Aruvanpara, Silent Valley [C. Sathish Kumar]		
Extent of Occurrence (Sq. km.):	<100		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	1/1.		
Habitat status:	Stable		
Threats			
Threats to taxon:	None		
Trade:	Not in trade		
Population			
Numbers/Generation time/trend:	Unknown		
Population trend:	Stable		
Recent Field Studies:	Not collected in recent times.		
Data quality:	Field studies		
Qualifier:	Area and Extent estimated and habitat status observed.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	D2
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	D2
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Silent Valley National Park		
Uncertainty	Assessment based on precaution. Assessment is exclusive to the below listed compilers and reviewer.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	No cultivated stocks available. No recommendations made at the workshop.		
Other comments:	Proposed by Manilal <i>et al.</i> based on a collection made by Sathish Kumar from Aruvanpara in Silent Valley.		
Sources:	Manilal <i>et al.</i> , 1984; Sathish Kumar, 1999: 202		
Compilers:	C. Sathish Kumar		
Reviewers:	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author: date):	<i>Eulophia cullenii</i> (Wight) Blume, 1858
Synonym:	<i>Cyrtopera cullenii</i> Wight, 1851
Habit:	Tuberous ground herb
Habitat:	Mid-elevation grasslands
Niche/ elevation:	Open grasslands. 120-900 m.
Distribution	
Historical distribution:	India
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)
Distribution from Literature:	Trivandrum [Sathish Kumar, 1991]. Madurai [Rathakrishnan & Chitra, 1984]
Distribution from Field Studies:	<u>Kerala</u> : Thiruvananthapuram, Bonaccord, Agastyamalai, Palode, TBGRI campus [Sathish Kumar, 1984-1992].
Extent of occurrence (Sq. km.):	5001-20,000
Area of occupancy (Sq. km.):	10-500
Number of Subpopulations/location:	20/10. Fragmented. There is a continuing decline and extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulations does not hold 95% or more of the total population.
Habitat status:	Decrease in the habitat <20% in the last 10 years due to loss of habitat. There is decrease in the quality of the habitat due to human interference.
Threats	
Threats to taxon:	Grazing, harvest for medicine, habitat loss, human interference, habitat fragmentation, overexploitation and trampling of parts are resulting in and may result in population decline. The influence of threats on the population structure are well understood, are not reversible and have not ceased to be a threat.
Trade:	The taxon is in local trade. The tuberous roots are used for medicinal purpose. Local trade for tribal and Sidha medicine has resulted in the perceived or inferred population decline.
Population	
Numbers/Generation time/Trend:	The number of mature individuals <250. No population contains more than 50 mature individuals. The number of mature individuals declined in the past by 20% and likely to decline by 20% in the future. Generation time 4-6 years.
Trends:	The population size/numbers declining by >10% in the last 10 years.
Recent Field Studies:	C. Sathish Kumar in Bonacord, 1994, Case study of orchids of Kerala.
Data quality:	Assessment based on field studies, informal sighting and literature/herbarium studies.
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies.
Status	
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED Criteria: C2a.
IUCN RED LIST CRITERIA (2000):	CRITICALLY ENDANGERED Criteria: C2a(i)
CITES:	Appendix II Indian WL. (P) Act: Not listed
National Red Data Book:	Not listed International RDB: Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.
Known presence in Protected Areas:	
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists.
Recommendations	
Research:	Survey, limiting factor research, life history studies, PHVA
Management:	Habitat management, cultivation/breeding, sustainable utilisation
Cultivation:	Cultivation is recommended for research. Cultivated stocks are available at TBGRI – Thiruvananthapuram. Numbers in cultivation 6. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.
Other comments:	Originally proposed by Wight based on General Cullen's collection from Travancore. This species is closely allied to <i>E. flava</i> (Lindl.) Hook.f. Fischer (1928) recognised a variety (minor) based on Van Malderen's collection from Pulney's, which is actually a dwarf form. The tubers of this species are very large and are highly medicinal. They are used by the local tribals to treat spider bites. The tubers are also eaten by wild boars. The tubers extend root like structures which resemble the spider, hence the local name ('Chilanti kizhangu'). The tubers of this species perennate for many years. Its medicinal properties are well known [P.S. Udayan].
Sources:	Abraham & Vatsala, 1981: 298,300; Blume, 1858; Henry <i>et al.</i> , 1989: 11; Manoharan, 1999: 235, 236; Mohanan & Henry, 1994: 458; Nayar, 1996: 225; Rao, 1998: 202; Seidenfaden, 1999: 1252; Somdeva & Naithani, 1986: 39; Sathish Kumar, 1991: 212; Rathakrishnan & Chitra, 1984: 1004; Wight, 1851
Compilers:	J.L. Ellis, R. Ingalthalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur.
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.

Scientific name (author; date):	Eulophia pratensis Lindley, 1858		
Synonyms:	<i>Eulophia ramentacea</i> auct. non Lindley, 1833 <i>Graphorkis pratensis</i> (Lindley) Kuntze		
Habit:	Terrestrial herb		
Habitat:	Montane grasslands		
Niche/ elevation:	Open grasslands at high elevations. 1500-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Gujarat, Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Kodaikanal Downs, Kodaikanal – Palni Ghat Road, Bhoothanachiamman Temple Hill [Seidenfaden, Belgaum, Dharwar, Mysore, Raichur [Sharma <i>et al.</i> , 1984]. Madurai [Henry <i>et al.</i> , 1989]. Panchmahal, Panchgani, Pune, Pashan – 6 miles west of Pune, Belgaum, Dharwar, Havasbari, Haveri [Santapau & Kapadia, 1966]. Palni, Kodaikanal [Fyson, 1974]. Konkan southwards [Hooker, 1890-1894]. Sholapur district and Belgaum [Chopra <i>et al.</i> , 1980]. Konkan, Dharwar, Mysore, Raichur [Ahmedullah & Nayar, 1986]. Kolhapur, Osmanabad, Pune, Raigad and Satore [Sharma <i>et al.</i> , 1996]		
Distribution from Field Studies:	<u>Karnataka</u> : Dharwar [S. Phatak, 1979]. Biligiri Rangaswamy Hills [Mohanan & Balakrishnan, 1991]. <u>Kerala</u> : Periyar Tiger Reserve [Sashidharan]. <u>Tamil Nadu</u> : Palni Hills [Sathish Kumar, 1979-2000].		
Extent of occurrence (Sq. km.):	>20,000		
Area of occupancy (Sq. km.):	>2,000		
Number of Subpopulations/location:	100/50. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the area of habitat in the last 10 years due to loss of habitat. There is decrease in the quality of the habitat due to human interference.		
Threats			
Threats to taxon:	Habitat loss, human interference, habitat fragmentation, trampling and drought resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and not ceased.		
Trade:	The taxon is in local trade.		
Population			
Numbers/Generation time/Trend:	Unknown		
Trends:	Unknown		
Recent Field Studies:	N. Sashidharan in Periyar Tiger Reserve, 1995-97, Flora of Periyar Tiger Reserve.		
Data quality:	Assessment based on field studies, informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status and threats observed in some areas and inferred in other areas.		
Status			
IUCN RED LIST CRITERIA (1994):	LOWER RISK NEAR THREATENED	Criteria:	--
IUCN RED LIST CRITERIA (2000):	NEAR THREATENED	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Periyar Tiger Reserve, Billigiri Rangaswamy Temple Wildlife Sanctuary		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists and range of opinion.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Cultivated stocks do not exist. There is no coordinated species management programme for this species and one is not recommended. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Wight (1851) described <i>E. ramentacea</i> based on a collection from the Pulneys. This name can not be accepted as it was already occupied by that of Lindley (1833) – for another plant from north east India and Bhutan. Lindley (1858) proposed <i>E. pratensis</i> based on stock collection from Deccan. Hook. f. found them to be conspecific. This species is found only in Palni Hills and Periyar Tiger Reserve. It is sold as dry tubers. This species has already been assessed in the CBSG CAMP workshop conducted by FRLHT and was given the status Endangered. Its medicinal properties are well known [P.S. Udayan]. Since there is taxonomic confusion with respect to this species and Satish Kumar's field knowledge of the species distribution is in Palni and Periyar only, the information available is incomplete. The Taxon is therefore Data Deficient.		
Sources:	Fyson, 1974: 392, 393; Henry <i>et al.</i> , 1989: 12; Hooker, 1890-1894: 4; Lindley, 1858 3: 25; Rao, 1998: 203; Santapau & Kapadia, 1966: 113-115; Seidenfaden, 1999: 1252; Sharma <i>et al.</i> , 1984: 270; Sharma <i>et al.</i> , 1996; Wight, 5(1): 8.t.1666. 1851;		
Compilers:	J.L. Ellis, R. Ingalthalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur.		

Reviewers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.

Scientific name (author: date):	Gastrochilus flabelliformis (Blatter & McCann) Saldanha, C.J., 1976		
Synonym:	<i>Saccolabium flabelliforme</i> Blatter & McCann, 1931		
Habit:	Epiphyte, monopodial herb.		
Habitat:	Evergreen forests and deciduous forests		
Niche/ elevation:	Main trunk and side branches. 200-1000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Kerala)		
Distribution from Literature:	Manthampotti near Mukkali, Silent Valley [Sathish Kumar, 1999]. Ponmudi, Bonaccord, Thenmalai, N. Canara [Abraham & Vatsala, 1981]. N. Canara, Hassan [Sharma <i>et al.</i> , 1984]. Hassan, lower Shiradi Ghat, Manthampatti near Mukkali [Manoharan, 1999].		
Distribution from Field Studies:	<u>Karnataka</u> : Hassan [Saldanha, 1976]. Kodagu, Brahmagiri range [T.A. Rao, 1996-98]. <u>Kerala</u> : Silent Valley [Sathish Kumar, 1983-1984, 1988]. Madampatti forest, Palghat [Sathish Kumar, 1992, 1996].		
Extent of occurrence (Sq. km.):	5,001-20,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	10/5. Fragmented. There is no continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulations does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to loss of habitat.		
Threats			
Threats to taxon:	Habitat loss, habitat fragmentation and harvest for timber resulting in and may result in population decline. The influence of threats on the population structure are well understood, not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations are <250. The number of mature individuals in the biggest subpopulation is not known. The numbers of mature individuals declined in the past by 10% and are likely to decline by 10% in the future. Generation time 5-6 years.		
Trends:	The population size/numbers of the taxon is declining at a rate of >10% in the last 10 years.		
Recent Field Studies:	C. Sathish Kumar in Madampatti forest, Palghat, 1992, 1996, Case study on orchids of Kerala. T.A. Rao Kodagu, Brahmagiri range, 1996-1998. C. Sathish Kumar in Kemmenagundi, 2001.		
Data quality:	Assessment based on field studies, informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed and inferred.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2bce; C2a
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B2a+b(ii,iii,v); C2a(i)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Brahmagiri Wildlife Sanctuary, Silent Valley National Park		
Uncertainty	<i>G. flabelliformis</i> is assessed based on evidence and on the consensus of the field biologists at the workshop. It was also on a range of opinion.		
Recommendations			
Research:	Survey, life history studies and PHVA.		
Management:	Habitat management and monitoring.		
Cultivation:	Cultivation is recommended for research and species recovery. Cultivated stocks are available at TBGRI, Thiruvananthapuram. Numbers in cultivation 10. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Some propagation techniques known for similar taxa.		
Other comments:	Originally described by Blatter & McCann based on a collection from South Canara.		
Sources:	Nayar, 1996: 225; Abraham & Vatsala, 1981: 469; Rao, 1998: 204; Saldanha & Nicolson, 1976: 830; Sharma <i>et al.</i> , 1984: 276; Manoharan, 1999: 203; Jain & Mehrotra, 1984: 65; Blatter & McCann 1931 33 : 722; Saldanha, C.J., 1976: 830; Blatter & McCann, 1931 35 : 722 t.1; Sathish Kumar, 1999: 203.		
Compilers:	J.L. Ellis, R. Ingalthalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur.		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Habenaria barnesii Summerh., ex Fischer, 1936		
Habit:	Tuberous ground herb		
Habitat:	Grasslands		
Niche/ elevation:	2100m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Mudimund, Nilgiris, High Range, Devikulam to Panniar [Mohan & Balakrishnan, 1991]. One locality from Devicolam to Panniar [Abraham & Vatsala, 1981]. Travancore, Nilgiris [Nayar, 1996]. Nilgiris [Henry <i>et al.</i> , 1989]. Nilgiri Biosphere Reserve, Idukki District [Nayar & Sastry, 1987]. High Range [Shetty & Vivekananthan, 1991]. Idukki, Nilgiri [Rathakrishnan & Chitra, 1984].		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Mukurthi National Park [P.F. Solomons]		
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	2-3/3. Fragmented. All individuals are not in one population and one subpopulations does not hold 95% or more of the total population		
Habitat status:	Decrease in area of habitat <20% in the last 10 years. <20% predicted decline in the next 10 years due to loss of habitat. Decrease in quality of habitat due to fire.		
Threats			
Threats to taxon:	Habitat loss and fire are resulting in and may result in population decline. The influence of threats on the population is well understood, are not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Generation time annual.		
Trends:	Unknown		
Recent Field Studies:	P.F. Solomons in Mukurthi National Park, 1999, Field studies. C. Sathish Kumar in Rajamala, 1995.		
Data quality:	Assessed based on field sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends inferred from literature.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2bc.
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii), 2a+b(ii,iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Rare (Nayar & Sastry, 1987)	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Mukurthi National Park, Eravikulam National Park.		
Uncertainty	Assessed based on precaution on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is recommended. Ongoing cultivation programme intensified or increased. Information on propagation techniques not available with this group of compilers.		
Other comments:	No change observed in Mukurthi National Park, as it is a protected area. Described by Fischer based on Barne's collections from Nilgiris and Namakad Gap in Kerala.		
Sources:	Abraham & Vatsala, 1981: 236; Henry <i>et al.</i> , 1989: 13; Jain & Mehrotra, 1984: 69; Mohan & Balakrishna, 1991: 194; Nayar, 1996: 225; Nayar & Sastry 1987: 256; Rao, 1998: 205; Somdeva & Naithani, 1986: 40; Summerh., 1936: 1887; Shetty & Vivekananthan, 1991: 141; Rathakrishnan & Chitra, 1984: 1004.		
Compilers:	J.L. Ellis, R. Gopalan, R. Ingalthalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, S. Phatak, B. Arthur		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date):	Habenaria cephalotes Lindey, 1835		
Synonym:	<i>H. trichosantha</i> auct. non. Lindley, 1835: A. Rich., 1841		
Habit:	Terrestrial herb		
Habitat:	Grasslands		
Niche/ elevation:	1800-2500m.		
Distribution	India		
Historical distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Current Global Distribution:	Idukki, Thirunelveli, Nilgiri, Palghat, Thiruvananthapuram [Mohanam & Balakrishnan, 1991]. Nilgiris [Nayar, 1996, Henry <i>et al.</i> , 1989]. Aruvanpara in Silent Valley [Manilal, 1988]. Nilgiri, Travancore hills [Hooker, 1890-1894]. Doddabetta, Naduvattom, Ooty, Pykara [Sharma <i>et al.</i> , 1977]. Nilgiris, Naduvattom, Pykara range, Mukurthi dam [Abraham & Vatsala, 1981]. Nilgiris, Travancore [Mohanam & Balakrishnan, 1991]. Idukki, Trivandrum, Nilgiri, Tirunelveli [Rathakrishnan & Chitra, 1984]. Aruvanpara [Sathish Kumar, 1999]		
Distribution from Literature:	<u>Kerala</u> : Silent Valley [Sathish Kumar]. <u>Tamil Nadu</u> : Mukurthi National Park [P.F. Solomons]		
Distribution from Field Studies:			
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	>20/7. Fragmented. All individuals are not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in area of the habitat and habitat quality.		
Threats			
Threats to taxon:	Habitat loss and trampling. The factors influencing the status of the taxon is well understood.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations are <250. Number of mature individuals in the largest subpopulation is not known. The numbers of mature individuals have declined in the past. Generation time one year.		
Trends:	Unknown.		
Recent Field Studies:	P.F. Solomons in Mukurthi National Park, 1997-99, Field studies.		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. Threats observed. Mature individuals inferred from literature.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2bc.
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii), 2a+b(ii,iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Mukurthi National Park, Silent Valley National Park		
Uncertainty	Assessed based on a range of opinion.		
Recommendations			
Research:	Survey and life history studies.		
Management:	Cultivation/breeding and monitoring		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Information on propagation techniques not available with this group of compilers.		
Other comments:	Proposed by Lindley based on Wight's collection from the Nilgiris. This species was found to occur intermingled with <i>Satyrium nepalense</i> [Abraham and Vatsala]. No change observed in Mukurthi National Park, as it is a protected area. In Nilgiri, Naduvattom and Pykara the habitat is under threat.		
Sources:	Richard 1841: 73; Henry <i>et al.</i> , 1989: 13; Hooker, 1890-1894: 139; Lindley 1835: 322; Manilal, 1988: 285; Manoharan, 1999: 203; Mohanam & Balakrishnan, 1991: 194; Nayar, 1996: 225; Rao, 1998: 205; Rathakrishnan & Chitra, 1984: 1004; Sathish Kumar, 1999: 203; Sharma <i>et al.</i> , 1977: 140.		
Compilers:	J.L. Ellis, R. Gopalan, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, S. Phatak, B. Arthur		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanam, S. Rajendran, S. Phatak., B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Habenaria elliptica Wight, 1851		
Habit:	Terrestrial herb		
Habitat:	Open grassy slopes		
Niche/ elevation:	Above 1500 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Palni hills, on the way to Anamudi from Nyamakad, Vattivara hills [Abraham & Vatsala, 1981]. Madurai, Nilgiri, Tirunelveli [Henry <i>et al.</i> , 1989]. Sispara [Manilal, 1988]. Palni, Kodaikanal, Nilgiris, Conoor [Fyson, 1974]. Palni Hills [Hooker, 1890-1894]. Ootacamund [Sharma <i>et al.</i> , 1977]. Kodaikanal, Bruce Valley, Kodaikanal Pillar Rocks, Palni hills, Kodaikanal - Berijam road, Fire tower, Shola of Mahilkundram, Peak north of Perumal peak, Gundar - Vembadi Path [Seidenfaden, 1999]. Mysore to Nilgiris and Palni Hills [Nayar, 1996]. Sispara [Sathish Kumar, 1999]. Mysore, Idukki, Madurai, Nilgiri [Rathakrishnana & Chitra, 1984]. Palni [Kunhikrishnan, 1991]		
Distribution from Field Studies:	<u>Kerala</u> : Silent Valley [C. Sathish Kumar, 1995]. <u>Tamil Nadu</u> : Kodaikanal [N. Raman, June 1997].		
Extent of occurrence (Sq. km.):	5,001-20,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	10–20/5–10. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulations does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10-20 years. >20% predicted decline in the next 10-20 years and decrease in the quality of habitat due to road construction, overexploitation and grazing.		
Threats			
Threats to taxon:	Damming, grazing, over exploitation and trade for market or medicine are resulting in and may result in population decline. The influence of threats on the population structure is well understood, are not reversible and have not ceased.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations are <2,500. The number of mature individuals declined in the Protected Areas by 20-30% and is likely to decline by 20-30% in the future. Generation time is 1 year.		
Trends:	The population size/numbers of the taxon is declining at a rate of >30% in the last 10 years. Predicted decline >30% in the next 10 years due to habitat loss.		
Recent Field Studies:	N. Raman in Kodaikanal, June 1997, Systematics. Sathish Kumar in Silent Valley, 1995.		
Data quality:	Assessed based on field studies, informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats and mature individuals estimated. Population trend inferred from indirect information.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2abcde.
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Silent Valley National Park		
Uncertainty	Assessed based on evidence and consensus of the field biologists at the workshop. It was also on range of opinion and subjective opinion.		
Recommendations			
Research:	Genetic research, life history studies.		
Management:	Genome resource banking, cultivation/breeding		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Described by Wight based on a collection from Pulney Hills. Very characteristic species with sepals scurfy pubescent on the adaxial surfaces. The record of its occurrence outside Kerala and Tamil Nadu i.e., in Mysore (Nayar, 1996, Sharma <i>et al.</i> , 1984) seems incorrect. Most of the plants have been destroyed due to grazing. This species is grazed by animals before it matures.		
Sources:	Abraham & Vatsala, 1981: 233; Fyson, 1974: 402 - 403; Henry <i>et al.</i> , 1989: 14; Hooker, 1890-1894: 147; Jain & Mehrotra, 1984: 71; Manilal, 1988: 286; Manoharan, 1999: 204; Nayar, 1996: 225; Rao, 1998: 206; 270; Sathish Kumar, 1999: 204; Seidenfaden, 1999: 1221, 1222; Sharma <i>et al.</i> , 1984; Wight, 1851 5(1): 13.t.1706; Sharma <i>et al.</i> , 1977: 141; Rathakrishnan & Chitra, 1984: 1004; Kunhikrishnan, 1991: 119.		
Compilers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan.		
Reviewers:	S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingallhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date):	Habenaria elwesii Hook. f., 1896		
Habit:	Tuberous terrestrial herb		
Habitat:	Evergreen forest.		
Niche/ elevation:	>850m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Devala [Sharma, <i>et al.</i> , 1977, Mohanan & Balakrishnan, 1991]. Hassan, Nilgiri [Rathakrishnana & Chitra, 1984].		
Distribution from Field Studies:	<u>Karnataka</u> : Hassan [S. Phatak]. Silent Valley [C. Sathish Kumar, 1982].		
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	2/2. Fragmented. There is a continuing decline and no extreme fluctuation in the number of locations or subpopulations.		
Habitat status:	Decrease in the habitat >80% in the last 20 years.		
Threats			
Threats to taxon:	Habitat loss, harvest, human interference and habitat fragmentation are resulting in and may result in population decline. The influence of threat on the population structure is well understood, are not reversible and have not ceased to be a threat.		
Trade:	Not known		
Population			
Numbers/Generation time/Trend:	Unknown		
Trends:	The Devala population is extirpated due to construction of human refugee camps in the primary evergreen habitat. The population is declining more than 50% overall, but is not known.		
Recent Field Studies:	None		
Data quality:	Assessed based on field observation, indirect information and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status observed over many years. Some threats inferred from literature.		
Status			
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2bcd
IUCN RED LIST CRITERIA (2000):	CRITICALLY ENDANGERED	Criteria:	B2a+b(ii,iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:			
Uncertainty	Assessed with 95% confidence based on the consensus of field biologists.		
Recommendations			
Research:	Survey		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Initiate cultivation programme for species recovery within 3 years. Techniques for cultivation not known at all.		
Other comments:	This species was described by Hook. f. based on Proudlock's collections from the Nilgiris. Sri Lankan refugees have been accommodated in this area. The land is being allotted free of cost and has been converted into tea plantation [Rajan]. The area needs to be surveyed. Before 40 years Devala was one of the thick evergreen forest, it is now completely denuded for habitation and plantation.		
Sources:	Hooker, 1896: t.7478; Mohanan & Balakrishnan, 1991: 195; Sharma, <i>et al.</i> , 1977: 141; Rathakrishnan & Chitra, 1984: 1004.		
Compilers:	T.A. Rao, K. Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan.		
Reviewers:	A. Durai, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, K.G. Selvi.		

Scientific name (author; date):	Habenaria flabelliformis Summerh. ex Fischer 1936.		
Habit:	Terrestrial tuberous herb		
Habitat:	Montane grasslands		
Niche/ elevation:	2400-2475m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Anaimudi slopes [Fischer, 1936; Shetty & Vivekananthan, 1991]. Idukki [Rathakrishnan & Chitra, 1984].		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Anaimudi slopes [S.D. Biju, TBGRI, 1995]		
Extent of occurrence (Sq. km.):	<100		
Area of occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	1/1. All individuals are in one population.		
Habitat status:	There is no change in the habitat of the taxon.		
Threats			
Threats to taxon:	Perennating tuberooids are eaten away by wild boars etc. This may result in population decline. The influence on the population structure is not well understood.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations are <50. The numbers of mature individuals have declined in the past. Generation time - perennial. Only seven individuals located.		
Trends:	Population trends unknown.		
Recent Field Studies:	S.D. Biju in Anaimudi slopes, 1995-97, Floristic studies in Eravikulam National Park.		
Data quality:	General field studies, informal field sightings, literature/herbarium		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status and threats observed.		
Status			
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2e; D
IUCN RED LIST CRITERIA (2000):	CRITICALLY ENDANGERED	Criteria:	B1a+b(v), 2a+b(v); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Eravikulam National Park.		
Uncertainty	Assessed with 95% confidence based on the consensus of field biologists.		
Recommendations			
Research:	Life history studies, PHVA pending		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivation is recommended for research, species recovery, reintroduction, preservation of live genome. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Described by Fischer based on a collection by Edward Barnes from the slopes of Anamudi. Only seven individuals were found by S.D. Biju during his field studies. Both conventional and non conventional propagation techniques should be taken up.		
Sources:	Fischer, 1936; Rathakrishnan & Chitra, 1984: 1004; Shetty & Vivekananthan, 1991: 148; Summerhayes, 1936: 1887.		
Compilers:	S.S.R. Bennet, J.L. Ellis, M. Mohanan, V. Sarojini Menon, C. Sathish Kumar, S. Seeni, B.V. Shetty, P.S. Udayan, U. Lakshminarayan.		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, R. Ingalthalli, B. Arthur, T.A. Rao, K.G. Selvi.		

Scientific name (author: date):	Habenaria gibsonii Hook. f. var. foetida Blatter & McCann, 1932		
Synonym:	<i>Habenaria foliosa</i> A. Rich var. <i>foetida</i> (Blatter & McCann) Bennet, 1984		
Habit:	Terrestrial herb		
Habitat:	Semi evergreen to evergreen forests.		
Niche/elevation:	Wet under growth. 120-2600m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra & Karnataka)		
Distribution from Literature:			
Distribution from Field Studies:	Mahabaleshwar, Londa [S. Phatak, 1979]. Kudremukh National Park [T.A. Rao, 2000]		
Extent of occurrence (Sq. km.):	>20,000		
Area of occupancy (Sq. km.):	<500		
Number of Subpopulations/location:	3/3. Fragmented. All individuals are not in one population and one subpopulations does not hold 95% or more of the total population.		
Habitat status:	Decrease in habitat in the last 10 years due to loss of habitat. Decrease in the quality of habitat due to habitat loss.		
Threats			
Threats to taxon:	Habitat loss and trampling resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and have not ceased.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Mature individuals <50. The number of mature individuals declined in the past by >20% and likely to decline in the future by >20%. Generation time annual.		
Trends:	Population size/numbers declining at a rate of >20% in the last 10 years.		
Recent Field Studies:	T.A. Rao in Kudremukh National Park, 2000		
Data quality:	Assessed based on informal sightings and literature/herbarium studies.		
Qualifier:	Extent estimated based on known locations. Habitat status, threats, mature individuals and population trends inferred.		
Status			
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	D
IUCN RED LIST CRITERIA (2000):	CRITICALLY ENDANGERED	Criteria:	D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Kudremukh National Park		
Uncertainty	Assessed subjectively based on precaution.		
Recommendations			
Research:	Survey, genetic research, taxonomic research.		
Management:	Habitat management, monitoring and genome resource banking.		
Cultivation:	Cultivation recommended for preservation of live genome. Cultivated stocks not available. No coordinated species management programme for this species and one not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments:	This variety was described by Blatter & McCann (1932) based on Hallberg's collection made on June 1917 from Monkey Hill in Khandala.		
Sources:	Bennet 1984 5 : 452; Blatter & McCann, 1932 36 : 16		
Compilers:	S. Phatak, B. Arthur		
Reviewers:	B.V. Shetty, C. Sathish Kumar, S. Molur		

Scientific name (author: date):	Habenaria gibsonii Hook. f. var. foliosa (A. Rich.) Santapau & Kapadia, 1959		
Synonymy ms:	<i>Habenaria foliosa</i> A. Rich., 1841 <i>Habenaria digitata</i> Lindley var. <i>foliosa</i> (A. Rich.) Hook. f., 1890 <i>Habenaria spencei</i> Blatter & McCann, 1932		
Habit:	Terrestrial herb		
Habitat:	Semi evergreen to evergreen forests		
Niche/ elevation:	Wet under growth. 2600m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Bridle path leading to the site for the Silent Valley project in Attapadi, Khandala, Godavari District and Western Ghats of Karnataka [Abraham & Vatsala, 1981]; Nilgiris [Nayar, 1996]; Pune, Satara [Sharma <i>et al.</i> , 1996]; Avalanche, Bikkapathimund, Naduvattam, Ootacamund, Pykara [Sharma <i>et al.</i> , 1977]. Mahabaleshwar [S. Phatak, 1979]		
Distribution from Field Studies:	Mahabaleshwar [S. Phatak, 1979]		
Extent of occurrence (Sq. km.):	>20,000		
Area of occupancy (Sq. km.):	<2,000		
Number of Subpopulations/location:	Fragmented.		
Habitat status:	Decrease in the habitat in the last 10 years due to loss of habitat. There is decrease in the quality of the habitat due to habitat loss.		
Threats			
Threats to taxon:	Habitat loss, trampling and habitat fragmentation resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and have not ceased.		The
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals <250. Number of mature individuals have declined in the past by >20% and predicted decline is >20%. Generation time annual.		
Trends:	Population size/numbers of the taxon declining at a rate of >20% in the last 10 years.		
Recent Field Studies:	None		
Data quality:	Assessed based on field studies and literature-herbarium studies.		
Qualifier:	Area and Extent estimated based on the known locations. Habitat status, threats, mature individuals and population trends observed.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	A1ce; B1+2ce
IUCN RED LIST CRITERIA (2000):	VULNERABLE	Criteria:	B2a+b(iii,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Silent Valley National Park		
Uncertainty	Assessed subjectively based on precaution.		
Recommendations			
Research:	Survey, Genetic research, taxonomic research.		
Management:	Monitoring, genome resource banking.		
Cultivation:	Cultivated stocks not available. No coordinated species management programme for this species and one not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	This was originally described by A. Richard (18410 based on a collection by Perrottet from Nilgiris. Western ghats, near Poona, Karwar [Santapau & Kapadia]. It was found growing side by side with <i>H. multicaudata</i> [Abraham & Vatsala, 1981]. It was found growing among <i>Habenaria digitata</i> , <i>H. stenopetala</i> and <i>H. crassifolia</i> in Mahabaleshwar [S. Phatak, 1984].		
Sources:	Abraham & Vatsala, 1981: 219; Richard, 1841: 71.t.34; Blatter & McCann, 1932 36: 17; Nayar, 1996: 225; S. Phatak, 1984; Santapau & Kapadia, 1959 56: 194; Sharma <i>et al.</i> , 1977; Sharma <i>et al.</i> , 1996.		
Compilers:	S. Phatak, B. Arthur		
Reviewers:	B.V. Shetty, C. Sathish Kumar, S. Molur		

Scientific name (author; date):	Habenaria gibsonii Hook. f., var. gibsonii 1890		
Synonyms:	<i>Habenaria digitata</i> Lindley var. <i>gibsonii</i> (Hook. f.) C. Fischer, 1928 <i>Habenaria foliosa</i> A. Rich. var. <i>gibsonii</i> (Hook. f.) Bennet 1984		
Habit:	Terrestrial herb		
Habitat:	Forest undergrowth and open slopes in grasslands		
Niche/ elevation:	Moist areas. 1200-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra & Karnataka)		
Distribution from Literature:			
Distribution from Field Studies:	<u>Maharashtra</u> : Wada [S. Phatak, 1980]. <u>Karnataka</u> : Kudremukh National Park, Mysore, Uttara Kannada, Chikmagalur [T.A. Rao, 2000]		
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	5-10/4. Fragmented. There is a continuing decline but not extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulations does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 20 years due to loss of habitat, forest fires and over grazing. There is decrease in the quality of the habitat due to human interference, animals, forest fires and over grazing.		
Threats			
Threats to taxon:	Edaphic changes, trampling, habitat loss, human interference, overexploitation, grazing, habitat fragmentation, trade for market or medicine, fire, reproductive problems and propagation difficulties are resulting in and may result in population decline. The influence of threats on the population structure are well understood, are not reversible and have not ceased to be a threat.		
Trade:	The taxon is in trade for its roots and medicinal value. Scientific collections also has resulted in a perceived or inferred population decline.		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations are <50. The number of mature individuals declined in the past by 20% and likely to decline by 20% in the future. Generation time 1 year.		
Trends:	The population size/numbers of the taxon is declining at a rate of >50% in the last 10 years. Predicted decline >80% in the next 10 years due to habitat loss. The threats influencing the population structure are well understood, are not reversible and have not ceased to be threats.		
Recent Field Studies:	T.A. Rao in Kudremukh National Park, Mysore, Uttara Kannada, 2000, Floristic survey. S. Phatak in Pratapghad, Londa, 1992, Taxonomy, Cytology.		
Data quality:	Assessed based on field studies, indirect information and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed.		
Status			
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	A2cd; C2a; D
IUCN RED LIST CRITERIA (2000):	CRITICALLY ENDANGERED	Criteria:	A3cd; C2a(i); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Kudremukh National Park		
Uncertainty	Assessed with 95% confidence based on evidence, precaution and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey, genetic research, limiting factor research, life history studies, PHVA		
Management:	Habitat management, sustainable utilisation, cultivation/breeding, wild population management, public awareness, genome resource banking, monitoring, limiting factor management.		
Cultivation:	Cultivation is recommended for research, preservation of live genome and reintroduction. Cultivated stocks are available at Kudremukh National Park orchidarium. There is no coordinated species management programme for this species and one is not recommended. Initiate programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	This species was described by J.D. Hooker based on Gibson's collections from near Kyreswar and 'Kandala'. Fischer treats this as a variety under <i>H. digitata</i> Lindley. It is isolated in Mahabaleshwar [Wada], Santapau collected it in Mumbai, Lonovala, Khandala. One may not be able to site the specimen every season on the same spot as the tubers hibernate. There is a perceptible ecological change. Exploitation by humans due to research and medicine. Life span of the tuber is seasonal, July-September. This species is not found in the area at present.		
Sources:	Bennet 1984 5: 452; Fischer, 1928: 1469; Hook. f. 1890 6: 135		
Compilers:	T.A. Rao, B. Arthur, K. Krishnaswamy, E. Mohan, R. Ingalhalli, S. Rajendran, R. Hegde, S. Phatak		

Reviewers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, B.V. Shetty, U. Lakshminarayan, K.G. Selvi.

Scientific name (author: date):	Habenaria pallideviridis Seidenf., 1993		
Habit:	Terrestrial herb		
Habitat:	Grassland		
Niche/ elevation:	2,100m.		
Distribution			
Historical distribution:	Endemic to Western Ghats (Tamil Nadu)		
Distribution from Literature:	Palni hills, off Kukkal, Boothanachiamman Temple Hills [Seidenfaden, 1999]. Palni hills, southern Ghats [Nayar, 1996].		
Western			
Distribution from Field Studies:	None.		
Extent of occurrence (Sq. km.):	<100		
Area of occupancy (Sq. km.):	<10.		
Number of Subpopulations/location:	1/1		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to loss of habitat. There is no change in the quality of the habitat.		
Threats			
Threats to taxon:	Grazing, habitat loss and trampling resulting in and may result in population decline. The influence of threats on the population structure is well understood, is not reversible and has not ceased to be a threat.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations are <50.		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	Assessed based on literature/herbarium studies only.		
Qualifier:	The Area and Extent estimated from literature distribution. Habitat status, threats and mature individuals inferred from literature and from indirect information.		
Status			
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2c; D
IUCN RED LIST CRITERIA (2000):	CRITICALLY ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:			
Uncertainty	Assessment based on precaution and a range of opinion.		
Recommendations			
Research:	Survey and life history studies.		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Coordinated species management programme for this species is recommended. Initiate programme within 3 years. Some propagation techniques known for similar taxa		
Other comments:	This species was proposed by Seidenfaden based on a collection by K.M. Matthew from the Palni Hills. This species has been reported only from Palni hills [Seidenfaden, 1999].		
Sources:	Nayar, 1996: 225; Seidenfaden, 1993 48 (4): 757; Seidenfaden, 1999: 1217.		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandra, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, T.A. Rao, U. Lakshminarayan.		

Scientific name (author; date):	Habenaria panchganiensis Santapau & Kapadia, 1957		
Synonym:	<i>Habenaria variabilis</i> Blatter & McCann, 1932 non Ridley, 1886		
Habit:	Terrestrial herb		
Habitat:	Table lands and slopey hill tops		
Niche/ elevation:	Moist grassy slopes. 1500-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra)		
Distribution from Literature:	Satara and Sindhudurg district, Western Ghats of Maharashtra [Nayar & Sastry, 1990]. Panchagani, Mahabaleshwar, northern Western Ghats [Nayar, 1996]		
Distribution from Field Studies:	<u>Maharashtra</u> : Panchagani, Mahabaleshwar [S. Phatak, 1976-96]		
Extent of occurrence (Sq. km.):	100-5,000		
Area of occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	3/2. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population		
Habitat status:	Decrease in the habitat >50% in the last 20 years due to overgrazing, trampling and tourism. There is decrease in the quality of the habitat due to tourism and horse riding.		
Threats			
Threats to taxon:	Interspecific competition, human interference, grazing, habitat loss and trampling are resulting in and may result in population decline. The influence on the population structure is well understood, is not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations are <2,500. The number of mature individuals declined in the past by 50% and is likely to decline by >20% in the future. Generation time – perennial – perinating through tuberooids.		
Trends:	The population size/numbers of the taxon is declining at a rate of >50% in the last 10 years. Predicted decline >50% in the next 10 years due to habitat loss.		
Recent Field Studies:	S. Phatak in Panchagani, Mahabaleshwar, 1996.		
Data quality:	Assessed based on field studies, informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed.		
Status			
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2bcde
IUCN RED LIST CRITERIA (2000):	CRITICALLY ENDANGERED	Criteria:	B2a+b(ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Rare [Nayar & Sastry, 1990]	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:			
Uncertainty	Assessed with 95% confidence based on evidence, precaution and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey, genetic research, life history studies, limiting factor research, PHVA pending		
Management:	Habitat management, wild population management, monitoring		
Cultivation:	Cultivated stocks are not available. Initiate cultivation programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	This was originally described by Blatter & McCann as <i>H. variabilis</i> , a later homonym of that of Ridley (1886) and hence illegitimate. Hence, Santapau & Kapadia (1957) proposed the new name. Only known from two localities including the collection of its type in Satara district [Nayar & Sastry, 1990]. The species has almost disappeared in the first tableland, there are very few in the second tableland and surviving in the third, fourth and fifth due to its inaccessibility. It is mainly found in the third tableland.		
Sources:	Blatter & McCann, 1932 36 : 19-20.t.4-5; ; Nayar, 1996: 225; Nayar & Sastry, 1990; Rao, 1998: 208; Santapau & Kapadia, 1957 54 : 478.		
Compilers:	T.A. Rao, B. Arthur, Krishnaswamy, E. Mohan, R. Ingallhalli, S. Rajendran, R. Hegde, S. Phatak		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, C. Sathish Kumar, B.V. Shetty, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date):	Habenaria periyarensis Sasidharan <i>et al.</i> , 1998		
Habit:	Terrestrial herb		
Habitat:	Grasslands		
Niche/ elevation:	Among short grasses. 1200 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Periyar Tiger Reserve [Sasidharan <i>et al.</i> , 1998].		
Distribution from Field Studies:	None		
Extent of occurrence (Sq. km.):	<100		
Area of occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	1/1		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to loss of habitat. Change in the quality of habitat not known.		
Threats			
Threats to taxon:	Habitat loss, grazing and trampling. The influence on the population structure is well understood.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations are <50.		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	Assessed based on literature/herbarium studies.		
Qualifier:	The Area, Extent of occurrence, habitat status, threats and mature individuals observed and estimated.		
Status			
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2c; D
IUCN RED LIST CRITERIA (1994):	CRITICALLY ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Periyar Tiger Reserve		
Uncertainty	Assessment of <i>H. periyarensis</i> is with 95% confidence based on evidence and range of opinion.		
Recommendations			
Research:	Survey, limiting factor research, taxonomic research, life history studies		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivation is recommended for research and preservation of live genome. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Recently described species by Sasidharan, Rajesh and Jomy based on a collection from Periyar. It is related to <i>H. diphylla</i> Dalz.		
Sources:	Sasidharan <i>et al.</i> , 1998 8(2): 167		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, R. Singh, T. Chhabra, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, T.A. Rao, U. Lakshminarayan.		

Scientific name (author: date):	Habenaria perrottetiana A. Rich., 1841		
Synonym:	<i>Platanthera lutea</i> Wight, 1844-1845		
Habit:	Terrestrial herb		
Habitat:	Grassland		
Niche/ elevation:	1600-2200 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Palni hills, Nilgiri hills, Mukurthi Dam, Kodaikanal [Abraham & Vatsala, 1981]. Coimbatore, Kanyakumari, Madurai, Nilgiri [Henry <i>et al.</i> , 1989]. Palni hills, Nilgiris [Hooker, 1890-1894]. Muthukuzhivayal [Ramaswamy & Razi, 1973]. Umaiyamalai, Anaimudi slopes [Shetty & Vivekananthan, 1971]. Kodaikanal, Nilgiris, Palni hills, Shembaganur - Kodaikanal Levinge path, Perumal peak, northern slopes [Seidenfaden, 1999]. Mahendragiri, [Sathish Kumar, 1999]. Mysore, Idukki, Coimbatore, Kannyakumari, Madurai, Nilgiri [Rathakrishnan & Chitra, 1984]. Avalanche [Sharma <i>et al.</i> , 1977].		
From Field Studies:	<u>Tamil Nadu</u> : Avalanche [B.V. Shetty, 1973; P.F. Solomons, 1997-99]. Anaimudi [B.V. Shetty, 1965]. Naduvattam [N. Raman, 1998; P.S. Udayan, 1993]. <u>Karnataka</u> : Kudremukh National Park [T.A. Rao, 2000].		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	30-50/15-25. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10-20 years. <20% predicted decline in the next 10-20 years due to loss of habitat and habitat change. Change in the quality of habitat not known.		
Threats			
Threats to taxon:	Human interference, grazing and trampling resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased to be threats.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <2500. The number of mature individuals declined in the past by 10-20% and likely to decline by 10-25% in the future. Generation time 1 year.		
Trends:	The population size/numbers of the taxon is declining at a rate of >10% in the last 10 years. Predicted decline >10% in the next 10 years due to habitat loss.		
Recent Field Studies:	N. Raman in Naduvattam 1998. P.S. Udayan in Naduvattam, 1990-96. P.F. Solomons in Avalanche 1997-99. T.A. Rao in Kudremukh National Park, 2000.		
Data quality:	Assessed based on field studies, census/monitoring and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed and inferred.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcde
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Eravikulam National Park, Kudremukh National Park, Mukurthi National Park		
Uncertainty	Assessed with 95% confidence based on evidence, range of opinion and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey, life history studies, PHVA		
Management:	Monitoring, habitat management and cultivation/breeding		
Cultivation:	Cultivation is recommended for research. Cultivated stocks not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Propagation techniques not known at all.		
Other comments:	Described by A. Richard based on Perrottet's collection from Ootacamund. Record of its occurrence in Karnataka i.e. Kudremukh (T.A. Rao pers. comm. at the workshop) needs confirmation.		
Sources:	Abraham & Vatsala, 1981: 236; Henry <i>et al.</i> , 1989: 15; Hooker, 1890-1894: 164, 165; Mohanan & Henry, 1994: 460; Ramaswamy & Razi, 1973: 399; Rao, 1998: 208; Rathakrishnan & Chitra, 1984: 1004; Richard, 1841 Ser 2 15 : 74.t.48; Sathish Kumar, 1999: 67; Seidenfaden, 1999: 1223, 1224; Sharma <i>et al.</i> , 1977: 141; Shetty & Vivekananthan, 1991: 39; Wight, 1844-1845: lc. 3(2) : 11.t. 919		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty, U. Lakshminarayanan.		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingahlalli, C. Sathish Kumar, B. Arthur, T.A. Rao.		

Scientific name (author: date):	Habenaria polyodon Hook. f., 1890		
Synonym:	<i>H. fimbriata</i> Wight 1851 non R. Br., 1813		
Habit:	Terrestrial herb		
Habitat:	Grasslands		
Niche/ elevation:	1600-1800 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Tamil Nadu)		
Distribution from Literature:	Nilgiris [Henry <i>et al.</i> , 1989; Hooker, 1890-1894; Rathakrishnan & Chitra, 1984; Sharma <i>et al.</i> , 1977; Mohanan & Balakrishnan, 1991; Nayar, 1996].		
From Field Studies:	<u>Tamil Nadu</u> : Bikkapathimund [T. Chhabra, 1995]		
Extent of Occurrence (Sq. km.):	<100		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	3/1. Fragmented. All individuals are not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10 years. >20% predicted decline in the next 10 years due to loss of habitat and grazing. Decrease in the quality of the habitat due to grazing.		
Threats			
Threats to taxon:	Human interference, grazing and habitat loss are resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations <250. Number of mature individuals declined in the past by >20% and likely to decline by >20% in the future (say, 10 years). Generation time 1 year.		
Trends:	The population size/numbers of the taxon declining at a rate of >20% in the last 10 years. Predicted decline >20% in the next 10 years due to habitat loss.		
Recent Field Studies:	T. Chhabra in Bikkapathimund, Nilgiris, 1995.		
Data quality:	Assessed based on field studies, informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends inferred and estimated.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2ce; C2
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B1a+b(iii,v), 2a+b(iii,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:			
Uncertainty	Assessed with based on some evidence, precaution, subjective and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey, life history studies, genetic research and PHVA pending.		
Management:	Habitat management, wild population management, monitoring and cultivation/breeding.		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Propagation techniques not known at all		
Other comments:	Originally proposed by Wight based on a collection from Nilgiris. Wight's name, <i>H. fimbriata</i> , however could not be accepted, as it was a later homonym of that of R. Br. (1813). Hence, Hook. f. proposed the name <i>polyodon</i> . The habitat should be thoroughly surveyed and protected. Hooker [1888-1890] reported this species from Nilgiris based on Wight's collection. Fischer also gives the same collection along with another of Gamble from Nilgiris, but none of these specimens are available in MH. Joseph [1983] states that he could not collect it from Nilgiris or its neighbourhood [Mohanan & Balakrishnan, 1991].		
Sources:	Henry <i>et al.</i> , 1989: 16; Hooker, 1890 6 : 139; Joseph, 1983; Mohanan & Balakrishnan, 1991: 190; Nayar, 1996: 225; Rathakrishnan & Chitra, 1984: 1004; Sharma <i>et al.</i> , 1977: 141; Wight, 1851 5 (1): 14.t.1712.		
Compilers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan.		
Reviewers:	S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Habenaria richardiana Wight, 1851		
Habit:	Terrestrial tuberous herb		
Habitat:	Moist deciduous forests and grasslands		
Niche/ elevation:	1200-2,500 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Coimbatore, Nilgiri [Henry <i>et al.</i> , 1989]. Travancore hills [Hooker, 1890-1894]. Coonoor, Doddabetta [Sharma <i>et al.</i> , 1977]. Travancore hills, Kodanad [Mohanan & Balakrishnan, 1991]. Coimbatore, Nilgiris, Trivandrum [Rathakrishnan & Chitra, 1984]. High Ranges [Shetty & Vivekananthan, 1991]. <u>Tamil Nadu</u> : Dawre in Kodaikanal [Rajan, 1985]		
Distribution from Field Studies:			
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	10–20/5–10. Fragmented. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >80% in the last 10 years due to tourism. Decrease in the quality of the habitat due to tourism.		
Threats			
Threats to taxon:	Habitat loss resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	The population size/numbers of the taxon declining at a rate of >20% in the last 10 years.		
Recent Field Studies:	None		
Data quality:	Assessed based on informal sighting and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated as inferred from literature. Threats, mature individuals and population trends inferred based on habitat information.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2abc
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(i,ii,iii), 2a+b(i,ii,iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	None		
Uncertainty	Assessed based on inference, precaution, subjective and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey, limiting factor research, life history studies and PHVA		
Management:	Habitat management and monitoring, cultivation/breeding		
Cultivation:	Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Proposed by Wight based on a collection from Nilgiris and Travancore Hills. In Doddabetta the habitat has been destroyed mainly due to tourism. Except for a single recent gathering in 1970 by E. Vajravelu, this plant is represented in Indian herbaria only by old collections made in 1883 by Gamble from Doddabetta [2050m].		
Sources:	Henry <i>et al.</i> , 1989: 16; Hooker, 1890-1894; Mohanan & Balakrishnan, 1991: 195; Rao, 1998: 208; Rathakrishnan & Chitra, 1984: 1004; Sharma, <i>et al.</i> , 1977: 288; Shetty & Vivekananthan, 1991: 141; Wight, 1851 5(1): 14.t.1713.		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, T.A. Rao, U. Lakshminarayan.		

Scientific name (author: date):	Habenaria suaveolens Dalz., 1850		
Habit:	Terrestrial herb		
Habitat:	Evergreen forests		
Niche/ elevation:	Moist forest floor. 500-1500 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra & Karnataka)		
Distribution from Literature:	Konkan, Chickamagalur, Bababudan [Nayar, 1996]. Sindhudurg [Lakshminarasimhan, 1996].		
Distribution from Field Studies:	-		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/locations:	4. Fragmented		
Habitat status:	Decrease in the habitat >20% in the last 10 years. >20% predicted decline in the next 10 years due to urbanization. Decrease in the quality of the habitat due to human interference and tourism.		
Threats			
Threats to taxon:	Human interference, grazing, habitat loss and trampling resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	The population size/numbers declining.		
Recent Field Studies:	-		
Data quality:	Assessed based only on literature/herbarium studies.		
Qualifier:	The Area, Extent of occurrence, habitat status, threats, mature individuals and population trends inferred from literature.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2c
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	None		
Uncertainty	Assessed based on inference, precaution and subjective opinion.		
Recommendations			
Research:	Survey and life history studies.		
Management:	Monitoring.		
Cultivation:	-		
Other comments:	Described by Dalzell (1850) based on his collection made between Vignorla and Malwan in Concan. This species is the rarest of Mumbai orchids. Detailed survey is required for this species.		
Sources:	Dalzell, 1850 2: 263; Lakshminarasimhan, 1996: 44; Nayar, 1996: 225		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarsi, J.L. Ellis, R. Ingalthalli, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, T.A. Rao, U. Lakshminarayan.		

Scientific name (author: date):	Habenaria travancorica Hook. f. 1890.		
Synonyms:	<i>Habenaria lindleyana</i> Wight 1844-45 non Steud., 1840 <i>Habenaria digitata</i> Lindley var. <i>travancorica</i> (Hook. f.) C. Fischer, 1928 <i>Habenaria gibsonii</i> Hook. f. var. <i>travancorica</i> (Hook. f.) Pradhan, 1976		
Habit:	Terrestrial herb		
Habitat:	Bare, exposed slopes		
Niche/ elevation:	1800-1950m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Tamil Nadu)		
Distribution from Literature:	Palni hills [Nayar, 1996]. Palni hills, Shembaganur, Levinge Path, Church Cliff [Seidenfaden, 1991]		
Distribution from Field Studies:			
Extent of Occurrence (Sq. km.):	<100		
Area of Occupancy (Sq. km.):	5-50		
Number of Subpopulations/location:	Unknown		
Habitat status:	Unknown		
Threats			
Threats to taxon:	Unknown		
Trade:	Not known		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	None		
Qualifier:	None		
Status			
IUCN RED LIST CRITERIA (1994):	DATA DEFICIENT	Criteria:	--
IUCN RED LIST CRITERIA (2000):	DATA DEFICIENT	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty			
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Not recommended		
Other comments:	This was originally proposed by Wight as <i>H. lindleyana</i> (1844-45) based on his collection from the Pulney hills. This is unfortunately a later homonym of that Steudel (1840). Hooker. f. proposed the name of <i>H. travancorica</i> . Some authors treat this as a variety under <i>H. digitata</i> Lindl. It is found endemic to the Pulneys and has not been so far recorded from Travancore. There is no information on this variety. U.C. Pradhan (1976) treats this as a variety under <i>H. digitata</i> Lindl. This is illegitimate and unacceptable because the new combination does not have basionym and secondly, this has already been proposed by Fishcher (1928).		
Sources:	Fishcher, 1928: 1469; Hooker, 1890 6: 135; Nayar, 1996: 225; Seidenfaden 1999: 1217-1218; Wight, 1844-45 3(2): 11.t.922		
Compilers:	J.L. Ellis, R. Gopalan, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, S. Phatak, B. Arthur		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Hetaeria ovalifolia (Wight) Benth., 1883		
Synonym:	<i>Goodyera ovalifolia</i> Wight 1851		
Habit:	Terrestrial herbs.		
Habitat:	Undergrowth of dense forests		
Niche/ elevation:	ca. 1800 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Coimbatore, Tirunelveli [Henry <i>et al.</i> , 1989]. Malabar, Courtallam [Hooker, 1890-1894]. Courtallam, Palni hills, near Shembaganur [Abraham & Vatsala, 1981]. Agastyamala, Munnar, Shembaganur [Sathish Kumar, 1991]. Madurai, Tiruchirapalli, Tirunelveli [Rathakrishnan & Chitra, 1984]		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Kalakad Mundanthurai Tiger Reserve [M.B. Viswanathan, 1998]; <u>Kerala</u> : Neyyar Wildlife Sanctuary and on the way to Kodaikanal from Kerala [C. Sathish Kumar, 1995].		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	10/4. Fragmented. No continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	No change in the habitat of the taxon.		
Threats			
Threats to taxon:	None		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <2,500. The numbers of mature individuals not declined in the past and not likely to decline in the future.		
Trends:	The population size/numbers increasing.		
Recent Field Studies:	M.B. Viswanathan in Kalakad-Mundanthurai Tiger Reserve, 1998, Conservation studies. C. Sathish Kumar in Neyyar Wildlife Sanctuary and on the way to Kodaikanal from Kerala, 1995.		
Data quality:	Assessed based on informal sighting and literature/herbarium studies.		
Qualifier:	The Area and Extent are estimated based on known locations. The habitat status, threats, mature individuals and population trends are observed.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	D2
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	D2
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve; Neyyar Wildlife Sanctuary		
Uncertainty	Assessed based on precaution and on the consensus of field biologists at the workshop.		
Recommendations			
Research:	Survey, genetic research, life history studies, PHVA pending.		
Management:	Habitat management, monitoring and cultivation/breeding.		
Cultivation:	There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Propagation techniques not known at all.		
Other comments:	Originally proposed by Wight based on his collection from Courtallam where this species has disappeared since then.		
Sources:	Abraham & Vatsala, 1981: 199; Bentham, 1883 3: 164; Henry <i>et al.</i> , 1989: 16; Hooker, 1890-1894: 115; Rathakrishnan & Chitra, 1984: 1004; Sathish Kumar, 1991: 212; Wight 1851 5(1): 16.t. 1730.		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, T.A. Rao, U. Lakshminarayan.		

Scientific name (author; date):	<i>Ipsea malabarica</i> (Reichb. f.) Hook. f., 1890.		
Synonyms:	<i>Pachystoma malabaricum</i> Reichb. f., 1864 <i>Spathoglottis malabarica</i> (Reichb. f.) Pradhan, 1979		
Habit:	Terrestrial tuberous herbs.		
Habitat:	Grasslands		
Niche/ elevation:	Water dripping rocks and slopy grasslands, associated with grasses like <i>Silentvalleya nairii</i> and <i>Tripogon</i> sp. and ferns like <i>Anemia wightiana</i> [MSM]. 900-1500 m.		
Distribution:			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Ponmudi [Abraham & Vatsala, 1981]. Aruvanpara, Poochappara [Manilal, 1988]. Kunthipuzha in Silent Valley, Malabar [Hooker, 1886-1890]. Sairandhri [Manoharan, 1999]. Silent Valley [Nayar & Sastry, 1987]. Ponmudi [Mohanani & Henry, 1994]. Aruvanpara dam site in Silent Valley, Poochappara, Siruvani near Mukurthi pond [V. Ramasundar]. Aruvanpara, Poochappara, Sairandhri [Sathish Kumar, 1999].		
Distribution from Field Studies:	<u>Kerala</u> : Aruvanpara, Poochappara and Sairandhri in Silent Valley [Sathish Kumar & Sarojini Menon, 1982-83, 1994-95]. Meppadi, Wayanad, Vellari, Calicut [Sathish Kumar, 1997-98]. Silent Valley - Aruvanpara, dam site, Poochappara, Siruvani - Muthikulam pond [MSM].		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	20–25/3. Fragmented. No continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to invasion of trees like <i>Glochidion</i> , <i>Wendlandia</i> etc. No change in the quality of the habitat.		
Threats			
Threats to taxon:	Fruit predation by insects. Natural or man-induced threats, grazing, habitat loss, habitat fragmentation, fire and landslides resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased to be threats.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations >2,500. The numbers of mature individuals not declined in the past and not likely to decline in the future. Generation time 1 year.		
Trends:	The population size/numbers of the taxon is declining at a rate of <20% in the last 10 years.		
Recent Field Studies:	C. Sathish Kumar and P.C. Suresh Kumar in Aruvanpara, 1995-98, reproduction biology of three endangered orchids of southern Western Ghats. A. Ganga Prasad in Sairandhri and Aruvanpara, 1993-95, Conservation through micropropagation of <i>Ipsea malabarica</i> . A.K. Pradeep in Vellarimala.		
Data quality:	Assessed based on field studies, informal sighting and literature/herbarium studies.		
Qualifier:	The Area and Extent are estimated based on known locations. The habitat status, threats, mature individuals and population trends are observed over years.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2b
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(ii), 2a+b(ii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Endangered [Nayar & Sastry, 1987]	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Silent Valley National Park, Wayanad Wildlife Sanctuary.		
Uncertainty	Assessed with 95% confidence based on evidence, information from an external source and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Cultivation is recommended for research and commercial/sustainability. Cultivated stocks are available at TBGRI – Thiruvananthapuram, Narayana Gurukula, Wayanad and National Orchidarium, Yercaud. Numbers in cultivation ca. 20. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Some propagation techniques known for similar taxa.		
Other comments:	Originally described by Reichenbach f. based on Jerdon's collection from the 'Malabar Ghauts'. In Vellarimala the collection was made by A.K. Pradeep. In Silent Valley, this species was found associated with grass - <i>Silentvalleya nairii</i> . In Meppadi and Vellarimala it is always associated with <i>Tripogon</i> sp. The flower buds, young flowers and fruits are eaten by insect larvae which reduces the future population. Seed and tissue culture propagation for this species is well standardised in TBGRI. During the vegetative phase, it is difficult to recognise the plants in the field due to grass like appearance [Nayar & Sastry, 1987]. T.C. Jerdon collected this plant around 1850 from the 'Malabar Ghauts' and the specimen is now in Natural History Museum at Wein Austria. It was rediscovered from Silent Valley after a span of 132 years in 1932 [Manilal & Sathish Kumar, 1983; Sathish Kumar, 1999]. The record of its occurrence in Ponmudi [Abraham & Vatsala, 1981; Mohanan & Henry, 1994] is incorrect as it is a case		

of mistaken identity (of *Pachystoma hirsutum*) [Joseph & Vajravelu, 1976; Sathish & Manilal, 1987]. It has also been recorded from Siruvani.

Sources:

Abraham & Vatsala, 1981: 268; Hooker, 1890 5: 812; Joseph & Vajravelu, 1976; Manilal, 1988: 289; Manoharan, 1999: 204; Mohanan & Henry, 1994: 461; M.S. Muktesh Kumar, 2000, Unpublished Biological Information Sheet; Naya & Sastry, 1987: 258; Pradhan, 1979 2: 702; V. Ramasundar, 2000, Unpublished Biological Information Sheet; Rao, 1998: 209; Rathakrishnan & Chitra, 1984: 1004; Reichenbach, 1864 6: 462; Sathish Kumar, 1999: 204; Sathish Kumar & Manilal, 1987

Compilers:

S.S.R. Bennet, J.L. Ellis, M. Mohanan, V. Sarojini Menon, C. Sathish Kumar, S. Seeni, B.V. Shetty, P.S. Udayan, U. Lakshminarayan

Reviewers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, Binu Priya, A.R., U. Lakshminarayan, K.G. Selvi, T.A. Rao.

Scientific name (author; date):	Kingidium mysorens (Saldanha, C.J.) Sathish, 1994		
Synonym:	<i>Phalaenopsis mysorensis</i> Saldanha, C.J., 1974		
Habit:	Monopodial epiphytic herb		
Habitat:	Evergreen forests		
Niche/ elevation:	840-1000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Kalpetta, Attapadi forests [Abraham & Vatsala, 1981]. Hassan [Sharma <i>et al.</i> , 1984]. Walakkad [Manilal, 1988]. Tirunalli [Ramachandran & Nair, 1988].		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Anamalai [V.S. Ramachandran, 1994]		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	10–20/6. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population		
Habitat status:	Decrease in the area of habitat due to habitat loss and forest operations. Decrease in the quality of the habitat due to habitat loss.		
Threats			
Threats to taxon:	Habitat loss resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <250. The numbers of mature individuals declined in the past by 20% and likely to decline by >10% in the future. Generation time 5-6 years.		
Trends:	The population size/numbers of the taxon declining at a rate of >10% in the last 10 years. Predicted decline >10% in the next 10 years due to habitat loss.		
Recent Field Studies:	V.S. Ramachandran in Anamalai, 1994, Medicinal Plants Conservation Area.		
Data quality:	Assessed based on field studies, informal sighting and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. Habitat status, threats, mature individuals and population trends observed over many years of field studies.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcde; C2a
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii,iv,v), 2a+b(ii,iii,iv,v); C2a(i)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Indira Gandhi Wildlife Sanctuary		
Uncertainty	Assessed on subjective opinion with the consensus of the participants.		
Recommendations			
Research:	Survey, genetic research and life history studies		
Management:	Habitat management, monitoring and cultivation/breeding		
Cultivation:	Cultivation is recommended for commercial/sustainability. Cultivated stocks not available. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	This species was described by Saldanha from Karnataka.		
Sources:	Abraham & Vatsala, 1981: 464-465; Manilal, 1988: 301; Ramachandran & Nair, 1988: 460; Rao, 1998: 210; Saldanha, 1974 100 : 571.t.3; Sathish, 1994: 95; Sharma <i>et al.</i> , 1984: 276.		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty, U. Lakshminarayan.		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, T.A. Rao.		

Scientific name (author; date):	Kingidium niveum Sathish, 1994		
Habit:	Epiphytic herb		
Habitat:	Evergreen forests		
Niche/ elevation:	Moss-clad branches. 800-950 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Walakkad in Silent Valley [Mohan & Henry, 1994; Sathish Kumar, 1999]		
Distribution from Field Studies:	Kerala: Silent Valley, Palakkad – Walakkad (1983), Agastyamala (1996) [C. Sathish Kumar]. Trichur, Pothumala, Nelliampathy [N. Sashidharan, 1986]		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	5/3. Fragmented. No continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population		
Habitat status:	No change in the habitat of the taxon. No change in the quality of the habitat.		
Threats			
Threats to taxon:	None		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations <250. Generation time– perennial, monopodial.		
Trends:	Unknown		
Recent Field Studies:			
C. Sathish Kumar in Agastyamala, 1996, Flora of Neyyar Wildlife Sanctuary. N. Sashidharan in Peechi, Thrissur, 1986.			
Data quality: Assessed based on field studies.			
Qualifier: The Area and Extent estimated based on known locations. The habitat status, threats and mature individuals observed.			
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	D
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Neyyar Wildlife Sanctuary, Peechi Vazhani Wildlife Sanctuary, Silent Valley National Park		
Uncertainty Assessed exclusively but with consensus of the participants.			
Recommendations			
Research:	Life history studies, PHVA.		
Management:	Monitoring, genome resource banking		
Cultivation:	Cultivation is recommended for research and commercial/sustainability. Cultivated stocks are available at TBGRI – Thiruvananthapuram. Numbers in cultivation 3. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Some propagation techniques known for similar taxa.		
Other comments: This species was proposed by C. Sathish Kumar, 1994 based on a collection from Silent Valley (Walakkad)			
Sources: Mohanan & Henry, 1994: 205; Sathish Kumar, 1994: 53; Sathish Kumar, 1999: 205.			
Compilers: S.S.R. Bennet, J.L. Ellis, M. Mohanan, V.S. Menon, C. Sathish Kumar, S. Seeni, B.V. Shetty, P.S. Udayan, U. Lakshminarayan.			
Reviewers: A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, B. Arthur, T.A. Rao, K.G. Selvi.			

Scientific name (author: date):	Liparis platyphylla Ridley, 1886		
Habit:	Unknown		
Habitat:	Unknown		
Niche/ elevation:	>1000m.		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Tamil Nadu)		
Distribution from Literature:	Mysore, Coimbatore, Nilgiris [Rathakrishnan & Chitra, 1984]		
Distribution from Field Studies:			
Extent of Occurrence (Sq. km.):	Unknown		
Area of Occupancy (Sq. km.):	Unknown		
Number of Subpopulations/location:	Unknown		
Habitat status:	Unknown		
Threats			
Threats to taxon:	Unknown		
Trade:	Not in trade		
Population			
Numbers/Generation time/trend:	Unknown		
Population trend:			
	Unknown		
Recent Field Studies:			
	None		
Data quality:			
	Literature/herbarium studies		
Qualifier:			
	None		
Status			
IUCN Red List Criteria (1994):	DATA DEFICIENT	Criteria:	--
IUCN Red List Criteria (2000):	DATA DEFICIENT	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty			
	Very high. Nothing is known about this species		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	None in cultivation. Not recommended for cultivation.		
Other comments:			
	Proposed by Ridley based on Beddome's collection from the 'Anamallays'. It is related to <i>L. olivacea</i> Lindl., but different in having broader leaves and with crenulate lip. This species has not been collected after the type collection.		
Sources:			
	Rathakrishnan & Chitra, 1984: 1005; Ridley, 1886: 264		
Compilers:			
	C. Sathish Kumar		
Reviewers:			
	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author; date):	Luisia abrahamii Vatsala, 1981		
Habit:	Epiphytic herbs		
Habitat:	Moist deciduous to evergreen forests		
Niche/ elevation:	300-600 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Thenmalai - Aryankavu range [Vatsala, 1981]		
Distribution from Field Studies:	<u>Kerala</u> ; Thenmala to Aryankavu (1986), Ranni (1992) [Sathish Kumar]		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	2/2. Fragmented. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	The change in the habitat not known. Predicted decline >50% in the next 10-15 years due to the development of the area as an eco-tourism village. Decrease in the quality of the habitat due to the development of the area as eco-tourism village.		
Threats			
Threats to taxon:	Habitat loss and human interference resulting in and may result in population decline. The influence on the population structure well understood, not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations <50. The numbers of mature individuals likely to decline by <50% in the future. Generation time – perennial.		
Trends:	Stable. Predicted decline >50% in next 5-10 years.		
Recent Field Studies:	C. Sathish Kumar in Thenmala, Palaruvi, 1994, A case study on the rare and endangered orchids of Kerala.		
Data quality:	Assessed based on field studies, indirect information and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years and inferred from developmental activities.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2ce; C2a; D
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B2a+b(iii,v); C2a(i); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	None		
Uncertainty	Assessed based on precaution and collective opinion.		
Recommendations			
Research:	life history studies, PHVA pending.		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivation is recommended for research, commercial/sustainability and preservation of live genome. Cultivated stocks are available at TBGRI – Thiruvananthapuram and National Orchidarium, Yercaud. Numbers in cultivation ca. 5. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Information on propagation techniques not available with this group of compilers		
Other comments:	Proposed by Vatsala based on her collection made from Thenmala – Aryankavu range in April 1973. It grows on <i>Ixora brachiata</i>		
Sources:	Vatsala, 1981: 489.		
Compilers:	S.S.R. Bennet, J.L. Ellis, M. Mohanan, V. Sarojini Menon, C. Sathish Kumar, S. Seeni, B.V. Shetty, P.S. Udayan, U. Lakshminarayan		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingallhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, T.A. Rao, K.G. Selvi.		

Scientific name (author: date):	Luisia evangelinae Blatter & McCann, 1932		
Synonym:	<i>L. tenuifolia</i> Blume var. <i>evangelinae</i> (Blatter & McCann) Santapau & Kapadia, 1962		
Habit:	Epiphyte		
Habitat:	Evergreen and deciduous forests		
Niche/ elevation:	600-850 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra, Karnataka & Kerala)		
Distribution from Literature:	Chandanathode [Abraham & Vatsala, 1981]. Uttara Kannada [Sharma <i>et al.</i> , 1984]. Koina valley, Chandwadi, Castle Rock, Anmode [Santapau & Kapadia, 1962]. Sairandhri, Aruvanpara [Manoharan <i>et al.</i> , 1999]. Sairandhri, Aruvanpara [Sathish Kumar, 1999].		
Distribution from Field Studies:	<u>Karnataka</u> : Sringeri, Chikkamagalur, Agumbe, Yellapur, Anmode [S. Phatak, 1997, 99]		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	20/<10. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat. >20% in the last 10 years due to road construction, traffic and tourism. Decrease in the quality of the habitat due to road construction, traffic and tourism.		
Threats			
Threats to taxon:	Habitat loss is resulting in and may result in population decline. The influence on the population structure is well understood, is not reversible and has not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <250. The numbers of mature individuals declined in the past by 20% and likely to decline by 20% in the future. Generation time - perennial.		
Trends:	Declining by >20% in the last 10 years. Predicted decline >20% in the next 10 years.		
Recent Field Studies:	S. Phatak in Sringeri, Agumbe, 1997, in Anmode, 1999, Orchids of Anmode.		
Data quality:	Assessed based on field studies, informal sighting and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed for some areas and inferred for other areas.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcde
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii,iv,v), 2a+b(ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Silent Valley National Park		
Uncertainty	Assessed based on evidence provided by a subjective study but with the consensus of field biologists.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Cultivated stocks are available at local green house [S. Phatak]. Numbers in cultivation 2. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Proposed by Blatter & McCann based on T.R. Bell's Ms notes and a painting by Miss Evangeline Bell. Santapau and Kapadia reduced <i>L. vangelinae</i> Blatter & McCann to a variety of <i>L. tenuifolia</i> Bl. (<i>Luisia birchea</i> (A. Rich) Bl.). According to them the only difference between the two are the rounded apex of the leaf in the later as against the linked one in the former, while the flowers are "identical". But Abraham & Vatsala are convinced that the two are different enough to warrant relegation into two different species as the vegetative aspect of the two are very distinct. <i>L. tenuifolia</i> is a robust erect speies, whereas <i>L. evangelinae</i> is pendant, fragile with distinctly kinked leaves. Following Santapau & Kapadia, Seidenfaden has dumped <i>L. evangelinae</i> also under <i>L. birchea</i> [Abraham & Vatsala, 1981].		
Sources:	Abraham & Vatsala, 1981: 483; Blatter & McCann, 1932 35: 493.t.11; Manoharan <i>et al.</i> , 1999: 206; Santapau & Kapadia, 1962 59: 829; Sathish Kumar, 1999: 206; Sharma <i>et al.</i> , 1984: 273;		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S.Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, N. Raman, T.A. Rao, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, U. Lakshminarayan.		

Scientific name (author: date):	Luisia macrantha Blatter & McCann, 1932		
Habit:	Epiphytic herb		
Habitat:	Dry and moist deciduous forests		
Niche/ elevation:	750-1000m		
Distribution			
Historical distribution:	ENDEMIC to Western Ghats (Karnataka & Kerala)		
Current Global Distribution:	Hassan to N. Kanara [Nayar, 1996]. Hassan [Saldanha & Nicolson, 1976]. Yellapur, Siddhappur, Dandeli, Devimane [Santapau & Kapadia, 1966]. Hassan, N. Kanara [Sharma <i>et al.</i> , 1984]. Coorg [Keshvamurthy & Yoganarasimhan, 1990]. Moozhiyar [Chandrasekaran, 1993].		
Distribution from Literature:	<u>Karnataka</u> : B.R. hills, Bhadra Wildlife Sanctuary, Kodagu, Hassan, Chikkamagalur [Krishnaswamy, 1998-2000]. Kushalnagar, Brahmagiri range, Uttara Kannada [1996-98]. Sirsi, Anmode [S. Phatak, 1997]. <u>Kerala</u> : Periyar, Wayanad [C. Sathish Kumar]		
Distribution from Field Studies:			
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	60/20. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to loss of habitat. Predicted decline <20% in the next 10 years. Change in the quality of habitat due to deforestation.		
Threats			
Threats to taxon:	Habitat loss, decline of host species due to extraction of timber and fire. The influence on the population structure is well understood. Not reversible and not ceased to be threats.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations are >2500. Mature individuals declined in the past 5-10%. Predicted decline 5-10%. Generation time 3-5 years.		
Trends:	The population size/numbers of the taxon is declining at a rate of >10% in the last 10 years. Predicted decline >10% in the next 10 years.		
Recent Field Studies:	K. Krishnaswamy in B.R. hills, Bhadra Wildlife Sanctuary, Kodagu, Hassan, Chikkamagalur, 1997-2000, Studies on orchidaceae. T.A. Rao in Kodagu and Chikkamagalur, 1996-98, Conservation of orchids. S. Phatak in Sirsi, Anmode, 1997, Orchids of Anmode.		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed for some areas and inferred for other areas.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2bcde
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1a+b(ii,iii,iv,v), 2a+b(ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Anshi National Park, Bhadra Tiger Reserve, Biligiri Rangaswamy Temple Wildlife Sanctuary, Brahmagiri Wildlife Sanctuary, Dandeli Wildlife Sanctuary, Kudremukh National Park, Periyar National Park, Pushpagiri Wildlife Sanctuary, Someshwara Wildlife Sanctuary, Wayanad Wildlife Sanctuary.		
Uncertainty	Assessed with 95% confidence based on evidence, and on subjective opinion.		
Recommendations			
Research:	Survey, life history studies		
Management:	Monitoring, cultivation/breeding, monitoring		
Cultivation:	Cultivation is recommended for research. Cultivated stocks exist in department of Botany, Mysore Univesity and local green house, Goa. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for similar taxa.		
Other comments:	This species was described by Blatter & McCann based on T.R. Bell's ms notes after a collection made from Yellapur and a coloured painting by Ms. Evangeline Bell.		
Sources:	Blatter & McCann, 1932: 492.t.10; Chandrasekaran, 1993; Keshvamurthy & Yoganarasimhan, 1990: 449; Nayar, 1996: 225; Saldanha & Nicolson, 1976: 835-836; Santapau & Kapadia, 1966: 217-218; Sharma <i>et al.</i> , 1984: 272		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandra, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, R. Singh, T. Chhabra, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, T.A. Rao, U. Lakshminarayan		

Scientific name (author; date):	Oberonia agastyamalayana Sathish, 1994		
Synonym:	<i>Oberonia longifolia</i> Muktesh & Stephen, 1998		
Habit:	Epiphyte		
Habitat:	Evergreen forests		
Niche/ elevation:	Unknown		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Silent Valley [Muktesh Kumar, 1991]. Agastyamala [Sathish Kumar & Manilal, 1994].		
Distribution from Field Studies:	<u>Kerala</u> : Agastyamalai [Sathish Kumar, R. Gopalan]. Silent Valley [Muktesh Kumar & Sequiera].		
Extent of Occurrence (Sq. km.):	<5,000		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	2/2. Fragmented.		
Habitat status:	The habitat is stable. Quality of the habitat stable.		
Threats			
Threats to taxon:	Unknown		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations <50. The population size/numbers of the taxon stable.		
Recent Field Studies:	None		
Data quality:	Assessed based on field observation.		
Qualifier:	The Area and Extent estimated based known locations. The habitat status, mature individuals and population trends from observation and informal sightings.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	D
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Silent Valley National Park		
Uncertainty	Assessed with 95% confidence and on consensus.		
Recommendations			
Research:	Survey and taxonomic research		
Management:	Habitat management and monitoring		
Cultivation:	Initiate cultivation programme after 3 years. Some cultivation techniques known for taxon or similar taxa.		
Other comments:	Proposed by C. Sathish Kumar based on a collection from Agastyamala. <i>O. longifolia</i> described recently from Silent Valley is in agreement with this species in all characters except the length of the leaves. There is only one collection from the type locality. Since Agastyamalai is inaccessible and is a protected area, the habitat is stable [R. Gopalan]. It has no ornamental or medicinal value, therefore cultivation is not required.		
Sources:	Muktesh Kumar & Sequiera, 1998: 29; Sathish Kumar, 1994: 57.		
Compilers:	A.Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan.		

Scientific name (author: date):	Oberonia anamalayana Joseph, 1963		
Habit:	Epiphytic herbs		
Habitat:	Evergreen forests		
Niche/ elevation:	950-1500m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Anamalai hills, Thariode, Peermade [Abraham & Vatsala, 1981]. Sispara in Silent Valley [Manilal, 1988]. Coimbatore [Henry <i>et al.</i> , 1989]. Idukki in Travancore [Nayar, 1996]. Calicut, Idukki, Coimbatore [Rathakrishnan & Chitra, 1984]. Sispara [Sathish Kumar, 1999].		
Distribution from Field Studies:	<u>Kerala</u> : Idukki, Thariode in Wayanad, Waverly Estate Reserve forests at Anamalais [R. Ansari].		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	10-15/5-10. Fragmented.		
Habitat status:	The habitat is stable. Decrease in the quality of the habitat due to tree felling [R. Ansari].		
Threats			
Threats to taxon:	Habitat loss		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations are <250. Generation time is five to six years.		
Trends:	The population size/numbers of the taxon is declining at a rate of >20% in the last 10 years.		
Recent Field Studies:	R. Ansari in Wayanad, 1992, Plants of Malabar.		
Data quality:	Assessed based on literature/herbarium studies.		
Qualifier:	The Area, Extent, habitat status, threats, mature individuals and population trends inferred from literature.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2c; D
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Silent Valley National Park, Wayanad Wildlife Sanctuary.		
Uncertainty	Assessed on subjective opinion.		
Recommendations			
Research:	Survey		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Initiate cultivation programme after 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	This was proposed by Joseph based on his collection from the Anamalais. As there has been no recent collection data is insufficient. This species occurs in protected areas, therefore habitat change is not expected [R. Gopalan].		
Sources:	Abraham & Vatsala, 1981: 425; R. Ansari, 2000, Unpublished Biological Information Sheet; Henry <i>et al.</i> , 1989: 20; Joseph, 1963 42(2): 222; Manilal, 1988: 294; Nayar, 1996: 225; Rathakrishnan & Chitra, 1984: 1005; Sathish Kumar, 1999: 206;		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, M. Mohanan, Rajendran, S. Phatak, B.V. Shetty, T.A. Rao, U. Lakshminarayan.		

Scientific name (author: date):	Oberonia balakrishnanii R. Ansari, 1990		
Habit:	Epiphytic herb		
Habitat:	Wet deciduous forest		
Niche/ elevation:	1800m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Tamil Nadu)		
Distribution from Literature:	Kodaikanal, Church Cliff, Kukkal Hill path down to paddy fields [Seidenfaden, 1999]		
Distribution from Field Studies:	None		
Extent of Occurrence (Sq. km.):	<100		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	2/2. Fragmented.		
Habitat status:	Human interference, tourism and developmental activities have decreased the quality of habitat.		
Threats			
Threats to taxon:	Human interference, tourism, developmental activities		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	Literature/herbarium studies.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2c
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	None		
Uncertainty	No studies carried out on this taxon.		
Recommendations			
Research:	Survey and Life history studies.		
Management:	Habitat management and monitoring.		
Cultivation:	Not recommended. There is no species management programme.		
Other comments:	Described by R. Ansari based on Bourne's collection from Kodaikanal. Matthew recorded this species from Kukkal. Endemic to Palni hills [Seidenfaden, 1999].		
Sources:	Ansari, 1990 4: 16; Seidenfaden, 1999: 1244.		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, T.A. Rao, U. Lakshminarayan.		

Scientific name (author; date):	Oberonia brachyphylla Blatter & McCann, 1931		
Habit:	Pendulous epiphytic herb		
Habitat:	Deciduous forest		
Niche/ elevation:	On branches of trees. 800-1500 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Kerala)		
Distribution from Literature:	Ponmudi [Abraham & Vatsala, 1981]. Hassan, Kenchankumri state forest, Shiradi ghat [Saldanha & Nicolson, 1976]. Hassan, Uttara Kannada [Sharma <i>et al</i> , 1984]. Aruvanpara in Silent Valley [Manilal, 1988]. Palghat, Mukkali forest, Hassan [Nayar & Sastry, 1988]. Nilgiri Biosphere Reserve, Palghat [Mohan & Balakrishnan, 1991]. Aruvanpara [Sathish Kumar, 1999]. Mukkali forest [Vajravelu, 1990]. Mukkali forest, Palghat [Joseph & Vajravelu, 1976]		
Distribution from Field Studies:	<u>Karnataka</u> : Kodagu, Shimoga, Hassan, Chikmagalur, Uttara Kannada [Krishnaswamy, 1995-2000].		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	20–25/10. Fragmented. Continuing decline and extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years. <20% predicted decline in the next 10 years due to loss of habitat. Decrease in the quality of the habitat due to habitat destruction.		
Threats			
Threats to taxon:	Decline of host species and habitat loss resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <2,500. The number of mature individuals declined in the past by 10% and likely to decline by 10% in the future. Generation time 5-10 years.		
Trends:	The population size/numbers of the taxon declining at a rate of >10% in the last 10 years. Predicted decline >10% in the next 10 years due to habitat loss.		
Recent Field Studies:	Krishnaswamy in Kodagu, Shimoga, Hassan, Chikmagalur, Uttara Kannada, 1998, Studies on Orchidaceae.		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent are estimated based on known locations. The habitat status, threats, mature individuals and population trends have been observed over many years of field studies.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2abcde+ 3c
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1a+b(i,ii,iii,iv,v)+c(iii), 2a+b(i,ii,iii,iv,v)+c(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Rare [Nayar & Sastry, 1988]	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Nilgiri Biosphere Reserve		
Uncertainty	Assessed based on subjective opinion but with the consensus of the participants.		
Recommendations			
Research:	Survey		
Management:	Habitat management, monitoring and cultivation/breeding		
Cultivation:	Cultivation is recommended for research. Initiate cultivation programme after 3 years. Some propagation techniques known for similar taxa.		
Other comments:	This species was described by Blatter & McCann based on a detailed illustration prepared by T.R. Bell and Miss Bell. Pendulous epiphytes on branches of trees like <i>Cyclostomon macrophyllum</i> [Vajravelu, 1990]. This species has to be studied in detail.		
Sources:	Abraham & Vatsala, 1981: 426; Blatter & McCann, 1931 35 : 252; Joseph & Vajravelu, 1976; Manilal, 1988: 296; Mohan & Balakrishnan, 1991: 195; Nayar & Sastry, 1988: 180; Saldanha & Nicolson, 1976: 838; Sathish Kumar, 1999: 206; Sharma <i>et al</i> , 1984: 274; Vajravelu, 1990: 486.		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingallhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao.		

Scientific name (author: date):	Oberonia chandrasekharanii V.J. Nair <i>et al.</i> , 1983		
Synonym:	<i>Oberonia rangannaiana</i> Keshav & Yogan., 1987		
Habit:	Epiphytic herb		
Habitat:	Evergreen forests		
Niche/ elevation:	850-1200m		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Sairandhri in Silent Valley [Sathish Kumar, 1999]. Kodagu [Rao, 1998]. Chandanathode [Nair <i>et al.</i> , 1983]. Coorg [Keshavmurthy & Yoganarasimhan, 1987]		
Distribution from Field Studies:			
Extent of Occurrence (Sq. km.):	101-5000		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	3/3. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in habitat quality.		
Threats			
Threats to taxon:	Human interference, developmental activities		
Trade:	Not in trade		
Population			
Numbers/Generation time/trend:	Unknown numbers. Generation time - perennial		
Population trend:	Unknown		
Recent Field Studies:	N. Sasidharan in Chinnar Wildlife Sanctuary, 1996-97.		
Data quality:	Field studies, informal sightings		
Qualifier:	Area and Extent estimated and habitat status observed.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2cd
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B2a+b(iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Chinnar Wildlife Sanctuary, Silent Valley National Park		
Uncertainty	Assessment based on precaution due to changes expected in habitat. Assessment is exclusive to the below listed compilers and reviewer.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	No cultivated stocks available. No recommendations made at the workshop.		
Other comments:	Described by V.J. Nair <i>et al.</i> based on V.S. Ramachandran's collection from Chandanathode, Kerala.		
Sources:	Keshavmurthy & Yoganarasimhan, 1987; Nair <i>et al.</i> 1983 28 : 361–362; Rao, 1998: 167; Sathish Kumar, 1999: 206		
Compilers:	C. Sathish Kumar		
Reviewers:	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author; date):	Oberonia josephii Saldanha, C.J., 1974		
Habit:	Pendulous epiphytic herbs		
Habitat:	Moist deciduous forest		
Niche/ elevation:	ca. 900m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Kerala)		
Distribution from Literature:	Hassan, below Genkalbetta [Saldanha & Nicolson, 1976]. Hassan [Sharma <i>et al.</i> , 1984]. Hassan and Mysore [Rathakrishnan & Chitra, 1984].		
Distribution from Field Studies:	<u>Kerala</u> : Tirunelli, Wayanad [Muktesh Kumar & Sequiera, 1999]		
Extent of Occurrence (Sq. km.):	<100		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	2 locations. Fragmented. All individuals not in one population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to human habitation. Decrease in the quality of the habitat due to human habitation.		
Threats			
Threats to taxon:	Habitat loss resulting in and may result in population decline. The influence on the population structure well understood, not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Unknown		
Trends:	Unknown		
Recent Field Studies:	Muktesh Kumar and Sequiera in Tirunelli, 1999.		
Data quality:	Assessed based literature/herbarium studies and habitat features of the type location at present.		
Qualifier:	The Area and Extent estimated based on published locations. The habitat status and threats inferred from the current status.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2bc
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1a+b(ii,iii), 2a+b(ii,iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	None		
Uncertainty	Assessed with consensus based on direct observation and precaution.		
Recommendations			
Research:	Survey and life history studies		
Management:	Habitat management and monitoring		
Cultivation:	Not recommended.		
Other comments:	Described by Saldanha based on a collection from Hassan district, Karnataka.		
Sources:	Rathakrishnan & Chitra, 1984: 1005; Saldanha, 1974 100 : 568.f.2; Saldanha & Nicolson, 1976: 840; Sharma <i>et al.</i> , 1984: 274.		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, J.L. Ellis, R. Ingalhalli, N. Raman, C. Sathish Kumar, B. Arthur, T.A. Rao.		

Scientific name (author: date):	Oberonia nayarii R. Ansari & Balakr., 1990		
Habit:	Pendulous epiphytic herbs		
Habitat:	Evergreen forests or shola forests		
Niche/ elevation:	1500-2000 m.		
Distribution			
Historical distribution:			
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiri [Rao, 1998]		
Distribution from Field Studies:	None		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	3/3. Fragmented. There is no continuing decline and no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Change in the habitat not known. No change in the quality of the habitat.		
Threats			
Threats to taxon:	Human interference (fire)		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	Assessed based on literature/herbarium studies.		
Qualifier:	The Area, Extent and habitat status inferred from literature.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	D2
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	D2
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:			
Uncertainty	Assessment is based on inference and precaution only.		
Recommendations			
Research:	Survey, life history studies and PHVA		
Management:	Monitoring		
Cultivation:	Cultivated stocks not available. Numbers in cultivation 20. There is no coordinated species management programme for this species and one is not recommended. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Another survey is required to determine the exact area of occupancy. This data is based on the old herbarium specimens. A thorough search has to be made to relocate this species in its type locality to determine its present status. It was described by Ansari and Balakrishnan (1990) based on collections from Karnataka, Kerala and Karnataka.		
Sources:	Ansari & Balakrishnan, 1990 4: 17; Rao, 1998: 216.		
Compilers:	S.S.R. Bennet, R. Gopalan, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarasi		
Reviewers:	P.F. Solomons, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, A. Durai, N. Raman, B.A. Daniel, M. Thapliyal, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Oberonia platycaulon Wight, 1851
Synonym:	<i>Oberonia bisaccata</i> Manilal & Sathish, 1984
Habit:	Epiphytic herb
Habitat:	Evergreen forests
Niche/ elevation:	1700-2150m.
Distribution	
Historical distribution:	India
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)
Distribution from Literature:	Nilgiris, Palni hills, Anamudi to Nyamakad [Abraham & Vatsala, 1981]. Madurai, Nilgiris [Henry <i>et al.</i> , 1989]. Konkan, Nilgiri, Palni hills, High Wavy mountains [Santapau & Kapadia, 1966]. Konkan, Nilgiris, Palni hills [Hooker, 1886-1890]. Udhagamandalam, Naduvattom [Sharma <i>et al.</i> , 1977]. Nilgiris, Palni hills [Nayar, 1996]. Thiruvananthapuram [Mohan & Henry, 1994]. Naduvattom, Kollam, Silent Valley [Mohan & Balakrishnan, 1991]. Idukki, Silent Valley, Nilgiris, Sairandhri [Manoharan, 1999]. Sairandhri [Sathish Kumar, 1999].
Distribution from Field Studies:	<u>Kerala</u> : Idukki, Silent Valley, Nilgiris [R. Ansari]
Extent of Occurrence (Sq. km.):	>20,000
Area of Occupancy (Sq. km.):	Unknown
Number of Subpopulations./location:	3/4. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.
Habitat status:	Unknown for the entire population. In Kerala Nilgiris decrease in habitat >20% in the last 10 years due to forest degradation and decrease in the quality of the habitat due to tree felling [R. Ansari].
Threats	
Threats to taxon:	Habitat loss and habitat fragmentation in Kerala Nilgiris [R. Ansari].
Trade:	Not in trade
Population	
Numbers/Generation time/Trend	Mature individuals in all populations <250. Decline unknown. Generation time 5 years [R. Ansari]
Trends:	Predicted decline <10% in the next 10 years due to habitat loss.
Recent Field Studies:	R. Ansari in Nilgiris, 1998, Plants of Western Ghats.
Data quality:	Assessed based indirect information and literature/herbarium studies.
Qualifier:	The Extent, mature individuals and population trends are inferred from literature.
Status	
IUCN Red List Criteria (1994):	ENDANGERED Criteria: D
IUCN Red List Criteria (2000):	ENDANGERED Criteria: D
CITES:	Appendix II Indian WL. (P) Act: Not listed
National Red Data Book:	Not listed International RDB: Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999
Known presence in Protected Areas:	Silent Valley National Park
Uncertainty	Assessed based on inference, precaution and consensus.
Recommendations	
Research:	Survey
Management:	Monitoring
Cultivation:	Cultivation/breeding
Other comments:	Wight described the species based on a collection from Pulney Mountains. Mass collection and transplantation results in the decline in the population.
Sources:	Abraham & Vatsala, 1981: 425; R. Ansari, 2000, Unpublished Biological Information Sheet; Henry <i>et al.</i> , 1989: 20; Hooker, 1886-1890: 682; Manilal & Sathish Kumar, 1984 39 (1): 121; Manoharan, 1999: 207; Mohan & Balakrishnan, 1991: 195; Mohan & Henry, 1994: 465; Nayar, 1996: 225; Santapau & Kapadia, 1966: 70-72; Sathish Kumar, 1999: 207; Sharma <i>et al.</i> , 1977: 142; Wight, 1851 5 (1): 3.t.1623.
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan.

Scientific name (author; date):	Oberonia sebastiana Shetty & Vivek., 1975 (1978)		
Habit:	Pendulous epiphytic herb		
Habitat:	Shola forests		
Niche/ elevation:	1000-2250 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Coimbatore [Henry <i>et al.</i> , 1989]. Anamudi to Devikolam [Nayar, 1996]. Anamudi, High Range, Umaiyamalai and Iyerpadi, Anamalais [Shetty & Vivekananthan, 1975 (1978)]. Idukki, Coimbatore [Rathakrishnan & Chitra, 1984]		
Distribution from Field Studies:	Anamalais, Chemunji, Thituvananthapuram (1995), Rajamala and Anamudi slopes (1994) [C. Sathish Kumar].		
Extent of Occurrence (Sq. km.):	101-5000		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	3/3. Fragmented. Continuing decline and extreme fluctuation in the number of locations or subpopulations unknown. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	The habitat is stable		
Threats			
Threats to taxon:	None		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Unknown		
Trends:	Unknown		
Recent Field Studies:	Chemunji, Bonaccord, Trivandrum [C. Sathish Kumar, 1995]		
Data quality:	Assessment is based on field studies, literature/herbarium studies.		
Qualifier:	Area and Extent estimated.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	D2
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	D2
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Eravikulam National Park, Indira Gandhi Wildlife Sanctuary, Peppara Wildlife Sanctuary		
Uncertainty	Assessment is based on inference and on the consensus of participants.		
Recommendations			
Research:	Survey, Life history studies and PHVA pending		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivated stocks exist at Gurukula Botanical Sanctuary, Wayanad. Initiate cultivation programme after 3 years		
Other comments:	Described by Shetty & Vivekananthan based on their collection from Anamudi slopes, Kerala and Barber's collection from Iyerpadi, Anamalai. Iyerpadi (Valparai) wherefrom C.A. Barber collected specimens in the early part of the 20 th century, is now a tea plantation.		
Sources:	Henry <i>et al.</i> , 1989: 20; Nayar, 1996: 225; Rathakrishnan & Chitra, 1984: 1005; Shetty & Vivekananthan, 1975 (1978): 157.		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarsi.		
Reviewers:	P.F. Solomons, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan, N. Raman, A. Durai, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Oberonia seidenfadeniana Joseph & Vajravelu, 1971 (1974)		
Habit:	Pendulous epiphytic herbs		
Habitat:	Evergreen forests		
Niche/ elevation:	500-1500m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Coimbatore [Henry <i>et al.</i> , 1989]. Anamalai [Nayar, 1996]. Thiruvananthapuram [Mohanani & Henry, 1994]. Coimbatore [Rathakrishnan & Chitra, 1984]		
Distribution from Field Studies:	None		
Extent of Occurrence (Sq. km.):	101-5,000		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations./location:	3/3. Fragmented. Continuing decline and extreme fluctuation in the number of locations unknown. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to human activities. Decrease in the quality of habitat due to human activities.		
Threats			
Threats to taxon:	Habitat loss, human interference		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	Assessment is based on Literature/herbarium studies.		
Qualifier:	The Area and Extent inferred from literature.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2bc
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B2a+b(ii,iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:			
Uncertainty	Assessed based on information through inference, precaution and group opinion.		
Recommendations			
Research:	Survey		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivated stocks not available. Initiate cultivation programme within 3 years		
Other comments:	Proposed on Joseph's collection from Anamalais.		
Sources:	Nayar, 1996: 225; Henry <i>et al.</i> , 1989: 20, 21; Mohanani & Henry, 1994: 466; Rathakrishnan & Chitra, 1984: 1005; Joseph & Vajravelu, 1971 (1974) 13 (3-4): 344.		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanani, S. Rajendran, S. Phatak, R. Thamilarasi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingallhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao.		

Scientific name (author: date): **Oberonia wightiana** Lindley var. **nilgirensis** R. Ansari, 1982.

Habit:

Habitat:

Niche/ elevation:

Distribution

Historical Distribution:

India

Current Global Distribution:

ENDEMIC to Western Ghats

Distribution from Literature:

Idukki, Nilgiri [R. Ganesan]

Distribution from Field Studies:

Extent of Occurrence (Sq. km.):

Area of Occupancy (Sq. km.):

Number of Subpopulations/location:

Habitat status:

Threats

Threats to taxon:

Trade:

Population

Numbers/Generation time/trend:

Population trend:

Recent Field Studies:

Data quality:

Qualifier:

Status

IUCN Red List Criteria (1994):

NOT EVALUATED

Criteria: --

IUCN Red List Criteria (2000):

NOT EVALUATED

Criteria: --

CITES:

Appendix II

Indian WL. (P) Act: Not listed

National Red Data Book:

Not listed

International RDB: Not listed

Other legislation:

Included in the Negative List of Exports (EXIM Policy), 1999.

Known presence in Protected Areas:

Uncertainty

Recommendations

Research:

Management:

Cultivation:

Other comments:

Sources:

Ansari 1982 3: 118; R. Ganesan, 2000, Unpublished Biological Information Sheet; Rathakrishnan & Chitra, 1984: 1005.

Compilers:

Reviewers:

Scientific name (author; date):	Oberonia wynaadensis Sivadasan & R.T. Balakr., 1989		
Synonym:	<i>Oberonia pakshipadalensis</i> Muktesh & Stephen, 1998		
Habit:	Epiphyte		
Habitat:	Evergreen forests		
Niche/ elevation:	600-900m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Thariode - Meppadi, Wayanad [Sivadasan & Balakrishnan, 1989]		
Distribution from Field Studies:	Pakshipadalam, Wayanad [Muktesh Kumar, 1998]		
Extent of Occurrence (Sq. km.):	<100		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	2 locations. Fragmented. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	No change in the habitat of the taxon. No change in the quality of the habitat of the taxon.		
Threats			
Threats to taxon:	None		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations are <250. Generation time perennial. Unknown		
Recent Field Studies:	Muktesh Kumar <i>et al.</i> , in Pakshipadalam, 1998, Vascular epiphytes of Nilgiri Biosphere Reserve.		
Data quality:	Assessed based on field studies, census/monitoring and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status and mature individuals observed.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	D
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Wayanad Wildlife Sanctuary		
Uncertainty	Assessed with confidence based on observations and some inference.		
Recommendations			
Research:	Survey, life history studies and PHVA		
Management:	Monitoring and cultivation/breeding		
Cultivation:	Cultivation recommended for research. Cultivated stocks not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Proposed by Sivadasan & Balakrishnan based on a collection made from Thariode, Wayanad.		
Sources:	Muktesh Kumar & Sequiera, 1998 12 (1-2): 31; Sivadasan & Balakrishnan, 1989 9 (4): 395.		
Compilers:	S.S.R. Bennet, J.L. Ellis, M. Mohanan, V. Sarojini Menon, C. Sathish Kumar, S. Seeni, B.V. Shetty, P.S. Udayan, U. Lakshminarayan		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingalhalli, N. Raman, C. Sathish Kumar, B. Arthur, T.A. Rao, K.G. Selvi.		

Scientific name (author; date):	Pachystoma hirsutum (Joseph & Vajravelu) Sathish & Manilal, 1987		
Synonyms:	<i>Eulophia hirsuta</i> Joseph & Vajravelu, 1975 (1978) <i>Ipea malabarica sensu</i> Abraham & Vatsala, 1981, non (Reichb. f.) Hook. f.		
Habit:	Terrestrial		
Habitat:	Grasslands		
Niche/ elevation:	Above 1000m		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Palghat, Kanyakumari [Rathakrishnan & Chitra, 1984]. Karasuryamalai grassy slopes [Vajravelu, 1990].		
Distribution from Field Studies:	<u>Kerala</u> : Palghat [M. Mohanan]. <u>Tamil Nadu</u> : Muthukuzhivayal, Kakachi, Kalakad-Mundanthurai Tiger Reserve [R. Ganesan, 2000]. Ponmudi, Agastyamalai, Kalakad-Mundanthurai Tiger Reserve [R. Gopalan]		
Extent of Occurrence (Sq. km.):	101-5,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations./location:	2/4. Fragmented. Continuing decline and fluctuation unknown.		
Habitat status:	No change in the habitat. No change in the quality of habitat.		
Threats			
Threats to taxon:	None		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Number of mature individuals in all populations unknown. Mature individuals in KMTR are <50 [R. Ganesan, 2000]		
Trends:	Unknown		
Recent Field Studies:	R. Ganesan in Kakachi (January 1994), Muthukuzhivayal (January 1995), Neyyar Wildlife Sanctuary (1995)		
Data quality:	Assessment is based on observation, informal sighting and literature/herbarium.		
Qualifier:	Area, Extent and habitat status estimated based on known locations.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	D2
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	D2
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve, Neyyar Wildlife Sanctuary		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists.		
Recommendations			
Research:	Survey and life history studies.		
Management:	Monitoring, cultivation/breeding.		
Cultivation:	Cultivation recommended for research and commercial/sustainability. Cultivated stocks not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Originally described by Joseph & Vajravelu based on latter's collection from Palghat. Abraham & Vatsala (1981) reported it from Ponmudi wrongly as <i>Ipea malabarica</i> (Reichb. f.) Hook. f. This species cannot be easily seen as it grows among grasses. Type locality in Palghat and Ponmudi are not protected. The habitats are very remote from human settlements and may not face immediate threats. The forests are declared as part of Kalakad-Mundanthurai Tiger Reserve. The yellow coloured flowers stands out of the lush green grasses [R. Ganesan]. Very few plants [<10] were found in the localities mentioned. It is a attractive orchid.		
very			
Sources:	Abraham & Vatsala, 1981: 269; R. Ganesan, 2000, Unpublished Biological Information Sheet; Joseph & Vajravelu, 1975 (1978) 17(1-4): 192; Rathakrishnan & Chitra, 1984: 1004; Sathish & Manilal, 1987 42(4): 942; Vajravelu, 1990: 479.		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarasi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, J.L. Ellis, T. Chhabra, M.B. Vishwanathan, A. Durai, N. Raman, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao		

Scientific name (author: date):	Paphiopedilum druryi (Beddome) Stein, 1892	
Synonym:	<i>Cypripedium druryi</i> Beddome, 1874	
Habit:	Terrestrial herb	
Habitat:	Montane grasslands	
Niche/ elevation:	Rocky slopes in association with the endemic grass <i>Zenkeria sebastinei</i> Henry. 1000-2000 m.	
Distribution		
Historical distribution:	India	
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)	
Distribution from Literature:	Agastyarmalai [Abraham & Vatsala, 1981; Sathish Kumar, 1991]. Kalakad, Travancore [Nayar & Sastry, 1987]. Agastyarmalai, Tirunelveli [Mohanam & Henry, 1994]. Travancore hills [Nayar, 1996]. Tirunelveli [Rathakrishnan & Chitra, 1984].	
Distribution from Field Studies:	<u>Tamil Nadu</u> : Kalakad, Agastyarmalai [R. Gopalan, March 1986, 87]. Agastyamala [S. Seeni, C. Sathish Kumar, 1993-1997].	
Extent of Occurrence (Sq. km.):	<100	
Area of Occupancy (Sq. km.):	<10	
Number of Subpopulations/location:	3/ 2. Fragmented. There is a continuing decline and extreme fluctuation in the number of locations or subpopulations. One subpopulation does not hold 95% or more of the total population.	
Habitat status:	Decrease in the habitat >20% in the last 10-20 years. >20% predicted decline in the next 10–20 years due to overexploitation, habitat destruction and wild collection. Decrease in the quality of habitat due to overexploitation.	
Threats		
Threats to taxon:	Disease, edaphic changes, harvest, habitat loss, overexploitation, trampling, habitat fragmentation, trade for market or medicine, drought, fire, landslides, reproductive problems and propagation difficulties resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and not ceased to be a threat.	
Trade:	The taxon is in domestic, commercial, international and ornamental trade. Whole plant and flowers collected. Scientific collections. Collection for cultivation of hybrids [S. Seeni, 2000]. Commercial and international trade result in perceived or inferred population decline.	
Population		
Numbers/Generation time/Trend	Mature individuals in all populations <250. The number of mature individuals declined in the past by >50% and likely to decline by <10% in the future.	
Trends:	The population size/numbers of the taxon declining at a rate of >10% in the last 10 years. Predicted decline >10% in the next 10 years due to habitat loss.	
Recent Field Studies:	V. Sarojini Menon, S. Seeni, S. William Decrusme and A. Ganga Prasad in Agastyamalai, Feb 1991- 92, 26-29 Jan 1993, 17 - 21 Mar 1993, 18 – 21 Oct 1993, A preliminary study on the habitat, distribution and population density of <i>Paphiopedilum druryi</i> . Agastyamala [C. Sathish Kumar, 1993-97].	
Data quality:	Assessed based on field studies, census/monitoring and literature/herbarium studies.	
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies and census/monitoring.	
Status		
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria: B1+2cde+3c
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria: B1a+b(iii,iv,v)+c(iii), 2a+b(iii,iv,v)+c(iii)
CITES:	Appendix II	Indian WL. (P) Act: Schedule VI
National Red Data Book:	Endangered [Nayar & Sastry, 1987]	International RDB: Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999	
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve.	
Uncertainty:	Assessed with 95% confidence based on evidence and on the consensus of the field biologists at the workshop.	
Recommendations		
Research:	Genetic research, life history studies, PHVA	
Management:	Monitoring, Cultivation/breeding	
Cultivation:	Cultivation is recommended for research. Cultivated stocks are available at TBGRI, Thiruvananthapuram and in National Orchidarium, BSI, Yercaud. Numbers in cultivation 4. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.	
Other comments:	Originally proposed by Beddome based on Col. Heber Drury's plant collected actually by Mrs. J.A. Broun from Agastyamala in 1865. Pilgrims visiting Agastyamalai spoil the habitat with camp fires. Habitat destruction and wild collection [S. Seeni, 2000]. After 1974, there was a rapid decline in the population in Agastyamalai. This species was recently rediscovered by R. Gopalan on the eastern side of Agastyamalai. Over exploitation due to its horticulture value. This species is collected for ornamental use and breeding programmes. This species is collected unsustainably for ornamental purpose. This species has been assessed as Critically Endangered in the CBSG CAMP workshop conducted by FRLHT due to 80% decline in the past 10 years and the area of occupancy [Only Kalakad and Agastyamalai] - P.S. Udayan. Flowering from clonal plants should be obtained for further propagation. Artificial cultivation does not produce flowers [R.Gopalan]. Medicinal uses of this species is well known- FRLHT database [P.S. Udayan]. Perennial herbs, sometimes reported to be an epiphyte on <i>Euphorbia</i>	

sp., sunny forest floors amidst grasses, sedges etc., often found in association with *Aerides maculosain* limey soil. About a dozen plants are reportedly grown in some private orchid nurseries in India. It is also known to be in cultivation in some botanical gardens or private nurseries around the world [Nayar & Sastry, 1987].

Sources:

Abraham & Vatsala, 1981: 192, 194; Beddome, 1874 1:23.t.112; R. Ganesan, 2000, Unpublished Biological Information Sheet; Henry *et al.*, 1989: 21; M. Mohanan, 2000, Unpublished Biological Information Sheet; Mohanan & Henry, 1994: 466; Nayar, 1996: 225; Nayar & Sastry, 1987: 264-265. Rathakrishnan & Chitra, 1984: 1005; Sathish Kumar, 1991: 213; Stein, 1892: 466; S. Seenii, 2000, Unpublished Biological Information Sheet.

Compilers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan.

Reviewers:

S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.

Scientific name (author: date):	Peristylus brachyphyllus A. Rich., 1841		
Synonym:	<i>Habenaria malabarica</i> Hook. f., 1890		
Habit:	Terrestrial		
Habitat:	Unknown		
Niche/ elevation:	Unknown		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Tamil Nadu)		
Distribution from Literature:	Canara to Nilgiris, Bababudan hills in Chikkamagalur district [Mathew, 1983]. Lakkadi, Nilgiri [Sharma, 1977]. Chikkamagalur, Nilgiris [Radhakrishnan & Chitra, 1984]		
Distribution from Field Studies:	None		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	Unknown		
Number of Subpopulations/location:	3 locations. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations.		
Habitat status:	Unknown.		
Threats			
Threats to taxon:	Unknown.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	Assessment is based on literature studies.		
Status			
IUCN Red List Criteria (1994):	DATA DEFICIENT	Criteria:	--
IUCN Red List Criteria (2000):	DATA DEFICIENT	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty	Assessment based only on literature.		
Recommendations			
Research:	Survey and taxonomic research		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Initiate cultivation programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Described by A. Richard (1841) based on Perrottet's collections from Kulhuty and Ootacamund. Habitat destruction due to fire or over grazing might have caused the decline of the species in its natural habitat. Collection, multiplication and reintroduction are recommended [Mohan & Balakrishna, 1991].		
Sources:	Hooker, 1890 6: 159; Mohan & Balakrishna, 1991; Radhakrishnan & Chitra, 1984: 1004; Richard, 1841 Ser 2.15: 70.t.2; Sharma <i>et al.</i> , 1977: 143.		
Compilers:	T.A. Rao, Sivabalakrishnan, P.F. Solomon, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan		
Reviewers:	R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarsi, A. Durai, N. Raman, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Mohan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty, K.G. Selvi.		

Scientific name (author: date):	Peristylus lancifolius A. Rich., 1841		
Synonym:	<i>Peristylus robustior</i> Wight, 1851		
Habit:	Terrestrial tuberous herb		
Habitat:	Open grasslands		
Niche/ elevation:	1000-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Tamil Nadu)		
Distribution from Literature:	Hassan [Sharma <i>et al.</i> , 1984]. Shiradhi ghat [Saldanha & Nicolson, 1976]. Nilgiri, Palni hills, Malabar, Travancore, Bababudan hills [Hooker, 1890-1894]. Waghai, Konkan: North west of Bhiwandi, hills south east of Tansa Lake, Badlapur, Neral, Uttara Kannada, Belgaum, Dharwar [Phatak, 1984]. Nadubetta, Nilgiris, Palni hills [Seidenfaden, 1999].		
Distribution from Field Studies:	None		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	5 locations. Fragmented.		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to loss of habitat. Decrease in the quality of the habitat due to habitat loss.		
Threats			
Threats to taxon:	Grazing, habitat loss, trampling and habitat fragmentation resulting in and may result in population decline. Their influence on the population structure well understood, not reversible and have not ceased.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	Assessment is based on literature studies only.		
Qualifier:	Area, Extent, habitat status and threats inferred from literature and the current situation of the habitat.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bc
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(ii,iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	None		
Uncertainty	Assessed based on precaution, inference and range of opinion.		
Recommendations			
Research:	Survey, Limiting factor research		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Described by A. Richard based on Perrottet's collection from Nilgiris. Though, Hook. f. gives distribution in Malabar and Travancore this species is yet to be recorded from Kerala. Medicinal value suspected.		
Sources:	Seidenfaden, 1999: 1213; Saldanha & Nicolson, 1976: 275, 841; Phatak, 1984: 134; Hooker, 1890-1894: 1160; Richard, 1841 Ser. 2 15: 69.t.2c; Wight, 1851 5(1): 12.t.1699		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarasi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingallhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date):	Peristylus stocksii (Hook. f.) Kranzlin, 1898		
Synonym:	<i>Habenaria stocksii</i> Hook. f., 1890		
Habit:	Unknown		
Habitat:	Moist deciduous forest		
Niche/ elevation:	Up to 500m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Gujarat, Maharashtra, Goa, Karnataka & Tamil Nadu)		
Distribution from Literature:	Near Mukurthi dam in Nilgiris [Abraham & Vatsala, 1981]. Nilgiris [Henry <i>et al.</i> , 1989]. Konkan, Dronagiri, Neral below Matheran [Cooke, 1958]. Konkan [Nayar, 1996]; Mysore, Utara Kannada [Sharma <i>et al.</i> , 1984]. Waghai, Igatpuri, Khandala, Lonavla, Mahabaleshwar, Bhimashankar, Uttara Kannada - Yellapur [Phatak, 1984]. Mukurthi dam, Nilgiri, Biligiri Rangan hills [Mohanani & Balakrishna, 1991]. Ahmednagar, Amravati, Raigad, Ratnagiri, Satara, Sindhudurg [Lakshminarasimhan, 1996]. Waghai, Dangs [Amin, 1978]		
From Field Studies:	<u>Goa</u> : [S. Phatak, 1990]. <u>Karnataka</u> : Karwar [S. Phatak, 1988].		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	Many. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10 years due to loss of habitat. There is decrease in the quality of the habitat due to thinning of forests.		
Threats			
Threats to taxon:	Grazing, habitat loss pollution [future] and habitat fragmentation resulting in and may result in population decline. Damming was a threat in the past and pollution considered to be a threat in the future. The influence on the population structure well understood, not reversible and have not ceased.		
Trade:	Local trade for its roots which are of medicinal value.		
Population			
Numbers/Generation time/Trend	Not known. Generation time 1 year. Mature individuals declining.		
Trends:	The population size of the taxon declining at a rate of >10% in the last 10 years.		
Recent Field Studies:	S. Phatak in Karwar, 1994, Ecological status studies.		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent are estimated based on the known locations. The habitat status, threats, mature individuals and population trends are observed and inferred.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcde
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Bhimashankar Wildlife Sanctuary, Biligiri Rangaswamy Temple Wildlife Sanctuary, Mukurthi National Park		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists at the workshop. It was also on a range of opinion.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Cultivation is recommended for research. Cultivated stocks not available. Some propagation techniques known for taxon.		
Other comments:	Originally proposed by Hook. f. based on collections by Stocks, Ritchie and others from Concan and Mysore. Due to the construction of the bridge across Kali river the habitat was destroyed. A hill was cut to form a road. The availability of shady areas have decreased for this shade-loving orchid to grow. This species may have medicinal value. The details about trade is not thoroughly understood.		
Sources:	Abraham & Vatsala, 1981: 243, 246; Amin, 1978: 661-662; Cooke, 1958: 215; Henry <i>et al.</i> , 1989: 23; Hooker, 1890 6: 158; Kranzlin, 1898 1: 513; Lakshminarasimhan, 1996: 58; Mohanani & Balakrishnan, 1991; Nayar, 1996: 226; Phatak, 1984: 130; Sharma <i>et al.</i> , 1984: 275.		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanani, S. Rajendran, S. Phatak, R. Thamilarasi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingallhalli, N. Raman, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarasimhan, K.G. Selvi.		

Scientific name (author: date):	Rhytionanthes nodosum (Rolfe) Garay <i>et al.</i> , 1994		
Synonyms:	<i>Cirrhopetalum nodosum</i> Rolfe, 1895 <i>Bulbophyllum nodosum</i> (Rolfe) J.J. Smith, 1912		
Habit:	Epiphytic herb		
Habitat:	Evergreen forest		
Niche/ elevation:	Unknown		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Tamil Nadu)		
Distribution from Literature:	Nilgiri [Henry <i>et al.</i> , 1989; Nayar, 1996]. Coorg, Nilgiri [Rathakrishnan & Chitra, 1984]. Nilgiri Biosphere Reserve [Mohan and Balakrishnan, 1991]. Nilgiris [Sharma <i>et al.</i> , 1977]		
Distribution from Field Studies:	None		
Extent of occurrence (Sq. km.):	Unknown		
Area of occupancy (Sq. km.):	Unknown		
Number of Subpopulations/location:	Unknown		
Habitat status:	Unknown		
Threats			
Threats to taxon:	Unknown		
Trade:	Unknown		
Population			
Numbers/Generation time/ Trends:	Unknown		
Trends:	Unknown		
Recent Field Studies:	C. Sathish Kumar since 1990 has visited the site where it was first described from, but was not able to locate it.		
Data quality:	Assessment based on field studies.		
Qualifier:	Observations		
Status			
IUCN RED LIST CRITERIA (1994):	EXTINCT	Criteria:	--
IUCN RED LIST CRITERIA (2000):	EXTINCT	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty	Assessed with 95% confidence based on evidence and consensus of the field biologists at the workshop		
Recommendations			
Research:	Survey, life history studies, PHVA pending.		
Management:	Monitoring.		
Cultivation:	Initiate cultivation within 3 years if rediscovered.		
Other comments:	Originally described by Rolfe based on O'Brien's collections in 1894 from Nilgiris. Mohan and Balakrishnan's report (1991) of its occurrence in Coorg is erroneous. This species is feared extinct, because subsequent studies have not indicated its presence [Sathish Kumar, 1991]. Extensive survey is required to relocate the species in wild. Since the species was rare and was not found in the locations of earlier sightings it is feared extinct.		
Sources:	Garay <i>et al.</i> , 1994 14 (6): 639; Henry <i>et al.</i> , 1989; Mohan and Balakrishnan, 1991: 190; Nayar, 1996: 224; Rathakrishnan & Chitra, 1984: 1003; Rolfe, 1895: 35; Sathish Kumar, 1991: 211; Sharma <i>et al.</i> , 1977: 139; Smith, 1912.		
Compilers:	T.A. Rao, K.Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan		
Reviewers:	A. Durai, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, T. Chhabra, S.S.R. Bennet, B.A. Daniel, M. Mohan, S. Rajendran, S. Phatak, R. Thamilarasi, J.L. Ellis, R. Ingallhalli, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty.		

Scientific name (author; date):	Rhytionanthes rheedei (Manilal & Sathish) Garay <i>et al.</i> , 1994		
Synonym:	<i>Bulbopyllum rheedei</i> Manilal & Sathish, 1991		
Habit:	Epiphytic herbs		
Habitat:	Riverine forests		
Niche/ elevation:	50-150m		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Kerala)		
Distribution from Literature:	Shertallai, Alappuzha district; South Kanara, Karkal, Kallar, Palode, Trivandrum district		
Distribution from Field Studies:	<u>Kerala</u> : Shertallai, Kallar, Palode [C. Sathish Kumar]		
Extent of Occurrence (Sq. km.):	101-5,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	4/4. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Declining and decrease in quality of habitat.		
Threats			
Threats to taxon:	Habitat loss. The 1992 landslide and flood damaged the entire population in Kallar, Trivandrum		
Trade:	Not in trade		
Population			
Numbers/Generation time/trend:	Mature individuals in all populations <500.		
Population trend:	Declining		
Recent Field Studies:	C. Sathish Kumar in TBGRI campus, Palode, currently.		
Data quality:	Field studies, informal sightings		
Qualifier:	Area and Extent estimated and habitat status observed. Population estimated based on observation.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcd
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii,iv), B2a+b(ii,iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty	Assessment based on precaution due to changes expected in habitat. Assessment is exclusive to the below listed compilers and reviewer.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Cultivated stocks exist at TBGRI and Gurukula Botanical Sanctuary, Wayanad. Initiate cultivation within 3 years.		
Other comments:	Described by Manilal & Sathish Kumar based on the latter's collection from TBGRI campus. This species was originally described and illustrated by Van Rheede in 1692 and was subsequently forgotten.		
Sources:	Garay <i>et al.</i> , 1994 14 (6): 639; Manilal & Sathish Kumar, 1991 1 : 55.		
Compilers:	C. Sathish Kumar		
Reviewers:	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author: date):	Seidenfadeniella rosea (Wight) Sathish, 1994		
Synonym:	<i>Sarcanthus roseus</i> Wight, 1851 var. <i>nilagirica</i> Fyson, 1915		
Habit:	Pendulous epiphytic herb		
Habitat:	Evergreen forests		
Niche/ elevation:	On tree trunks. 1000-1500 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiris, North of Palghat gap [Seidenfaden, 1999]. Sispara, Silent Valley [Manoharan, 1999; Sathish Kumar, 1999].		
Distribution from Field Studies:	<u>Kerala</u> : Pakshipadalam, Wayanad [Sathish Kumar, 1988]. <u>Tamil Nadu</u> : Anamalais [R. Gopalan, 1975]. Nilgiris [M. Mohanan, 1984].		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	3 locations. Fragmented.		
Habitat status:	Decrease in the habitat <20% in the last 25 years. <20% predicted decline in the next 5 years due to loss of habitat and developmental projects.		
Threats			
Threats to taxon:	Habitat loss resulting in and may result in population decline. The influence of threat on the population structure well understood, not reversible and has not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	Unknown		
Recent Field Studies:	C. Sathish Kumar in Mukurthi, Nilgiris (1990), Pakshipadalam, Wayanad (1988).		
Data quality:	Assessed based on literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on the known locations. The habitat status and threats inferred.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2c
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Mukurthi National Park, Silent Valley National Park		
Uncertainty	Assessment is based on consensus from a range of opinion.		
Recommendations			
Research:	Survey, PHVA pending		
Management:	Monitoring and cultivation/breeding		
Cultivation:	Cultivation is recommended for research and commercial/sustainability. Cultivated stocks are available at National Orchidarium Yercaud [BSI] and Gurukula Botanical Sanctuary, Wayanad. Numbers in cultivation not known. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Propagation techniques not known at all.		
Other comments:	Originally described by Wight based on his collection from the Nilgiris. Most of the population occurs in Protected Areas, so there is no immediate threat to the species.		
Sources:	Fyson, 1915 1: 396; Manoharan, 1999: 210; Sathish Kumar, 1994: 46; Sathish Kumar, 1999: 210; Seidenfaden, 1999: 1257, 1258; Wight, 1851 5(1): 10.t.1685;		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarsi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingallhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Seidenfia crenulata (Ridley) Szlachetko, 1995		
Synonym:	<i>Microstylis crenulata</i> Ridley, 1888 <i>Malaxis crenulata</i> (Ridley) Kuntze, 1891		
Habit:	Terrestrial herb		
Habitat:	Rocky outcrops in grasslands		
Niche/ elevation:	Grows in association with <i>Habenaria rariflora</i> A. Rich. 1800-2000m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Western Nilgiri [Hooker, 1886-1890]. Nilgiri [Nayar, 1996].		
Distribution from Field Studies:	<u>Kerala</u> : Munnar in Idukki District [W.D. Theuerkauf, 1995] <u>Tamil Nadu</u> : Pykara, Nilgiris [W.D. Theuerkauf, 1995]		
Extent of Occurrence (Sq. km.):	<20,000		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	2/2. Fragmented.		
Habitat status:	Decreasing due to human activities, tourism and developmental activities.		
Threats			
Threats to taxon:	Human activities, tourism and developmental activities, but not in protected area.		
Trade:	Not known		
Population			
Numbers/Generation time/Trend:	<50 individuals		
Trends:	Unknown		
Recent Field Studies:	W.D. Theuerkauf in Munnar, Pykara, 1995, Conservation of endemic plants of Western Ghats.		
Data quality:	General field study		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status inferred from developmental activities in the area and mature individuals estimated.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2c; D
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B2a+b(iii); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Eravikulam National Park		
Uncertainty	Exclusive and subjective assessment based on more recent information available outside of the workshop.		
Recommendations			
Research:	Survey		
Management:	Habitat management		
Cultivation:	Cultivated stocks exist at Gurukula Botanical Sanctuary, Wayanad. Initiate programme within 3 years.		
Other comments:	Originally described by Ridley based on Beddome's collection from the Nilgiris. It has been now rediscovered by W.D. Theuerkauf (pers. comm.) from Munnar and Nilgiris.		
Sources:	Hooker, 1886-1890: 691; Kuntze, 1891 2: 673; Nayar, 1996: 225; Rao, 1998: 212; Ridley, 1888: 346; Szlachetko 1995: 122.		
Compilers:	A.Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingallhalli, C. Sathish Kumar, B. Arthur, T.A. Rao, K.G. Selvi, W.D. Theuerkauf.		
Note:	The workshop participants assessed the species as extinct. However, W.D. Theuerkauf of Gurukula Botanical Sanctuary, Wayanad provided information on the species' existence in Pykara and Munnar based on which this category has been assigned.		

Scientific name (author: date):	Seidenfia intermedia (A.Rich.) Szlach., 1995		
Synonym:	<i>Liparis intermedia</i> A. Rich., 1841 <i>Malaxis intermedia</i> (A. Rich.) Seidenf. 1978		
Habit:	Terrestrial herb		
Habitat:	Shola forests and grasslands		
Niche/ elevation:	ca. 1800 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiris [Joseph, 1982]. Chikkamagalur, Mysore, Madurai, Nilgiris [Rathakrishnan & Chitra, 1984]		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Mukurthi National Park [P.F. Solomons, 1998, 99]		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	2/ca.10. Fragmented. All individuals not in one population and one subpopulation does not hold 95% or more of the total population		
Habitat status:	Decrease in the area of habitat due to habitat loss. Decrease in quality due to trampling.		
Threats			
Threats to taxon:	Habitat loss, human interference and trampling.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations <250. 1 year.		
Trends:	Unknown		
Recent Field Studies:	P.F. Solomons in Mukurthi National Park, 1999-2000, field studies.		
Data quality:	Assessed based on field studies.		
Qualifier:	The Area and Extent are estimated based on known locations. The habitat status, threats and mature individuals are observed.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bc
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(ii,iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Mukurthi National Park		
Uncertainty	Assessed with 95% confidence based on evidence, some precaution, subjective and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey and life history studies		
Management:	Monitoring and cultivation/breeding		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Information on propagation techniques not available with this group of compilers.		
Other comments:	Originally proposed by A. Richard based on Perottet's collection from Nilgiris. This species is also reported from Mysore, Madurai, Nilgiris. It is also said to be in Kerala. Mukurthi National Park is a protected area therefore there is no change in habitat. Trampling by wild animals.		
Sources:	Szlach., 1995: 122; Seidenfaden, 1978: 99; Richard, 1841 ser.2 50: 17; Joseph, 1982: 144		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, T.A. Rao, U. Lakshminarayan.		

Scientific name (author; date):	Seidenfia stocksii (Hook. f.) Szlach., 1995		
Synonyms:	<i>Seidenfia intermedia</i> (A. Rich.) Szlach., 1995 <i>Liparis intermedia</i> A. Rich., 1841 <i>Microstylis stocksii</i> Hook. f. 1890 <i>Malaxis stocksii</i> (Hook. f.) Kuntze, 1891		
Habit:	Terrestrial herb		
Habitat:	Evergreen forests		
Niche/ elevation:	1400-1900m		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiris [Joseph, 1987]. Bababudan hills, Kodaikanal [Fyson]		
Distribution from Field Studies:			
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	5/5. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Declining due to human interference and change in quality of habitat.		
Threats			
Threats to taxon:	Habitat loss, human interference		
Trade:	Not in trade		
Population			
Numbers/Generation time/trend:	<250 mature individuals in all populations. Generation time – perennial.		
Population trend:	Declining.		
Recent Field Studies:	None		
Data quality:	Field studies, informal sightings, literature/herbarium studies		
Qualifier:	Area and Extent estimated and habitat status observed. Population estimated based on observation.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcd; D
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(ii,iii,iv); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty	Assessment based on precaution due to changes expected in habitat. Assessment is exclusive to the below listed compilers and reviewer.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Cultivated stocks exist at Gurukula Botanical Sanctuary, Wayanad		
Other comments:	Originally described by A. Richard based on Perrottet's collection from Nilgiris		
Sources:	Hooker, 1890 5: 691; Joseph (1987); Kuntze, 1891 2: 673; Richard, 1841 ser. 2, 15: 17; Szlachetko 1995 122: 1995		
Compilers:	C. Sathish Kumar		
Reviewers:	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author: date):	Smithsonia maculata (Dalz.) Saldanha, C.J., 1974		
Synonyms:	<i>Micropera maculata</i> Dalz., 1851 <i>Saccolabium maculatum</i> (Dalz.) Hook. f., 1890 <i>Gastrochilus maculatus</i> (Dalz.) Kuntze, 1891 <i>Loxoma maculatum</i> (Dalz.) Garay, 1972		
Habit:	Epiphytic herb		
Habitat:	Riverine forests		
Niche/ elevation:	On lateral branches. 500-800 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Hassan, [Saldanha, 1974]. Shirdi Ghats [Saldanha & Nicolson, 1976]. Chandanathode [Ramachandran & Nair, 1988]		
Distribution from Field Studies:	<u>Kerala</u> : Thiruvananthapuram [Sathish Kumar, 1990s]		
Extent of Occurrence (Sq. km.):	101-5000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations./location:	5/5. Fragmented. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Change in quality of habitat due to human interference in some areas.		
Threats			
Threats to taxon:	Habitat loss is resulting in and may result in population decline.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	<500 in all populations.		
Trends:	Declining.		
Recent Field Studies:	Attayar, near Agastyamalai [Sathish Kumar, 1990s]		
Data quality:	Field studies, informal sightings and Literature/herbarium studies.		
Qualifier:	Area and Extent estimated on known locations, number of mature individuals estimated through observations.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2c
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Neyyar Wildlife Sanctuary		
Uncertainty	Subjective assessment based on exclusive field study but with the consensus of the participants.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Not recommended		
Other comments:	Ths was originally described by Dalzell based on his collection from Tulkut Ghaut.		
Sources:	Dalzell, 1851 3 : 282; Garay, 1972 23 (4): 184; Hooker, 1890 6 : 64; Kuntze, 1891 2 : 661; Ramachandran & Nair, 1988: 463; Saldanha, 1974 71 : 74; Saldanha & Nicolson, 1976: 850		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarasi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingalthalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Smithsonia straminea Saldanha, C.J., 1974		
Habit:	Epiphytic herb		
Habitat:	Evergreen forests		
Niche/ elevation:	600-900 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Kerala)		
Distribution from Literature:	Hassan [Sharma <i>et al</i> , 1984]. Mukkali [Vajrav elu, 1990]. Chandanathode [Ramachandran & Nair, 1988]. Hassan, Cannanore, Palghat [Rathakrishnan & Chitra, 1984]		
Distribution from Field Studies:	<u>Kerala</u> : Palode, Thiruvananthapuram [C. Sathish Kumar].		
Extent of Occurrence (Sq. km.):	101-5,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	4/4. Fragmented. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Declining habitat and decrease in quality.		
Threats			
Threats to taxon:	Habitat loss.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	<500 mature individuals.		
Trends:	Declining.		
Recent Field Studies:	Palode, TBGRI Campus [Sathish Kumar, 1990s]		
Data quality:	General field studies, informal sighting, Literature/herbarium studies.		
Qualifier:	Area and Extent estimated and mature individuals inferred from field observation.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2c
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	None		
Uncertainty	Information not available.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Not recommended		
Other comments:	Described by Saldanha based on his collection from Hassan District, Karnataka.		
Sources:	Ramachandran & Nair, 1988: 463; Rathakrishnan & Chitra, 1984: 1005; Saldanha, 1974 71 : 74; Saldanha & Nicolson, 1976: 850; Sharma <i>et al</i> , 1984: 277; Vajravelu, 1990: 493;		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarasi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date):	Smithsonia viridiflora (Dalz.) Saldanha, C.J., 1974		
Synonyms:	<i>Micropera viridiflora</i> Dalz., 1851 <i>Sarcochilus dalzellianus</i> Santapau, 1949 <i>Aerides dalzellianus</i> (Santapau) Garay, 1972		
Habit:	Epiphytic herb		
Habitat:	Evergreen forests		
Niche/ elevation:	600-800m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Kerala)		
Distribution from Literature:	Hassan, Kemphole, in lower Shirdhi Ghats [Saldanha & Nicolson, 1976]		
Distribution from Field Studies:	<u>Kerala</u> : Moozhiyar, Neyyar [C. Sathish Kumar]		
Extent of Occurrence (Sq. km.):	101-5000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	4/4. Fragmented. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Presently no change, but predicted decline due to human interference.		
Threats			
Threats to taxon:	Human interference (predicted).		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	<250 mature individuals in all populations. Declining.		
Recent Field Studies:	Moozhiyar, Athirumala [C. Sathish Kumar, A case study on orchids]		
Data quality:	Literature/herbarium, general field studies.		
Qualifier:	Area and Extent estimated and mature individuals inferred from field observation.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2c; D
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(iii), 2a+b(iii); D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Neyyar Wildlife Sanctuary		
Uncertainty	Consensus and precaution.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Cultivated stocks exist at Gurukula Botanical Sanctuary and TBGRI, Palode.		
Other comments:	Originally described by Dalzell based on a collection from South Concan in Western Ghats.		
Sources:	Dalzell, 1851; Garay, 1972; Saldanha & Nicolson, 1976: 850; Saldanha, 1974; Santapau, 1949.		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarsi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date): **Spiranthes sinensis** (Pers.) Ames var. **wightiana** Lindley, 1852

Habit:

Habitat:

Niche/ elevation: 2225 m. [B.V. Shetty]

Distribution

Historical Distribution:

India

Current Global Distribution:

ENDEMIC to Western Ghats

Distribution from Literature:

Nilgiri [Sharma, 1977], [RG]; [Mohan & Balakrishna, 1991]

Distribution from Field Studies:

Bangitappal to Sispara [B.V. Shetty, 1970]

Extent of Occurrence (Sq. km.):

Area of Occupancy (Sq. km.):

Number of Subpopulations/location:

Habitat status:

Threats

Threats to taxon:

Trade:

Population

Numbers/Generation time/trend:

Population trend:

Recent Field Studies:

Data quality:

Qualifier:

Status

IUCN Red List Criteria (1994):

NOT EVALUATED

Criteria: --

IUCN Red List Criteria (2000):

NOT EVALUATED

Criteria: --

CITES:

Appendix II

Indian WL. (P) Act: Not listed

National Red Data Book:

Not listed

International RDB: Not listed

Other legislation:

Included in the Negative List of Exports (EXIM Policy), 1999.

Known presence in Protected Areas:

Uncertainty

Recommendations

Research:

Management:

Cultivation:

Other comments:

Except for a single specimen collected by B.V. Shetty this plant is represented in MH only by very old collections of Schmidt in 1878 and Beddome in 1804. Another specimen from Bangitappal had been cited by Joseph but the specimen was not traceable [Mohan & Balakrishnan, 1991].

Sources:

Lindley, 1852; Mohan & Balakrishnan, 1991; Sharma, 1977

Compilers:

Reviewers:

Scientific name (author: date):	Taeniophyllum scaberulum Hook. f., 1890		
Habit:	Epiphytic herb		
Habitat:	Evergreen forests		
Niche/ elevation:	Moss-clad twigs. 800-900m		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala)		
Distribution from Literature:	Travancore [Nayar, 1996]		
Distribution from Field Studies:	<u>Kerala</u> : Periyar Tiger Reserve, Idukki [Rajesh, <i>et al.</i> , 1997]		
Extent of Occurrence (Sq. km.):	<100		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations./location:	1		
Habitat status:	No change in habitat.		
Threats			
Threats to taxon:	Unknown		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations are <50. Generation time – perennial.		
Trends:	Unknown		
Recent Field Studies:	N. Sasidharan in Periyar Tiger Reserve, 1997, Floristic studies in Periyar Tiger Reserve.		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated. Habitat status and mature individuals inferred from the current habitat status.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	D
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Periyar Wildlife Sanctuary		
Uncertainty	Assessed on subjective opinion, precaution and consensus.		
Recommendations			
Research:	Survey, Life history studies, limiting factor research, PHVA pending, physiological (photosynthetic) studies.		
Management:	Monitoring and cultivation/breeding		
Cultivation:	Cultivation recommended for research, species recovery and preservation of live genome. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Propagation techniques not known at all.		
Other comments:	This species was proposed based on Rev. E. Johnson's collection made in 1854 from 'Cottayam', rediscovered recently from Periyar Tiger Reserve by Rajesh <i>et al.</i> (1997).		
Sources:	Hooker, 1890 6: 77; Nayar, 1996: 226		
Compilers:	S.S.R. Bennet, J.L. Ellis, M. Mohanan, V. Sarojini Menon, C. Sathish Kumar, S. Seeni, B.V. Shetty, P.S. Udayan, U. Lakshminarayan.		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, K.G. Selvi.		

Scientific name (author; date):	Thrixspermum musciflorum A.S. Rao & Joseph var. nilagiricum Joseph & Vajravelu, 1981		
Habit:	Epiphytic herb		
Habitat:	Evergreen and moist deciduous forests.		
Niche/ elevation:	700-1000m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Tamil Nadu)		
Distribution from Literature:	Coimbatore, Nilgiri [Henry <i>et al.</i> , 1989]. Mannar and nearby areas [Mohanam & Balakrishnan, 1991]. Nilgiris [Nayar, 1996]. Nilgiris [Rathakrishnan & Chitra, 1984]		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Coimbatore [R. Gopalan, M. Mohanam, 1975]. Bakasuramalai, Coimbatore [E. Vajravelu].		
Extent of Occurrence (Sq. km.):	<100		
Area of Occupancy (Sq. km.):	10-100.		
Number of Subpopulations/location:	>1/1.		
Habitat status:	No change in the habitat of the taxon.		
Threats			
Threats to taxon:	Unknown		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <50. The number of mature individuals not declined in the past and not likely to decline in the future.		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	Assessed based on literature/herbarium and indirect information.		
Qualifier:	Area and Extent and population numbers area inferred from literature and herbarium.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	D
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	D
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	None		
Uncertainty	Assessed based on subjective opinion.		
Recommendations			
Research:	Survey		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivated stocks not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Information on propagation techniques not available with this group of compilers.		
Other comments:	This variety was described by Joseph & Vajravelu based on the latter's collection from Nilgiris. Bakkasura Malai is uninhabited and is inaccessible. It is considered safe from all kinds of threats, mainly human interference.		
Sources:	Henry <i>et al.</i> , 1989: 25; Joseph & Vajravelu, 1981 107 (10): 648; Mohanam & Balakrishnan, 1991: 191; Nayar, 1996: 226; Rathakrishnan & Chitra, 1984: 1005		
Compilers:	S.S.R. Bennet, B. A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanam, S. Rajendran, S. Phatak, R. Thamilarasi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, A. Durai, N. Raman, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, T.A. Rao, B. Arthur, B.V. Shetty, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Trias bonaccordensis Sathish, 1989		
Habit:	Epiphytic herb		
Habitat:	Evergreen to semi evergreen forests.		
Niche/ elevation:	950-1050m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Kerala & Tamil Nadu)		
Distribution from Literature:	Bonaccord in Thiruvananthapuram [Sathish Kumar, 1989]		
Distribution from Field Studies:	<u>Kerala</u> : Agastyamalai [M. Mohanan, 1979]. <u>Tamil Nadu</u> : Kalakad-Mundanthurai Tiger Reserve [C. Sathish Kumar, 2000]		
Extent of Occurrence (Sq. km.):	<100		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	3-4 locations. Fragmented		
Habitat status:	No change in the habitat of the taxon. No change in the quality of the habitat.		
Threats			
Threats to taxon:	Unknown		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	Unknown		
Recent Field Studies:	C. Sathish Kumar in Agastyamala, Kalakad-Mundanthurai Tiger Reserve, 1995.		
Data quality:	Assessed based on field study and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status observed.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	D2
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	D2
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve, Neyyar Wildlife Sanctuary, Peppara Wildlife Sanctuary		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey, life history studies		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivation is recommended for research and reintroduction. There is no coordinated species management programme for this species and one is not recommended. Propagation techniques not known at all.		
Other comments:	This species was described by Sathish Kumar based on his collection from Bonccord, Thiruvananthapuram. It grows epiphytically on many trees especially on <i>Garcinia morella</i> (Gaertn.) Desr. and <i>Mesua ferea</i> L. (Clusiaceae), <i>Gluta travancorica</i> Beddome (Anacardiaceae) and <i>Careya arborea</i> Roxb. (Lecythidaceae) [S23]. This species was collected by M. Mohanan in 1979. It was described as a new species by Sathish Kumar based on his later collections from Agastyamalai.		
Sources:	Mohanan & Henry, 1994: 471; Sathish Kumar, 1989 34 : 105.		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarasi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date):	Trias stocksii Benth. ex Hook. f., 1890		
Habit:	Epiphytic or lithophytic herb		
Habitat:	Evergreen and moist deciduous forests.		
Niche/ elevation:	500-1400 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Canara, South Konkan, Ponnudi, Attapadi, Chandanathode [Abraham & Vatsala, 1981]. Castle Rock, Siddhapur, Anmode, Jog [Santapau & Kapadia, 1966; Subramanian, 1995]. Coimbatore, Kanyakumari, Tirunelveli [Henry <i>et al.</i> , 1989]. Chembotti in Silent Valley [Vajravelu, 1990; Manilal, 1988]. Canara, Konkan [Hooker, 1886-1890]. Konkan, Uttara Kannada, Shimoga [Nayar, 1996]. Bagamandala, Kukkable, Shanthali and Shuntiguthi, Kodagu [Keshavmurthy & Yoganarasimhan, 1990]. Ponnudi, Dakshina Kannada, throughout Western Ghats [Mohanan & Balakrishnan, 1991]. Valiaparathode [Manoharan, 1999]. Chembotti, Valiaparathode in Silent Valley [Sathish Kumar, 1999]. Konkan [Lakshminarasimhan, 1996].		
Distribution from Field Studies:	<u>Karnataka</u> : Hassan [Saldanha], Belgaum, Castle Rock [S. Phatak, 1978]. Kudremukh Medicinal Plants Conservation Area, Talakaveri [P.S. Udayan <i>et al.</i> , 1998]. Kodagu, Madikeri, Sampagii, Somwarpet, Bhagamandala, Shaniwarsanthe [T.A. Rao, 1996-98]. <u>Tamil Nadu</u> : Ponnudi [M. Mohanan, 1978]. Mount Stuart, Anamalai Hills [K. Sivabalakrishnan <i>et al.</i> , 1997].		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	<10		
Number of Subpopulations/location:	15/9. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to loss of habitat, plantation and road construction. There is decrease in the quality of the habitat due to human activities.		
Threats			
Threats to taxon:	Climate, habitat loss, habitat fragmentation, grazing and harvest are resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations >2,500. The number of mature individuals declined in the past by 10% and likely to decline by <10% in the future. Generation time perennial.		
Trends:	The population size/numbers of the taxon declining at a rate of <10% in the last 10 years and <10% predicted decline in the next 10 years due to habitat loss.		
Recent Field Studies:	S. Phatak in Anmode, 1998, Floristic study. T.A. Rao in Kodagu, 1996 - 98, Conservation of Wild Orchids of Kodagu. P. S. Udayan <i>et al.</i> , in Kudremukh Medicinal Plants Conservation Area, 1998, Floristics. K. Sivabalakrishnan in Mt. Stuart, Anamalai Hills, 1997, <i>Ex situ</i> conservation studies. C. Sathish Kumar in Silent Valley, 1995.		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on the known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies.		
Status			
IUCN Red List Criteria (1994):	CRITICALLY ENDANGERED	Criteria:	B1+2bcde
IUCN Red List Criteria (2000):	CRITICALLY ENDANGERED	Criteria:	B2a+b(ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Kudremukh National Park, Silent Valley National Park.		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Taxonomic research and life history studies		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivation is recommended for research. Cultivated stocks available at National Orchidarium Yercaud, Kaveri Nisargadhama, Kodagu and Carmel College, Goa. Numbers in cultivation <10. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Described by Hook. f. based on Stocks and Law collections from the Deccan. This species is present in easily accessible, localised areas. The reported occurrence of this species in Arunachal Pradesh is based on a misidentification Saldanha and Nicolson 1976.		
Sources:	Abraham & Vatsala, 1981: 346; Henry <i>et al.</i> , 1989: 25; Hooker, 1890 5: 781; Keshavmurthy & Yoganarasimhan, 1990: 457; Lakshminarasimhan, 1996: 62; Manilal, 1988: 306; Manoharan, 1999: 211;		

Mohanán & Balakrishnan, 1991; Nayar, 1996: 226; Saldanha & Nicolson, 1976: 853; Santapau & Kapadia, 1966: 201 - 202; Sathish Kumar, 1999: 67, 112; Sathish Kumar & Manilal, 1994: 86; Subramanian, 1995: 393, 394; Vajravelu, 1990: 494.

Compilers:

R. Gopalan, M. Mohanan, S. Phatak.

Reviewers:

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Scientific name (author; date):	Vanda wightii Reichb. f., 1861		
Habit:	Epiphytic herb		
Habitat:	Unknown		
Niche/ elevation:	2100m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka & Tamil Nadu)		
Distribution from Literature:	Nilgiris [Henry <i>et al.</i> , 1989; Hooker, 1890-1894; Joseph, 1982; Sharma, 1977; Nayar & Sastry, 1987].		
Distribution from Field Studies:	<u>Karnataka</u> : Kodagu [Sathish Kumar]		
Extent of Occurrence (Sq. km.):	<100		
Area of Occupancy (Sq. km.):	<100		
Number of Subpopulations/location:	1		
Habitat status:	Unknown		
Threats			
Threats to taxon:	Unknown		
Trade:	Not known		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	Unknown		
Recent Field Studies:	None		
Data quality:	Field studies, inventories		
Qualifier:	Observation		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	D2
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	D2
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Possibly Extinct [Nayar & Sastry, 1987]	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	None		
Uncertainty	Consensus and precaution.		
Recommendations			
Research:	Survey		
Management:	Not recommended		
Cultivation:	Not recommended		
Other comments:	A very little-known species, originally reported from Nilgiris. It was proposed by Heinrich Gustav Reichenbach based on Wight's collection. The only collection known so far is of Wight from Nilgiris. The subsequent workers consider this to be a 'little known' or 'threatened' plant species [Nayar & Sastry, 1987]. Reichenbach described this species in 1861 based on Wight's collection from Nilgiris [Mohanani & Balakrishnan, 1991]. Endemic to Nilgiris of the Western Ghats in Tamil Nadu. There has been no record of its recent relocation in the wild ever since Reichenbach described it in 1861 based on Wight's collection from Nilgiris [Subbarayalu & Velumurugan, 1999]. It was rediscovered from Karnataka.		
Sources:	Henry <i>et al.</i> , 1989: 26; Hooker, 1890-1894: 54; Joseph, 1982: 132; Mohanani & Balakrishnan, 1991; Nayar & Shastri, 1987: 280-281; Reichenbach, 1861 6 : 932; Sharma, 1977: 293; Subbarayalu & Velumurugan, 1999;		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanani, S. Rajendran, S. Phatak, R. Thamilarasi		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingalhalli, N. Raman, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date):	Xenikophyton smeeanum (Reichb. f.) Garay, 1974		
Synonyms:	<i>Saccolabium smeeanum</i> Reichb. f., 1887 <i>Rhynchosstylis latifolia</i> C. Fischer, 1927 <i>Schoenorchis latifolia</i> (C. Fischer) Saldanha, 1974		
Habit:	Epiphytic herbs		
Habitat:	Moist deciduous to shola forests [RG]		
Niche/ elevation:	800-2,300m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Udumbansholai, Karaparai, Hassan district, Kadamane [Abraham & Vatsala, 1981]. Kadamane in Hassan [Saldanha & Nicolson, 1976]. Somavarpet, Madikeri [Keshvamurthy & Yoganarasimhan, 1990]. Aruvanpara and Sairandhri [Manoharan, 1999].		
Distribution from Field Studies:	<u>Karnataka</u> : Madikeri, Brahmagiri Range, Sampagii [T.A. Rao, 1996-98], Thalakaveri Medicinal Plants Conservation Area [P.S. Udayan <i>et al.</i> , 1998]. Biligiri Rangan Hills [R. Ganesan, 2000]. <u>Kerala</u> : Agastyamala, Munnar, Silent Valley [C. Sathish Kumar, 1990s] <u>Tamil Nadu</u> : Doddabetta, Udthagamandalam [K. Sivabalakrishnan, 1996].		
Extent of Occurrence (Sq. km.):	101-5,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	11/5. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years. Predicted decline <20% in the next 10 years due to loss of habitat and coffee plantation [R. Ganesan, 2000].		
Threats			
Threats to taxon:	Habitat loss and habitat fragmentation [R. Ganesan, 2000] resulting in and may result in population decline.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations unknown. The number of mature individuals declined in the past and likely to decline in the future. Generation time 3 years.		
Trends:	The population size/numbers of the taxon declining at a rate of <10% in the last 10 years. Predicted decline <10% in the next 10 due to habitat loss.		
Recent Field Studies:	T.A. Rao in Kodagu, 1996-98, Conservation of wild orchids of Kodagu. K. Sivabalakrishnan in Doddabetta, 1996, <i>Ex situ</i> conservation. P.S. Udayan <i>et al.</i> , Thalakaveri Medicinal Plants Conservation Area, 1998, Addition to the flora of Coorg district. C. Sathish Kumar in Agastyamala, Munnar, Silent Valley, 1990s.		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcde
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii,iv,v), 2a+b(ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Biligiri Rangaswamy Temple Wildlife Sanctuary, Eravikulam National Park, Neyyar Wildlife Sanctuary, Kalakad-Mundanthurai Tiger Reserve, Silent Valley National Park		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Life history studies, PHVA.		
Management:	Cultivation/breeding		
Cultivation:	Cultivation recommended for research. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Information on propagation techniques not available with this group of compilers.		
Other comments:	Originally proposed by Reichenbach f. based on Smee's collection without precise locality. It is frequently found in Somwarpet and Mercara [Keshvamurthy & Yoganarasimhan, 1990]. No decline perceived in Thalakaveri Medicinal Plants Area. Except few sholas closer to coffee estate, others are free from disturbance. So, plants may not face threats unless the sholas are destroyed [RG].		
Sources:	Abraham & Vatsala, 1981: 473, 475; Fischer, 1927: 35; R. Ganesan, 2000, Unpublished Biological Information Sheet; Garay, 1974 23(10): 374; Keshvamurthy & Yoganarasimhan, 1990: 456; Manoharan, 1999: 213; Reichenbach, 1887 ser 3 2: 214; Saldanha, 1974 70: 414; Saldanha & Nicolson, 1976: 847.		

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**ORCHIDS ENDEMIC TO WESTERN GHATS
AND EXTENDING INTO EASTERN GHATS**

Scientific name (author date):	Anoectochilus elatus Lindley, 1857		
Habit:	Terrestrial herb.		
Habitat:	Evergreen forest.		
Niche/ elevation:	Forest floor on humus. Above 1300 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Kolli Hills (Tamil Nadu & Kerala)		
Distribution from Literature:	Sispara in Silent Valley [Manilal, 1988]. Nilgiris, Salem [Henry <i>et al.</i> , 1989]. Kollimalai, Wallaghat, Udhagamandalam [Matthew, 1983]. Shembaganur, Peria Shola, Kukkal Shola, Tiger Shola, Parappan stream, Blackburn Shola, Wallaghat, Udhagamandalam [Seidenfaden, 1999]. Nilgiris [Nayar, 1996]. Kolli hills [Mathew, 1983]. Walakkad near Sispara [Sathish Kumar, 1999]. Devala, Coonoor [Sharma <i>et al.</i> , 1977]. Kakachi-Kodayar [Ganesan & Livingstone, 2001]		
Distribution from Field Studies:	<u>Kerala</u> : Silent Valley [Sathish Kumar]. <u>Tamil Nadu</u> : Kodaikanal [N. Raman, June 1997]. Coonoor, Nilgiri [P.F. Solomons, 1999]. Kolli Hills in Salem [M.B. Vishwanathan]. Kakachi-Kodayar [R. Ganesan]		
Extent of Occurrence (Sq. km.):	100-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/Locations:	10-50/10-20. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10-20 years and >20% predicted decline in the next 10-20 years due to loss of habitat, industrialisation and construction of roads. Decrease in the quality of habitat due to human interference and grazing.		
Threats			
Threats to taxon:	Grazing and habitat loss resulting in and may result in future population decline. The influence of these factors on the habitat and population well understood, not reversible and have not ceased.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations less than 2,500. The number of mature individuals declined in the past by 30-50% and likely to decline by 30-50% in the future. Generation time 1 year.		
Population Trends:	Decline in the population by more than 20% in the last 10 years and estimated decline of more than 20% in the next 10 years.		
Recent Field Studies:	N. Raman in Kodaikanal, June 1997, study on mycorrhizal association; M.B. Viswanathan in Kolli Hills in the Eastern Ghats, 1991, floristic survey. C. Sathish Kumar in Silent Valley, 1982-1995, floristic survey. K. Ravikumar in High Wavy mountains, Kodaikanal, 1985-1990, floristic survey. R. Ganesan in Kakachi-Kodayar, 1997-2000, floristic survey.		
Data quality:	Assessed based on field studies, indirect information, informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed, inferred and suspected, respectively.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2abcde
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B1a+b(i,ii,iii,iv,v), 2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Kakakkad-Mundanthurai Tiger Reserve, Mukurthi National Park, Silent Valley National Park		
Uncertainty	Assessed based on range of opinion and both evidence and precaution with the consensus of the field biologists.		
Recommendations			
Research:	Survey, genetic research, life history studies, PHVA		
Management:	Cultivation/breeding.		
Cultivation:	Cultivation recommended for research. Cultivated stocks exist at TBGRI, Palode and Gurukula Botanical Sanctuary, Wayanad. There is no coordinated species management programme for this species and one is not recommended but cultivation programme is recommended to be initiated within 3 years. Some propagation techniques is known for similar taxa.		
Other comments:	Proposed by Lindley (1987) based on Mc Ivor's collection from Walla Ghaut. Found in dense shade of forests with species of <i>Zeuxine</i> , <i>Calanthe sylvatica</i> , <i>Tainia bicornis</i> and <i>Chrysoglossum maculatum</i> . In Devala the habitat has been completely destroyed due to human habitation [Rajan]. It is very sensitive to disturbance in the habitat. The specimens reported under this name from Thiruvananthapuram and Idukki Districts (Kerala) and Kalakad-Mundanthurai Tiger Reserve (Tamil Nadu) actually belong to an yet undescribed species.		
Sources:	Ganesan & Livingstone, 2001; Henry <i>et al.</i> , 1989: 4; Lindley, 1857 1: 178; Manilal, 1988: 269; Matthew, 1983: 1557; Mohanan & Henry, 1994: 448; Nayar, 1996: 224; Sathish Kumar, 1999: 194; Seidenfaden, 1999: 1208; Sharma <i>et al.</i> , 1977: 138.		

Compilers:

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Scientific name (author: date):	Cirrhopetalum neilgherrense Wight, 1851		
Synonym:	<i>Bulbophyllum kaitiensis</i> (Wight) Reichb. f., 1861		
Habit:	Epiphytic herb		
Habitat:	Evergreen forest		
Niche/ elevation:	Above 1300m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Kolli hills & Shevroys (Maharashtra, Goa, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiris, Anamalai hills, Devikulam [Abraham & Vatsala, 1981]. Coimbatore, Nilgiri, Salem [Henry <i>et al.</i> , 1989]. Mysore [Sharma <i>et al.</i> , 1984]. Nilgiris [Nayar & Sastry, 1988]. Kollimalais [Matthew, 1983]. Coonoor, below Kaitia [Hooker, 1888-1890]. Pune, Satara, Sindhudurg [Lakshminarasimhan, 1996]. Canacona, Goa, Tudal-Ordofond [Rao, 1986]. Mysore, Idukki, Coimbatore, Nilgiris [Rathakrishnan & Chitra, 1984]. Ootacamund, Coonoor [Mohanan & Balakrishnan, 1991].		
Distribution from Field Studies:	<u>Kerala</u> : Devikulam [C. Sathish Kumar] <u>Tamil Nadu</u> : High Wavy Mountains [K. Ravi Kumar]		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	Many. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Habitat loss and change in quality of habitat due to human interference and developmental activities.		
Threats			
Threats to taxon:	Loss of habitat		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Unknown.		
Trends:	Unknown.		
Recent Field Studies:	C. Sathish Kumar in Devikulam, 1995. K. Ravi Kumar in High Wavy mountains, 1993.		
Data quality:	Assessed based on field studies, indirect information, informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status and threats observed and inferred respectively.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	B1+2cd
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	B2a+b(iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists.		
Recommendations			
Research:	Survey, taxonomic research		
Management:	Monitoring		
Cultivation:	Cultivation recommended for research. There is no coordinated species management programme for this species and one is not recommended but cultivation programme is recommended to be initiated within 3 years. Some propagation techniques is known for similar taxa.		
Other comments:	Described by Wight based on a collection from Kartairy, below Kaitia in Nilgiris.		
Sources:	Abraham & Vatsala, 1981: 338-341; Henry <i>et al.</i> , 1989: 5; Hooker, 1886-890: 778; Lakshminarasimhan, 1996: 15; Matthew, 1983: 1592; Mohanan & Balakrishnan, 1991: 192; Nayar & Sastry, 1988: 155; Rao, 1986: 417; Rathakrishnan & Chitra, 1984: 1003; Reichenbach, 1861, 6: 262; Sharma <i>et al.</i> , 1984: 266; Wight 1851, 5(1): 7.t.1654;		
Compilers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, U. Lakshminarayanan, K.G. Selvi.		
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Scientific name (author; date):	Dendrobium anomalayanum Chandrab. <i>et al.</i> , 1981		
Habit:	Epiphyte		
Habitat:	Evergreen forests and sholas		
Niche/ elevation:	1000 m.		
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Shevroys (Tamil Nadu & Kerala)		
Distribution from Literature:	Anamalai [Nayar, 1996]. Coimbatore, Salem [Henry <i>et al.</i> , 1989]. Servarayan hills, Anamalai – Kavarakal [Matthew, 1983]. Yercaud on the temple plateau [Mathew, 1991]. Coimbatore [Rathakrishnan & Chitra, 1984]. Anamalai Hills, Coimbatore [M.C. Chandra Bose, 1980].		
Distribution from Field Studies:			
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	2/2. Fragmented. No continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10 years. Predicted decline >20% in the next 10 years due to loss of habitat and plantations. Decrease in quality of the habitat.		
Threats			
Threats to taxon:	Human interference, decline of host species, habitat loss and demographic instability resulting in and may result in population decline. The influence of threats on the population well understood, not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations <2,500. The numbers of mature individuals declined by 20% and likely to decline by 20% in the future. Generation time 5 years.		
Trends:	The population size/numbers of the taxon declining at a rate of >10% in the last 10 years. Predicted decline >10% in the next 10 due to habitat loss.		
Recent Field Studies:	K. Ravikumar in High Wavy mountains, Tamil Nadu, 1989-1992. C. Sathish Kumar in Eravikulam National Park, 1993-1997, Orchid flora of Kerala. S.D. Biju in Eravikulam National Park, 1995-1999, Flora of Eravikulam National Park.		
Data quality:	Assessed based on indirect information and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends inferred from literature and from habitat status.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2abc
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B2a+b(i,ii,iii,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Eravikulam National Park, Indira Gandhi Wildlife Sanctuary		
Uncertainty	Assessed with 95% confidence based on inference, range of opinion, precaution and on the consensus of the field biologists.		
Recommendations			
Research:	Genetic research, PHVA pending.		
Management:	Cultivation/breeding		
Cultivation:	Cultivation is recommended for commercial/sustainability. Cultivated stocks not available. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Discovered from Anamalai, it was also reported from Salem. In Shevroys there is disturbance in the natural habitat.		
Sources:	Chandrabose <i>et al.</i> , 1981 78(3): 575-576; Henry <i>et al.</i> , 1989: 8; Matthew, 1983: 1588; Nayar, 1996: 224; Rathakrishnan & Chitra, 1984: 1003;		
Compilers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan.		
Reviewers:	S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao.		

Scientific name (author: date):	Dendrobium aqueum Lindley, 1843		
Synonym:	<i>Dendrobium album</i> Wight, 1851.		
Habit:	Epiphytic, pendant herb.		
Habitat:	Shola forest.		
Niche/ elevation:	1300-1600 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Kollimalai and Servarayan Hills (Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Konkan to Anamalais [Nayar, 1996]. Muthukuzhivayal [Abraham & Vatsala, 1981]. Kodagu, Hassan, Maharashtra, Tamil Nadu [Rao, 1998]. Silent Valley, Aruvanpara [Manilal, 1988]. Hassan [Sharma <i>et al.</i> , 1984]. Hassan – upper ghats [Saldanha & Nicolson, 1976]. Konkan, Western Ghats of Bombay – Mahabaleshwar, Deccan – Manched – Bhimashankar [Santapau & Kapadia, 1966]. Kollimalai, Servarayan [Mathew, 1983]. Palghat – Kunthipuzha dam site [Vajravelu, 1990]. Iyamaalley hills, Nilgiris [Hooker, 1886-1890]. Kodagu [Keshvamurthy & Yoganarasimhan, 1990]. Ahmednagar, Kolhapur, Nasik, Pune, Satara, Thane [Lakshminarasimhan, 1996]. Aruvanpara [Sathish Kumar, 1999]. Hassan [T.A. Rao, 1972-76]. Uttara Kannada [S. Phatak, 1980]. Mudigere Taluk, Chikkamagalur district [G.K. Seetharamu, 2000]. Aruvampara, Kunthipuzha dam site [Sathish Kumar]. Kodaikanal [N. Raman, June 1997]. Uttara Kannada, Belgaum [S. Phatak, 1998]. Palghat [Vajravelu]. Brahmagiri range, Thalakaveri, Bagamandala and Thadiandamol, Sampagii, Pushpagiri in Kodagu [T.A. Rao, 1996-98].		
Distribution from Field Studies:	Hassan [T.A. Rao, 1972-76]. Uttara Kannada [S. Phatak, 1980]. Mudigere Taluk, Chikkamagalur district [G.K. Seetharamu, 2000]. Aruvampara, Kunthipuzha dam site [Sathish Kumar]. Kodaikanal [N. Raman, June 1997]. Uttara Kannada, Belgaum [S. Phatak, 1998]. Palghat [Vajravelu]. Brahmagiri range, Thalakaveri, Bagamandala and Thadiandamol, Sampagii, Pushpagiri in Kodagu [T.A. Rao, 1996-98].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	>2,000		
Number of Subpopulations/location:	10-40/10-20. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or Subpopulations. All individuals not in one population and one subpopulations does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10-20 years. >20% predicted decline in the next 10-20 years due to loss of habitat, timbering, vandalism, coffee plantations in Mudigere and Chikkamagalur [G.K. Seetharamu]. Decrease in the quality of the habitat due due to timbering activities.		
Threats			
Threats to taxon:	Harvest for timber, habitat loss, human interference and over exploitation of host trees. These threats are resulting in and may result in population decline. The influence on the population is well understood, are not reversible and have not ceased to be threats.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations are >2,500. The numbers of mature individuals declined in the past by 10-20% and are likely to decline by 20-30% in the future. Generation time 3-10 years.		
Trends:	The population size/numbers of the taxon is declining at a rate of >20% in the last 10 years. Predicted decline >20% in the next 10 years due to habitat loss and vandalism.		
Recent Field Studies:	N. Raman in Kodaikanal, June 1997, mycorhizal association. T.A. Rao in Kodagu, Uttara Kannada, Kudremukh, 1996-98, floristic studies. S. Phatak in Belgaum, 1998, floristic survey.		
Data quality:	This species is assessed based on field studies, and literature/herbarium studies.		
Qualifier:	The Area and Extent are estimated based on known locations. The habitat status, threats, mature individuals and population trends are observed over many years of field studies, inferred and suspected for the entire distribution from a range of opinion.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	A1ac+2c
IUCN RED LIST CRITERIA (2000):	NEAR THREATENED	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Bhimashankar Wildlife Sanctuary, Kudremukh National Park, Pushpagiri Wildlife Sanctuary, Silent Valley National Park, Talakaveri Wildlife Sanctuary		
Uncertainty	<i>D. aqueum</i> species is assessed based on evidence for a few locations and extrapolated for the entire distribution with the consensus of the field biologists at the workshop, involving a range of opinion.		
Recommendations			
Research:	Survey, genetic research, life history studies, PHVA pending.		
Management:	Monitoring, cultivation/breeding.		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are available at local green House. Numbers in cultivation 6. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Described by Lindley based on Loddiges collection from Bombay. The species is highly tufted and pendulous. Lindley mentions that this species is "a native of Bombay, whence it was imported by Messrs. Loddiges". Cooke and Blatter and Mc Cann mention that the plant is often cultivated but has not been seen wild [Santapau & Kapadia, 1966].		

- Sources:** Abraham & Vatsala, 1981: 349; Hooker, 1886-1890: 739; Keshvamurthy & Yoganarasimhan, 1990: 441; Lakshminarasimhan, 1996: 19; Lindley, 1843 6: t.59; Manilal, 1988: 275; Mathew, 1983: 1589; Nayar, 1996: 224; Rao, 1998: 197; Sathish Kumar, 1999: 200; Saldanha & Nicolson, 1976: 819; Santapau & Kapadia, 1966: 99-101; G.K. Seetharamu, 2000, Unpublished Biological Information Sheet; Sharma *et al.*, 1984: 267; Vajravelu, 1990: 472, 473; Wight, 1851.
- Compilers:** A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan.
- Reviewers:** S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao.

Scientific name (author; date):	Dendrobium microbulbon A. Rich., 1841		
Habit:	Epiphyte		
Habitat:	Dry and moist Deciduous forests.		
Niche/ elevation:	Moss clad branches of trees. 1400-1600 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Shevroys and Guthirayan hills (Maharashtra, Karnataka & Tamil Nadu) Muthukuzhivayal and Naduvattam [Abraham & Vatsala, 1981]. Coimbatore, Nilgiris, Salem, Tirunelveli [Henry <i>et al.</i> , 1989]. Thana, Kasara, Igatpuri, Khandala, Lonavla, Mahabaleshwar, Purandhar, Bhimashankar, Amboli ghat, Anamalai, Nilgiris [Santapau & Kapadia, 1966]. North Kanara [Sharma <i>et al.</i> , 1984]. Servarayanamalai, Guthirayans [Mathew, 1991]. Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane [Lakshminarasimhan, 1996].		
Distribution from Literature:	<u>Maharashtra</u> : Amboli [S. Phatak, 1986]. Londa [S. Phatak, 1990]. <u>Karnataka</u> : Thadiandamol [T.A. Rao, 1998-99]. Anmod [S. Phatak, 1990].		
Distribution from Field Studies:			
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	10-500.		
Number of Subpopulations/location:	10/3. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulations does not hold 95% or more of the total population		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to loss of habitat. Decrease in the quality of habitat due to tourism and construction of roads.		
Threats			
Threats to taxon:	Damming and habitat loss resulting in and may result in population decline. The influence on the population well understood, not reversible and not ceased to be threats.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Mature individuals in all populations <250. The number of mature individuals declined in the past by >10% and likely to decline by >10% in the future. Generation time perennial.		
Trends:	The population size/numbers of the taxon declining at a rate of >10% in the last 10 years. No decline predicted.		
Recent Field Studies:	T.A. Rao at Thadiandamol, Brahmagiri Range, Kudremukh National Park, 1998-99, Conservation studies		
Data quality:	Assessed based on field studies, indirect information and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2abcde; C2a
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B2a+b(i,ii,iii,iv,v); C2a(i)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Bhimashankar Wildlife Sanctuary, Brahmagiri Wildlife Sanctuary, Kudremukh National Park		
Uncertainty	Assessed based on some evidence, range of opinion and precaution with the consensus of the field biologists.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Initiate programme after 3 years. Some propagation techniques known for similar taxa.		
Other comments:	Proposed by A. Richard based on Perottet's collection from Nilgiris.		
Sources:	Abraham & Vatsala, 1981: 358; Henry <i>et al.</i> , 1989: 9; Lakshminarasimhan, 1996: 23; Richard, 1841 15: 19.t.8; Santapau & Kapadia, 1966: 87-89; Seidenfaden, 1983: 1588		
Compilers:	T.A. Rao, K. Sivabalakrishnan, P.F. Solomons, P.S. Udayan, M.B. Viswanathan, U. Lakshminarayan		
Reviewers:	A. Durai, R. Gopalan, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, S.S.R. Bennet, B.A. Daniel, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty.		

Scientific name (author: date):	Dendrobium nanum Hook. f., 1889		
Synonym:	<i>Dendrobium mabelae</i> Gammie, 1905.		
Habit:	Epiphyte		
Habitat:	Evergreen forests		
Niche/ elevation:	Moss clad branches of trees. 1400-1600 m.		
Distribution	India		
Historical distribution:	ENDEMIC to Western Ghats + Shevroys and Guthirayan hills (Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Current Global Distribution:	ENDEMIC to Western Ghats + Shevroys and Guthirayan hills (Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Anamalais through Palni hills and Shevaroyes [Nayar, 1996]. Cannanore – Chandanathode [Ramachandran & Nair, 1988]. Coimbatore, Kanyakumari, Salem, Tirunelveli, Madurai, Nilgiris [Henry <i>et al.</i> , 1989]. Silent Valley, Aruvanpara [Manilal, 1988]. Hassan Upper Ghats [Saldanha & Nicolson, 1976]. Coorg, Hassan, Mysore [Sharma <i>et al.</i> , 1984]. Servarayanmalai, Guthirayaan [Mathew, 1983]. Ayappankovil area [Vajravelu, 1990]. Malabar, Bababudan hills [Hooker, 1886-1890]. Attur, Bhagamandala and Koothi [Keshvamurthy & Yoganarasimhan, 1990]. Belgaumghat, Castle Rock [Cooke, 1958]. High Range, Kerala, Umaiyamalai, Rajamalai [B.V. Shetty, 2000]. Naduvattom, Nelakota – Devala [Sharma, <i>et al.</i> , 1977]. Nasik, Satara [Lakshminarasimhan, 1996]. Aruvanpara [Sathish Kumar, 1999]. Chikmagalur, Coorg, Hassan, Mysore, Cannanore, Idukki, Palghat, Coimbatore, Kanniyakumari, Madurai, Nilgiri, Salem, Tirunelveli [Rathakrishnan & Chitra, 1984].		
Distribution from Field Studies:	<u>Karnataka</u> : Thadiandamol, Brahmagiri Range, Thalakaveri, Sampaje, Pushpagiri in Kodagu [T.A. Rao, 1996-98]. <u>Kerala</u> : Aruvanpara [Sathish Kumar, 1982, 83, 92, 96]. Aruvanpara [Sathish Kumar]. <u>Tamil Nadu</u> : Mukurthi National Park [P.F. Solomons, 1998, 99]. Salem [V.S. Ramachandran].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	50/10. Fragmented. Continuing decline in the number of locations or subpopulations. All individuals are not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years. <20% predicted decline in the next 10 years due to loss of habitat and felling of host trees. There is a change in the quality of habitat.		
Threats	Habitat loss and human interference is resulting in and may result in population decline. The influence on the population is well understood, is not reversible and has not ceased to be a threat.		
Threats to taxon:	Habitat loss and human interference is resulting in and may result in population decline. The influence on the population is well understood, is not reversible and has not ceased to be a threat.		
Trade:	Not in trade		
Population	The numbers of mature individuals declined in the past by 10% and are likely to decline by 10% in the future. Generation time 3-6 years.		
Numbers/Generation time/Trends:	The numbers of mature individuals declined in the past by 10% and are likely to decline by 10% in the future. Generation time 3-6 years.		
Trends:	The population size/numbers of the taxon declining at a rate of <10% in the last 10 years. Predicted decline <10% in the next 10 due to habitat loss.		
Recent Field Studies:	C. Sathish Kumar in Aruvanpara, 1992, 95, case study on orchids of Kerala. T.A. Rao in Kodagu, 1996-98, conservation of wild orchids. P.F. Solomons in Mukurthi National Park, 1998, 99, field studies.		
Data quality:	This species is assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status and threats observed over years of field studies while the population trends are assessed based on indirect information.		
Status	IUCN RED LIST CRITERIA (1994): ENDANGERED Criteria: B1+2abcde IUCN RED LIST CRITERIA (2000): ENDANGERED Criteria: B2a+b(i,ii,iii,iv,v)		
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Brahmagiri Wildlife Sanctuary, Mukurthi National Park, Pushpagiri Wildlife Sanctuary, Silent Valley National Park, Talakaveri Wildlife Sanctuary.		
Uncertainty	Assessed with based on evidence of habitat effects and on precaution due to threats; on the consensus of the field biologists at the workshop; on a range of opinion.		
Recommendations	Survey, life history studies, PHVA.		
Research:	Habitat management, monitoring, cultivation/breeding.		
Management:	Cultivation is recommended for research. Cultivated stocks available at TBGRI, Thiruvananthapuram and Narayana Gurukulam, Wayanad. Numbers in cultivation 12. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Some propagation techniques known for similar taxa.		
Cultivation:	Cultivation is recommended for research. Cultivated stocks available at TBGRI, Thiruvananthapuram and Narayana Gurukulam, Wayanad. Numbers in cultivation 12. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Some propagation techniques known for similar taxa.		
Other comments:	Habitat loss not observed in Silent Valley and Mukurthi Hills as they are in protected areas.		
Sources:	Cooke, 1958: 184; Gammie, 1905 16: 429-433; Henry <i>et al.</i> , 1989: 9; Hooker, 1886-1890: 77; Hooker, 1889: t.1853; Lakshminarasimhan, 1996: 23; Manilal, 1988: 277, 278; Mathew, 1983: 1587; Nayar, 1996: 224; Ramachandran & Nair, 1988: 453; Rathakrishnan & Chitra, 1984: 1004; Saldanha & Nicolson, 1976:		

821; Sathish Kumar, 1999: 200; Sharma *et al.*, 1984: 268; Sharma, 1977: 139; B.V. Shetty, 2000, Unpublished Biological Information Sheet; Vajravelu, 1990: 474.

Compilers:

J.L. Ellis, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur.

Reviewers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, T.A. Rao.

Scientific name (author; date):	Dendrobium wightii Hawkes & Heller, 1962		
Synonym:	<i>Dendrobium graminifolium</i> Wight, 1851 non Willd., 1805		
Habit:	Mostly lithophytic herb		
Habitat:	Moist moss-clad rocks		
Niche/ elevation:	Dripping rocks on streamlands and ravines. 800-1000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Yercaud, Shevroys and Sanyasimalai Hills (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiri, Anamalai hills Courtallum, Ponmudi [Abraham & Vatsala, 1981]. Chikkamagalur, Nilgiris, Tirunelveli, and southern Western Ghats [Nayar, 1996]. Cannanore, Chandanathode [Ramachandran & Nair, 1988]. Coimbatore, Kanyakumari, Salem, Tirunelveli, Madurai, Nilgiris [Henry <i>et al.</i> , 1989]. Chikkamagalur [Sharma <i>et al.</i> , 1984]. Yercaud, Sanyasimalai, Servarayan [Seidenfaden, 1983]. Mahendragiri hills [B.V. Shetty, 2000]. Charmadi Ghats, Kotigehar [Yoganarasimhan <i>et al.</i> , 1981]. Kannur, Kollam, Thiruvananthapuram [Mohan & Balakrishnan, 1991].		
Distribution from Field Studies:	<u>Karnataka</u> : Kudremukh [T.A. Rao, 2000] <u>Kerala</u> : Ponmudi, Thiruvananthapuram [C. Sathish Kumar, 1986]. Agastyamala [C. Sathish Kumar, 1994-97].		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	6/Many. Fragmented. Continuing decline in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	No change in the habitat of the taxon. Predicted decline of <20% in the next 10 years due to landslides. No change in the quality of the habitat.		
Threats			
Threats to taxon:	Landslides may result in population decline. The influence on the population well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trends:	Generation time 5-6 years.		
Trends:	Unknown.		
Recent Field Studies:	C. Sathish Kumar in Ponmudi, Agastyamalai, 1994-96, case study on the orchids of Kerala. T.A. Rao in Kudremukh, 2000.		
Data quality:	Assessed based on field studies, indirect information and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status and threats observed over many years.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	B1+2d
IUCN RED LIST CRITERIA (2000):	VULNERABLE	Criteria:	B1a+b(iv), 2a+b(iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Kudremukh National Park		
Uncertainty	Assessed based on evidence (and some precaution) and with the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey, life history studies, PHVA pending.		
Management:	Monitoring		
Cultivation:	Cultivation is recommended for research. Cultivated stocks available at TBGRI, Thiruvananthapuram. Numbers in cultivation 20. There is no coordinated species management programme for this species and one is not recommended. Ongoing cultivation programme intensified or increased. Some propagation techniques known for similar taxa.		
Other comments:	Always seen on dripping rocks in ravines. In Ponmudi the ravines are not affected. The flowers have no commercial value. The plant is very small.		
Sources:	Abraham & Vatsala, 1981: 351, 353; Hawkes & Heller, 1962 24: 16; Henry <i>et al.</i> , 1989: 10; Mohan & Balakrishnan, 1991: 193; Mohan & Henry, 1994: 453; Nayar, 1996: 225; Ramachandran & Nair, 1988: 453; Seidenfaden, 1983: 1590; Sharma <i>et al.</i> , 1984: 268; B.V. Shetty, 2000, Unpublished Biological Information Sheet; Wight, 1851; Yoganarasimhan <i>et al.</i> , 1981: 326.		
Compilers:	J.L. Ellis, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur.		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, B.V. Shetty, T.A. Rao.		

Scientific name (author; date):	Eria nana A. Rich., 1841
Synonyms:	<i>Dendrobium filiforme</i> Wight, 1851; <i>Eria muscicola</i> (Lindley) Lindley var. <i>ponmudianam</i> Mohanan & A.N. Henry, 1986
Habit:	Epiphytic or lithophytic herb
Habitat:	Evergreen and shola forests
Niche/ elevation:	1600 m.
Distribution	
Historical distribution:	India
Current Global Distribution:	ENDEMIC to Western Ghats + Shevroys, Yercaud (Karnataka, Kerala & Tamil Nadu)
Distribution from Literature:	Nilgiri hills, Ponmudi [Abraham & Vatsala, 1981]. Mysore, Nilgiris, Kodagu [Rao, 1998]. Kodaikanal, Glenfalls, Bear shola, Perumal peak [Seidenfaden, 1999]. Mysore [Sharma <i>et al.</i> , 1984]. Coimbatore, Madurai [Henry <i>et al.</i> , 1989]. Yercaud, Servarayans [Mathew, 1983]. Kodaikanal, Ootacamund downs [Fyson, 1974]. Nilgiri hills [Hooker, 1886-1890]. Koothi Reserve forests [Keshavmurthy & Yoganarasimhan, 1990]. Avalanche, Bangihalla, Doddabetta, Naduvattom and T.R. Bazaar [Sharma <i>et al.</i> , 1977]. Kakachi-Kodayar [Ganesan & Livingstone, 2001]
Distribution From Field Studies:	<u>Karnataka</u> : Thadiandamol [T.A. Rao]. <u>Tamil Nadu</u> : Pykara, Upper Bhavani Avalanche, Mukurthi National Park, Wenlock downs [T. Chhabra]. Naduvattom [K. Sivabalakrishnan]. Mukurthi National Park [P.F. Solomons, 1997- 99]. Kakachi-Kodayar [R. Ganesan, 1997-2000]
Extent of Occurrence (Sq. km.):	>20,000
Area of Occupancy (Sq. km.):	10-500
Number of Subpopulations/location:	>100/>10. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulations does not hold 95% or more of the total population.
Habitat status:	Decrease in the habitat >20% in the last 10 years. >20% predicted decline in the next 10 years due to loss of habitat. No change in the quality of the habitat.
Threats	
Threats to taxon:	Habitat loss, human interference and demographic instability resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and have not ceased.
Trade:	Not in trade
Population	
Numbers/Generation time/Trend:	Mature individuals in all populations are >2,500. The numbers of mature individuals declined in the past by >20% and are likely to decline by >20% in the future.
Trends:	The population size/numbers of the taxon is declining at a rate of >20% in the last 10 years. Predicted decline >20% in the next 10 due to habitat loss.
Recent Field Studies:	T. Chhabra in Avalanche, Pykara, Upper Bhavani, Mukurthi National Park, Wenlock downs. K. Sivabalakrishnan in Naduvattom. P.F. Solomons in Mukurthi National Park. T.A. Rao in Thadiandamol, 1996-98. C. Sathish Kumar in Ponmudi, Trivandrum district, 1984, floristic of Kerala. R. Ganesan in Kakachi-Kodayar, 1997-2000, floristic survey.
Data quality:	Assessed based on field studies, informal sightings and literature-herbarium studies.
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years. It is also based on range of opinion.
Status	
IUCN RED LIST CRITERIA (1994):	ENDANGERED Criteria: B1+2bcde
IUCN RED LIST CRITERIA (2000):	ENDANGERED Criteria: B2a+b(ii,iii,iv,v)
CITES:	Appendix I Indian WL. (P) Act: Not listed
National Red Data Book:	Not listed International RDB: Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve, Mukurthi National Park.
Uncertainty	Assessed with 95% confidence based on evidence, on the consensus of the field biologists and range of opinion.
Recommendations	
Research:	Life history studies and PHVA.
Management:	Cultivation/breeding
Cultivation:	Cultivation is recommended for research. Cultivated stocks are available at home garden. Numbers in cultivation 10. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for similar taxa.
Other comments:	Proposed by A. Richard based on Perrotet's collection from Nilgiris. This species is also found in Ponmudi - Bose and Bhattacharya - Orchids of India. Flowers are greenish-yellow, very attractive star shaped.
Sources:	Abraham & Vatsala, 1981: 377; Fyson, 1974: 388; Ganesan & Livingstone, 2001; Hooker, 1886-1890: 789; Keshavmurthy & Yoganarasimhan, 1990: 445; Mathew, 1983: 1576; Mohanan & Henry, 1986 8(2): 425; Rao, 1998: 201;

Richard, 1841 **15**: 19; Seidenfaden, 1999: 1247; Sharma *et al.*, 1977: 140; Sharma *et al.*, 1984: 269; Wight, 1851 **1**: 5.t.1642.

Compilers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan.

Reviewers:

S.S.R. Bennet, B.A. Daniel, , M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhali, N. Raman, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao.

Scientific name (author: date):	Eria pauciflora Wight, 1851		
Habit:	Creeping epiphyte and lithophyte		
Habitat:	Moist deciduous forest		
Niche/ elevation:	Above 1200 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Kolli Hills (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Coonor, Kateri Falls and Kodanad [Sharma <i>et al.</i> , 1984]. Kakchi-Kodayar [Ganesan & Livingstone, 2001]		
Distribution from Field Studies:	<u>Karnataka</u> : Kudremukh National Park [T.A. Rao]. <u>Kerala</u> : Nilgiris, Silent Valley, Aruvanpara and Sairandhri [Sathish Kumar]. <u>Tamil Nadu</u> : Lovedale, Naduvattom [P.F. Solomons, 1998, 99; P.S. Udayan, 1992-96]. Kalakad-Mundanthurai Tiger Reserve [M.B. Viswanathan, 1996-2000]. Silent Valley National Park [C. Sathish Kumar, 1981-83]. Kakachi-Kodayar [R. Ganesan, 1997-2000].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	>2,000		
Number of Subpopulations/location:	11/10. Fragmented. There is no continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population		
Habitat status:	Decrease in the area of habitat.		
Threats			
Threats to taxon:	Habitat loss and habitat loss due to exotic plants.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations are >10,000. There is no decline in the number of mature individuals. Generation time perennial.		
Trends:	The population size/numbers of the taxon is increasing.		
Recent Field Studies:	P.F. Solomons in Lovedale and Naduvattom, 1998, 99, field studies. P.S.Udayan in Naduvattom, 1992-96, Documentation of vegetation in Nilgiris. M.B. Viswanathan in Kalakad-Mundanthurai Tiger Reserve, 1996-2000, Conservation. T.A. Rao in Kudremukh National Park, 2000. K. Ravikumar in High Wavy Mountains, Agumbe, Talakaveri, 1990, 1992 and 1994, floristic survey. C. Sathish Kumar in Neyyar and Peppara Wildlife Sanctuary, 1993-1995; Eravikulam National Park, 1995-1997. R. Ganesan in Kakachi-Kodayar, 1997-2000, floristic survey.		
Data quality:	Assessment based on field studies, indirect information and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on the known locations. Mature individuals and population trends observed.		
Status			
IUCN RED LIST CRITERIA (1994):	LOWER RISK LEAST CONCERN	Criteria:	--
IUCN RED LIST CRITERIA (2000):	LEAST CONCERN	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Eravikulam National Park; Kalakad-Mundanthurai Tiger Reserve; Kudremukh National Park, Neyyar Wildlife Sanctuary, Peppara Wildlife Sanctuary, Silent Valley National Park, Talakaveri Wildlife Sanctuary.		
Uncertainty	Assessed based on evidence and on the consensus of the field biologists.		
Recommendations			
Research:	Survey, genetic research, life history studies, PHVA.		
Management:	Monitoring, cultivation/breeding.		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Information on propagation techniques not available with this group of compilers.		
Other comments:	Described by Wight based on his collection from Kaitie Falls in Nilgiris. Based on literature this species has been reported from few pockets of southern Western Ghats and also from Eastern Ghats [Kollimalais]. In Kothayar, Kannikatti and Mahendragiri, this was the predominant species of orchid in the forest. Decline in the population is not seen in Naduvattom and Lovedale.		
Sources:	Sharma <i>et al.</i> , 1984: 269; Wight, 1851 5(1): 4.t.1636.		
Compilers:	J.L. Ellis, R. Gopalan, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, S. Phatak, B. Arthur		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author: date):	Eria polystachya A. Rich., 1841		
Habit:	Epiphyte		
Habitat:	Evergreen forests		
Niche/ elevation:	250-1800 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Shevroys, Yercaud (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Devarshola and Naduvattom, Nilgiris [Sharma, <i>et al.</i> , 1977]. Chikmagalur, Hassan, Idukki, Trivandrum, Kanniyakumari, Nilgiris [Rathakrishnan & Chitra, 1984]		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Naduvattom [P.F. Solomons, 1999]. Kalakad-Mundanthurai Tiger Reserve [M.B. Viswanathan, 1998].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	16/10. Fragmented. There is no continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulation does not hold 90% or more of the total population.		
Habitat status:	Change in the area or quality of habitat unknown.		
Threats			
Threats to taxon:	Unknown		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations >2,500. The numbers of mature individuals not declined in the past and not likely to decline in the future. Generation time perennial.		
Trends:	The population size/numbers of the taxon is increasing.		
Recent Field Studies:	M.B. Viswanathan in Kalakad-Mundanthurai Tiger Reserve, 1998-2000, Conservation studies. P.F. Solomons in Naduvattom, 1999, Field studies.		
Data quality:	Assessment based on field studies, informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on the known locations. Mature individuals and population trends estimated.		
Status			
IUCN RED LIST CRITERIA (1994):	LOWER RISK NEAR THREATENED	Criteria:	-
IUCN RED LIST CRITERIA (2000):	NEAR THREATENED	Criteria:	-
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve, Mukurthi National Park		
Uncertainty	Assessed based on precaution, on the consensus of the field biologists at the workshop. Since information on threats and habitat status is unknown, the decision was to place it under Near Threatened.		
Recommendations			
Research:	Genetic research, taxonomic research, life history studies and PHVA.		
Management:	Monitoring and cultivation/breeding.		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are available at Gurukula Botanical Sanctuary. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Information on propagation techniques not available with this group of compilers.		
Other comments:	This was described by A. Richard based on Perrottet's collection from the Nilgiris. It has been reported from Eastern Ghats also.		
Sources:	Richard, 1841, ser.2 15: 20.t.9; Rathakrishnan & Chitra, 1984: 1004; Sharma <i>et al.</i> , 1977: 140.		
Compilers:	J.L. Ellis, R. Gopalan, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, S. Phatak, B. Arthur.		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Flickingeria nodosa (Dalz.) Seidenf., 1980		
Synonym:	<i>Dendrobium nodosum</i> Dalz. 1852		
Habit:	Epiphytic herb		
Habitat:	Evergreen forest		
Niche/ elevation:	Branches and crotches of tall trees. 500-1000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Shevroys, Yercaud (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiri, Salem, Tirunalveli [Henry <i>et al.</i> , 1989]. Silent Valley – Valiaparathode [Manilal, 1988]. Sairandhri [Manoharan <i>et al.</i> , 1999]. Yercaud, Kilyur Falls [Matthew, 1991]. Valiaparathode and Sairandhri [Sathish Kumar, 1999].		
Distribution from Field Studies:	<u>Karnataka</u> : Madikeri, Brahmagiri Range, Sampagee, Hassan, Yellapur, Thadiandamol, Chikkamagalur [T.A. Rao, 1996-98]. <u>Kerala</u> : Aruvanpara in Silent Valley 1984, Munnar 1994 [C. Sathish Kumar]. Silent Valley [P.F. Solomons, 1998-99]. <u>Tamil Nadu</u> : Gudalur [P.F. Solomons, 1998-99].		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	>500/>50. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the area >20% in the last 10 years due to loss of habitat. There is decrease in the quality of the habitat.		
Threats			
Threats to taxon:	Habitat loss, human interference, habitat fragmentation, harvest for medicine, harvest for food, trade of parts, trade for market or medicine and over exploitation resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and not ceased to be a threat.		
Trade:	Stem and pseudobulbs in local trade for medicinal purposes. Also used for preparation of halwas.		
Population			
Numbers/Generation time/Trend	Mature individuals >2,500. Mature individuals declined by 10% in the past and predicted decline >10%. Generation time 10 years.		
Trends:	Population size/numbers declining by >10% in the last 10 years.		
Recent Field Studies:	C. Sathish Kumar in Munnar, 1994, case study of orchids of Kerala. P.F. Solomons in Silent Valley and Gudalur, 1998-99, field studies. T.A. Rao in Kodagu, Chikamagalur, Hassan, Uttara Kannada, 1996-98, conservation of wild orchids.		
Data quality:	Assessment based on field studies and literature/herbarium studies.		
Qualifier:			
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	B1+2bcde
IUCN RED LIST CRITERIA (2000):	VULNERABLE	Criteria:	B1a+b(ii,iii,iv,v), 2a+b(ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	Brahmagiri Wildlife Sanctuary, Silent Valley National Park		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists.		
Recommendations			
Research:	Survey, limiting factor research, PHVA		
Management:	Habitat management, monitoring, sustainable utilisation, cultivation/breeding		
Cultivation:	Cultivation recommended for commercial/sustainability. Cultivated stocks of >100 plants exist at TBGRI, Palode, Gurukula Botanical Sanctuary, Wayanad and Kaveri Nisargadhama, Kodagu. No coordinated species management programme and one is not recommended. Initiate cultivation programme after 3 years. Some techniques known for taxon.		
Other comments:	This species was originally described by Dalzell. Medicinal uses well known [FRLHT database]. Halwa is made from the pseudobulbs in Uttara Kannada [T.A. Rao]. Originally described by Dalzell based on Stock's collection made from Ram Ghat in 1851.		
Sources:	Dalzell, 1852 3 : 292; Henry <i>et al.</i> , 1989: 12; Manilal, 1988: 283; Manoharan <i>et al.</i> , 1999: 203; Matthew, 1991: 499; Sathish Kumar, 1999: 203; Seidenfaden, 1980 34 (1): 41.		
Compilers:	J.L. Ellis, R. Ingalthalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur.		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S.Rajendran, S. Phatak, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.		

Scientific name (author; date):	Habenaria decipiens Wight, 1844-1845		
Synonym:	<i>Habenaria montana</i> auct. non A. Rich., 1841		
Habit:	Terrestrial or lithophytic		
Habitat:	Open grassy slopes		
Niche/ elevation:	Wet soil. 1200 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Kolli hills and Shevroy hills (Tamil Nadu)		
Distribution from Literature:	Nilgiris, Tirunelveli hills, Shevroy hills, Kollimalai, Gap [Abraham & Vatsala, 1981]. Shembaganur, Kodaikanal, Palani hills, Shembaganur-Kodaikanal Levinge path, Coimbatore, Nilgiris [Seidenfaden, 1999]. Coimbatore, Madurai, Nilgiri, Ramanathapuram, Salem, Tirunelveli [Henry <i>et al.</i> , 1989]. Nilgiri, Tirunelveli, Shevroy hills [Mohanani & Balakrishnan, 1991]. Kothagiri [Sharma <i>et al.</i> , 1977]. Kolli Hills [Seidenfaden, 1983].		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Udhagamandalam [S. Phatak, 1980]		
Extent of Occurrence (Sq. km.):	101-5,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations/location:	Fragmented.		
Habitat status:	Decrease in the habitat >20% due to tourism. Decrease in the quality of the habitat due to habitat disturbance.		
Threats			
Threats to taxon:	Habitat loss, habitat fragmentation, trampling, grazing and landslides resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and have not ceased.		
Trade:	Local trade for its roots.		
Population			
Numbers/Generation time/Trend:	Unknown		
Trends:	Population size/numbers declining by >20% in the last 10 years.		
Recent Field Studies:	None		
Data quality:	Assessed based on informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status observed; threats and population trends suspected due to habitat status.		
Status			
IUCN RED LIST CRITERIA (1994):	ENDANGERED	Criteria:	B1+2bce
IUCN RED LIST CRITERIA (2000):	ENDANGERED	Criteria:	B1a+b(ii,iii,v), 2a+b(ii,iii,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty	Assessed with based on precaution and on the consensus of the field biologists at the workshop. It was also on a range of opinion.		
Recommendations			
Research:	Survey		
Management:	Monitoring		
Cultivation:	Cultivation is recommended for research. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Fischer (1927) believed this to be a natural hybrid between <i>H. longicornu</i> Lindl. and <i>H. longicorniculata</i> Grah. This species was described by Wight based on a collection from Pulneys. The records of occurrence of this species outside Tamil Nadu -- in Mysore (Sharma <i>et al.</i> , 1984) and Silent Valley (Manilal, 1988) is incorrect (C. Sathish Kumar, pers. comm.).		
Sources:	Abraham & Vatsala, 1981: 229; Fischer 1927: 113; Henry <i>et al.</i> , 1989: 15; Manilal, 1988: 287-281; Mohanani & Balakrishnan, 1991: 198; Richard, 1841; Seidenfaden, 1983: 1565; Seidenfaden, 1999: 1220; Sharma, 1977: 140; Sharma <i>et al.</i> , 1984: 271; Wight, 1844-1845 5(1): 14.t. 927; Wight IC. t.927 & t.1714 in part.		
Compilers:	J.L. Ellis, R. Gopalan, R. Ingalhalli, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, S. Phatak, B. Arthur		
Reviewers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanani, S. Rajendran, B.V. Shetty, T.A. Rao.		

Scientific name (author: date):	Habenaria grandifloriformis Blatter & McCann, 1932		
Synonym:	<i>Habenaria grandiflora</i> Lindley ex. Hook. f. 1890, non Torr. ex Beck, 1833 <i>Habenaria rotundifolia</i> Lindley, 1835 non Richardson, 1823		
Habit:	Terrestrial herb		
Habitat:	Grassy slopes		
Niche/ elevation:	Wet, moist places. 800-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats (Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Bababudangiri top [Yoganarasimhan <i>et al.</i> , 1981].		
Distribution From Field Studies:	<u>Maharashtra</u> : Yellapur, Kolhapur, Panchgani, Satara, Mahabaleshwar <u>Karnataka</u> : Dakshina Kannada, Dharwar [S. Phatak, 1978]. Belgaum, Chikkamagalur, Hassan, Kolar, Uttara Kannada, Shimoga [T.A. Rao, 1996-98]. Agumbe, Shimoga, Shringeri, Chikkamagalur [Krishnaswamy, 1998-99]. Kemmanagundi Medicinal Plants Conservation Area [P.S. Udayan, 1992].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	40–50/>10. Fragmented. There is a continuing decline and extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10 years due to deterioration of habitat quality. There is decrease in the quality of the habitat due to urbanization.		
Threats			
Threats to taxon:	Edaphic changes, habitat loss, human interference, habitat fragmentation, trampling, grazing, habitat loss due to exotic plants, landslides and reproductive problems. These threats are resulting in and may result in population decline. Their influence on the population structure are well understood, are reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations are >2,500. The number of mature individuals declined in the past by >20% and are likely to decline by >20% in the future. Generation time – Seasonal.		
Trends:	The population size/numbers of the taxon is declining at a rate of >20% in the last 10 years. Predicted decline >10% in the next 10 years due to habitat loss.		
Recent Field Studies:	T.A. Rao in Uttara Kannada, 1991, floristic survey. S. Phatak in Uttara Kannada, Belgaum, Dharwar, 1996, taxonomy. Krishnasamy near Shringeri, 1998, study on orchidaceae. K. Ravikumar in Munnar, 1989, 1993, floristic studies.		
Data quality:	Assessed based on field studies, informal sighting, and literature/herbarium studies.		
Qualifier:	Area and extent estimated based on known locations; habitat status, threats, mature individuals and population trends observed over many years.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	A1ac, B1+2abcde
IUCN RED LIST CRITERIA (2000):	VULNERABLE	Criteria:	B2a+b(i,ii,iii,iv,v)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Bhadra Wildlife Sanctuary, Kudremukh National Park.		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists at the workshop. It was also on a range of opinion.		
Recommendations			
Research:	Life history studies, limiting factor research, taxonomic research and genetic research.		
Management:	Wild population management and monitoring		
Cultivation:	Cultivated stocks are not available. Initiate cultivation programme after 3 years. Some propagation techniques known for similar taxa		
Other comments:	This species has an interesting history. Lindley proposed the name <i>H. grandiflora</i> in 1828 in Wall. Cat. without a description. A description was first given by Dalzell & Gibson (1861). But this cannot be accepted as it is later homonym of that of Torrey ex Beck (1833). Blatter & McCann proposed <i>H. grandifloriformis</i> in 1932. Habitat completely lost in Dharwar in one location, in Karnataka University Dharwar Campus due to monoculture and buildings. Habitat loss complete near table lands in Panchgani. In the Ghat section widening of slopes has destroyed the species. The tubers are used as medicine [T.A. Rao, S. Phatak]. There is decline in the population in some areas.		
Sources:	Blatter & McCann, 1932 36 : 17; Hooker, 1890 6 : 136; Lindley, 1835: 306; Yoganarasimhan <i>et al.</i> , 1981: 336		
Compilers:	T.A. Rao, N.V.K. Ashraf, B. Arthur, Krishnaswamy, E. Mohan, R. Ingalhalli, S. Rajendran, R. Hegde, S. Phatak.		

Reviewers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, B.V. Shetty, U. Lakshminarayan, K.G. Selvi.

Scientific name (author; date):	Habenaria heyneana Lindley, 1835		
Synonyms:	<i>Habenaria subpubens</i> A. Rich., 1841 <i>Habenaria glabra</i> A. Rich., 1841 <i>Habenaria candida</i> Dalz., 1850 <i>Habenaria cerea</i> Blatter & McCann, 1932 <i>Habenaria cerea</i> Blatter & McCann var. <i>polyantha</i> Blatter & McCann, 1932		
Habit:	Terrestrial herb		
Habitat:	Montane grassland		
Niche/ elevation:	Abundant in rocky plateau and open grassy slopes. ca. 1600 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Shevroys, Yercaud (Maharashtra, Goa, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Shevroy hills, Konkan, Nilgiris, Khandala, Panchagani, Uttara Kannada, near Munnar and Mukurthi dam [Abraham & Vatsala, 1981]. Belgaum, Chikkamagalur, Dharwar, Hassan, Kolar, Uttara Kannada [Sharma <i>et al.</i> , 1984]. Wari country, Khandala, Lonavla, Panchagani, Mahabaleshwar, Karli, Bhimashankar, Konkan throughout Nilgiris and Shevroys [Nayar, 1996]. Aruvanpara, Silent Valley [Vajravelu, 1990; Sathish Kumar, 1999]. Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg [Lakshminarasimhan, 1996]. Goa, Sanguem, Ravanacha, Dongar, Verlem, Castle Rock on the way to Anmode [Rao, 1986]. Kalhatti, Kariashola, Mudimund, Naduvattom, Ootacamund, Pykara [Sharma <i>et al.</i> , 1977]		
From Field Studies:	<u>Maharashtra</u> : Panchagani, Londa, Yellapur [S. Phatak, 1980, 81]. <u>Karnataka</u> : Thadiandamol, Kodagu [T.A. Rao, 1996-98; R. Hegde, 1999]. <u>Kerala</u> : Kodanadu [P.S. Udyan, 1996]. <u>Tamil Nadu</u> : Kalhatti, Kariashola, Mudumalai, Naduvattom, Ootacamund, Pykara [B.V. Shetty, 1973-75]. Kolli Hills [M.B. Viswanath, 1992]. Mukurthi National Park [P.F. Solomons, 1997-99]. Kotagiri, Naduvattom, Nilgiris [N. Raman, 1998].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	>2,000		
Number of Subpopulations/location:	40–50/20–25. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >50% in the last 10 years. Predicted decline <20% in the next 10 years due to loss of habitat, broad gauge operations, tourism and trampling. Decrease in the quality of the habitat due to broad gauge operation, tourism and trampling.		
Threats			
Threats to taxon:	Grazing, habitat loss, trampling, fire, pollution and broad gauge operations resulting in and may result in population decline. The influence of threats on the population structure well understood, not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations >2,500. The number of mature individuals declined in the past by >20% and likely to decline by >20% in the future. Generation time 1 year.		
Trends:	The population size/numbers of the taxon declining at a rate of >50% in the last 10 years [in Maharashtra only]. Predicted decline <10% in the next 10-20 years due to habitat loss.		
Recent Field Studies:	R. Hegde in Thadiandamol, 1999, Systematics. P.F. Solomons in Mukurthi National Park, 1997-99, Field studies. P.S. Udayan in Kotagiri, Kodanadu, 1992 - 96, Documentation of vegetation in Nilgiris. M.B. Viswanathan in Kolli Hills, 1992-95, Flora of Kolli Hills. S. Phatak in Londa, 1993-99, Field studies. T.A. Rao in Thadiandamol in Kodagu, 1996-98.		
Data quality:	Assessed based on field studies, informal sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed in some areas and inferred for others.		
Status			
IUCN RED LIST CRITERIA (1994):	LOWER RISK NEAR THREATENED	Criteria:	--
IUCN RED LIST CRITERIA (2000):	NEAR THREATENED	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Bhimashankar Wildlife Sanctuary, Mudumalai Wildlife Sanctuary, Mukurthi National Park, Silent Valley National Park		
Uncertainty	Assessed based on evidence, range of opinion and on the consensus of the field biologists		
Recommendations			
Research:	Survey, life history studies and taxonomic research.		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for taxon or similar taxa		

Other comments: Lindley (1835) describes this species based on Heyne's collection from the peninsula. Grasslands are being destroyed for plantation purposes.

Sources: Abraham & Vatsala, 1981: 231, 233; Blatter & McCann, 1932 **36**: 21.t.6, **36**: 22; Dalzell, 1850 **2**: 262; Lakshminarasimhan, 1996: 39; Lindley, 1835: 320; Nayar, 1996: 225; Rao, 1986: 419; Richard, 1841 **15**: 75.t.4C, **15**: 75.t.5A; Sathish Kumar, 1999: 204; Sharma *et al.*, 1977: 141; Sharma *et al.*, 1984: 271; Vajravelu, 1990: 481.

Compilers: A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty

Reviewers: P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, T.A. Rao.

Scientific name (author: date):	Habenaria longicorniculata Graham, 1839		
Synonyms:	<i>Habenaria longicalcarata</i> A. Rich, 1841 <i>Habenaria longicalcarata</i> A. Rich var. <i>viridis</i> Blatter & McCann, 1932		
Habit:	Terrestrial tuberous herb		
Habitat:	Open grassy and rocky slopes		
Niche/ elevation:	1000m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Kolli Hills & Shevroy Hills (Gujarat, Maharashtra, Goa, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Ramdurg, North Kanara, Ponmudi, Vattivarta hills, Nilgiris [Abraham & Vatsala, 1981]. Kodaikanal, Glen falls, Upper Palni grasslands, Shembaganur – Levinge path, Palni Hills, Pallanghi-Palni path, Kodaikanal – Berijam, Mathikuttan shola slopes [Seidenfaden, 1999]. Konkan to Nilgiris [Nayar, 1996]. Goa – Dudhsagar, Castle Rock, on the way to Anmode [Rao, 1986]. Cannanore – Chandanathode [Ramachandran & Nair, 1988]. Hassan – Upper Ghats [Saldanha & Nicolson, 1976]. Coimbatore, Kanniyakumari, Madurai, Nilgiri, Salem [Henry <i>et al.</i> , 1989]. Silent Valley – Pulipara [Manilal, 1988]. Khandala, Katraj Ghar, Belgaum, Londa, Yellapur, west of Dharwar, Sampkhand, Sirsi – Siddhapur, Bihar, Orissa, Belgaum, Bellary, Chikmagalur, Dharwar, Hassan, Nysore, N. Kanara, Shimoga, Tumkur [Santapau & Kapadia, 1966]. Aruvanpara [Vajravelu, 1990]. Palni hills, near Kodaikanal, Mysore [Fyson, 1974]. Kollimalais, Serarayans [Seidenfaden, 1983]. Khandala near Poona, Konkan to Travancore [Hooker, 1890-1894]. Sairandhri [Manoharan <i>et al.</i> , 1999]. Near 184/7 milestone, Charamadi Ghats, Kotigehar [Yoganarasimhan <i>et al.</i> , 1981]. Kulathupuzha [Sathish Kumar & Manilal, 1994]. Avalanche, Coonoor, Devala-Nadugani, Naduvattom [Sharma <i>et al.</i> , 1977]. Pulipara and Sairandhri [Sathish Kumar, 1999]. Akola, Amaravathi, Aurangabad, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg [Lakshminarasimhan, 1996]. Dangs – Malegaon [Amin, 1978].		
Distribution from Field Studies:	<u>Maharashtra</u> : Konkan, Wada, Kolhapur, Pratapghad [S. Phatak, 1980]. <u>Karnataka</u> : Dakshina Kannada [S. Phatak, 1980]. <u>Kerala</u> : Silent Valley [C. Sathish Kumar, 1995]. <u>Tamil Nadu</u> : Bikkapathimund [T. Chhabra]. Anamalais [V.S. Ramachandran, 1998-99]. Nadugani, Vellingiri [R. Gopalan, 1978]. Salem [M.R. Vishwanathan, 1991, 94]. Avalanche [P.F. Solomons, 1998, 99]. Catherine Falls, Coonoor [P.S. Udayan, 1992-94].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	>2,000		
Number of Subpopulations/location:	400-500/40-50. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulations does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the past. Predicted decline >20% in the next 20 years due to their removal as weeds. Decrease in the quality due to plantation with exotic species and cultivation.		
Threats			
Threats to taxon:	Habitat loss, grazing, habitat loss due to exotic plants, fire and research collection are resulting in and may result in population decline. The influence of threats on the population structure is well understood, not reversible and have not ceased.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations are >10,000. The number of mature individuals declined in the past by 10% and is likely to decline by 10% in the future. Generation time is 1 year.		
Trends:	The population size/numbers of the taxon is declining at a rate of <10% in the last 10 years. Predicted decline 10% in the next 10years.		
Recent Field Studies:	C. Sathish Kumar in Silent Valley, 1995. V.S. Ramachandran in Anamalai hills, Nadugani, 1998, 99, conservation of orchids. A. Durai in Anamalai hills, 1996, <i>ex situ</i> conservation.		
Data quality:	Assessed based on field studies, informal sightings and literature/herbarium studies.		
Qualifiers:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed in some areas and inferred for others.		
Status			
IUCN RED LIST CRITERIA (1994):	LOWER RISK NEAR THREATENED	Criteria:	--
IUCN RED LIST CRITERIA (2000):	NEAR THREATENED	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Silent Valley National Park		
Uncertainty	Assessed based on evidence and on the consensus of the field biologists and subjective opinion.		
Recommendations			
Research:	Taxonomic research		
Management:	Wild population management, monitoring		
Cultivation:	Not recommended. Initiate cultivation programme after 3 years. Some techniques known for the taxon.		

Other comments: Described by Graham based on his collection from the open ground about Sir. Herbert Compton's Bungalow at Kandalla. Richard (1984) described his species based on Perrotet's collection from Nilgiris. Medicinal properties known [FRLHT, database]. In general students tend to collect this plant due to its long spur. Once tubers are lost they cannot rejuvenate. Misra records it from Orissa.

Sources: Abraham & Vatsala, 1981: 239; Amin, 1978: 658; Blatter & McCann, 1932 **36**: 20; Fyson, 1974: 401-403; Graham, 1839: 202; Hooker, 1890-1894: 141-142; Henry *et al.*, 1989: 15; Lakshminarasimhan, 1996: 39; Manilal, 1988: 287; Manoharan *et al.*, 1999; Rao, 1986: 420; Richard, 1841 **15**:71.t.3B; Sathish Kumar, 1999: 204; Sathish Kumar & Manilal, 1994; ; Saldanha & Nicolson, 1976: 833; Santapau & Kapadia, 1966: 29-32; Seidenfaden, 1983; Seidenfaden, 1999: 1219, 1220; Sharma *et al.*, 1977: 141; Sharma *et al.*, 1984: 271; Vajravelu, 1990: 482; Yoganarasimhan *et al.*, 1981: 337.

Compilers: A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarsi, M.B. Vishwanathan.

Reviewers: S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhali, N. Raman, N.C. Rathakrishnan, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.

Scientific name (author; date):	Habenaria multicaudata Sedgw., 1919		
Habit:	Terrestrial herb		
Habitat:	Evergreen forest.		
Niche / elevation:	Forest undergrowth. 1500 m		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Shevroy hills, Chitteri hills & Kalrayan hills (Maharashtra, Goa, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Wayanad [Ramachandran & Nair, 1988]. Palghat [Vajravelu, 1990]. Nilgiris, Anamalai hills, Kariasholai, Uttara Kannada Attapadi [Abraham & Vatsala, 1981]. Hassan, Uttara Kannada [Sharma <i>et al.</i> , 1984]. Silent Valley, below dam site [Manilal, 1988]. Yellapur, Katgal, Karwar, Guddehalli near Karwar, Nilgiris, Anamalai hills, Karian Sholai, Uttara Kannada, Attapadi [Nayar, 1996]. Sairandhri [Sathish Kumar, 1999]. Akola, Satara [Lakshminarasimhan, 1996]. Goa, Sanguem, Molem-Belgaum road [Rao, 1986]. Nilgiris [Sharma <i>et al.</i> , 1977]		
Distribution from Field Studies:	<u>Maharashtra</u> : Mahabaleshwar, Pratapghad [S. Phatak, 1980]. <u>Kerala</u> : Wayanad [V.S. Ramachandran, 1979-80]. Palghat [Vajravelu, 1977]. <u>Tamil Nadu</u> : Anamalai, Coimbatore [V.S. Ramachandran, 1994-95].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	>10/11. Fragmented. There is a continuing decline and no extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years. There is decrease in the quality of the habitat due to tourism.		
Threats			
Threats to taxon:	Interspecific competition, grazing, habitat loss, trampling, reproductive problems and decline in pollinator population, fruit predation by insects and demographic instability are resulting in and may result in population decline. The influence of threats on the population structure is well understood, are not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations are <10,000. The number of mature individuals declined in the past by 30-40% and is likely to decline by 30-40% in the future. Generation time is 1 year.		
Trends:	The population size/numbers of the taxon is declining at a rate of >30% in the last 10 years. Predicted decline >30% in the next 10 due to habitat loss.		
Recent Field Studies:	S. Phatak in Pratapghad, Mahabaleshwar, 1996, Orchid survey. V.S. Ramachandran in Anamalai, Coimbatore, 1994, 95, Medicinal Plant Conservation Area Report.		
Data quality:	Assessed based on field studies, informal sighting and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on the known locations. The habitat status, threats, mature individuals and population trends observed and also inferred from literature and herbarium studies.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	A1c+2c; B1+2bcde; C1
IUCN RED LIST CRITERIA (2000):	VULNERABLE	Criteria:	A2c+3c; B2a+b(ii,iii,iv,v); C1
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Silent Valley National Park, Wayanad Wildlife Sanctuary		
Uncertainty	Assessed based on evidence, precaution, minimum values, range of opinion and on the consensus of field biologists at the workshop.		
Recommendations			
Research:	Survey, genetic research, limiting factor research, PHVA pending.		
Management:	Habitat management, wild population management, genome resource banking, cultivation/breeding		
Cultivation:	Cultivation is recommended for preservation of live genome, commercial/sustainability. Cultivated stocks are not available. There is no coordinated species management programme for this species and one is recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	Proposed by L.J. Sedgwick based on a collection by T.R.D. Bell, Chief Conservator of Forests, Bombay Presidency in September 1917 from Gudihalli, a hill clode to the sea coast near Kaswar in North Kanara. It was found growing in a densely wooded part where very little light penetrates [Abraham & Vatsala, 1981]. Inter specific competition among <i>Habenaria</i> species like <i>H. digitata</i> , <i>H. spencei</i> , <i>H. gibsonii</i> , <i>H. crassifolia</i> . Nayar and Kochhar have reported this for the first time from Maharashtra.		
Sources:	Abraham & Vatsala, 1981: 216; Lakshminarasimhan, 1996: 41; Manilal, 1988: 288; Nayar, 1996: 225; Sharma <i>et al.</i> , 1984: 271; Ramachandran & Nair, 1988: 455, 456; Rao, 1986: 420; Santapau & Kapadia, 1966: 14, 15; Sathish Kumar, 1999: 204; Sedgwick, 1919 6: 352; Sharma <i>et al.</i> , 1977: 141;		
Compilers:	A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, N. Raman, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan.		

Reviewers

S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao, U. Lakshminarayan, K.G. Selvi.

Scientific name (author: date):	Habenaria ovalifolia Wight, 1851		
Synonym:	<i>Habenaria modesta</i> Dalz., 1850 <i>Habenaria hallbergii</i> Blatter & McCann, 1932		
Habit:	Tuberous herb		
Habitat:	Grassland		
Niche/ elevation:	Forest clearing. Up to 900 m.		
Historical distribution:	India		
Distribution			
Current Global Distribution:	ENDEMIC to Western Ghats + Periakalrayan hills, Kolli hills, Melagiri hills, Thiruchirappalli (Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Upper Ghats in Hassan [Saldanha & Nicolson, 1976]. Coimbatore, Nilgiris, Salem, Thiruchirappalli [Henry <i>et al.</i> , 1989]. Jodupala [Keshvamurthy & Yoganarasimhan, 1990]. Hill side of Kanheri caves, Borivilli hills west of Mulund, Khandala, Yellapur, Sirsi, Siddhapur, Nayali [Santapau & Kapadia, 1966]. Hassan, Uttara Kannada [Sharma <i>et al.</i> , 1984]. Malabar, Anamalai hills [Seidenfaden, 1999]. Bombay, Pune, Sindhudurg [Lakshminarasimhan, 1996]		
From Field Studies:	<u>Karnataka</u> : Sirsi, Siddhapur, Yellapur, Kumta [S. Phatak, 1981]. Kodagu [R. Hegde, 1999]. Chikkamagalur, Shimoga [Krishnaswamy, 1998]. Chikkamagalur, Kodachadira, Shringeri, [T.A. Rao, 1996-98]		
Kemmanagundi,			
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	>2,000		
Number of Subpopulations/location:	20-40/10-20. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10 years due to overgrazing, mining, habitat loss and tourism. Decrease in the quality of the habitat due to overgrazing, mining and tourism.		
Threats			
Threats to taxon:	Climate, grazing, habitat loss, trampling, habitat loss due to exotic animals, pollution and iron mining are resulting in and may result in population decline.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <2,500. The number of mature individuals declined in the past by >20% and likely to decline by >20% in the future. Generation time 1 year.		
Trends:	The population size/numbers of the taxon declining at a rate of >20% in the last 10 years. Predicted decline >20% in the next 10 due to habitat loss. The threats influencing the population structure well understood, not reversible and have not ceased.		
Recent Field Studies:	K. Krishnaswamy in Shimoga, Chikkamagalur, Yellapur, Thadiandamol, 1998, studies on orchidaceae. T.A. Rao in Chikkamagalur, Uttara Kannada, Dakshina Kannada, 1996-98, conservation of wild orchids. K. Ravikumar in Melpattu, Thenmalai MPCA, Thiruvanamalai Dt., Javadi Hills, Eastern Ghats, 1995-1998, floristic studies.		
Data quality:	Assessed based on field studies, and literature-herbarium studies.		
Qualifier:	The Area and Extent estimated based on the known locations. Habitat status, threats, mature individuals and population trends observed over many years of field studies.		
Status			
IUCN RED LIST CRITERIA (1994):	VULNERABLE	Criteria:	A1c+2c
IUCN RED LIST CRITERIA (2000):	NEAR THREATENED	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	None		
Uncertainty	Assessed based on evidence, precaution and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey, life history studies, limiting factor research and PHVA pending		
Management:	Habitat management and monitoring		
Cultivation:	Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme after 3 years. Some propagation techniques known for similar taxa		
Other comments:	Proposed by Wight based on a collection from Anamalai. Mainly confined to the Western Ghats and also some pockets in the Eastern Ghats [Salem, Trichy]. Medicinal uses known [FRLHT database].		
Sources:	Blatter & McCann, 1932 36: 24; Dalzell, 1850 2: 262; Henry <i>et al.</i> , 1989: 15; Keshvamurthy & Yoganarasimhan, 1990: 446; Lakshminarasimhan, 1996: 42; Nayar, 1996: 225; Saldanha & Nicolson, 1976: 83; Santapau & Kapadia, 1966: 271; Seidenfaden, 1999: 1223; Sharma <i>et al.</i> , 1984: 142; Wight, 1851 5(1): 13.t.1708.		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandra, N. Raman, K.G. Selvi, B.V. Shetty		

Reviewers:

A. Durai, P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, T.A. Rao.

Scientific name (author; date):	Habenaria rariflora A. Rich., 1841		
Habit:	Terrestrial tuberous herb		
Habitat:	Grasslands		
Niche/ elevation:	1300m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Kolli Hills and Shevroys (Maharashtra, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Panchagani, Pasarinighat, Konkan, Khandala, Vattivara [Abraham & Vatsala, 1981]. Coimbatore, Madurai, Nilgiris, Ramanathapuram, Salem, Thiruchirapalli [Henry <i>et al.</i> , 1989]. Khandala, Panchagani, Pasarnighal, Karkua, near Poona, Purandhar, Kollimalai hills, Horeleykonda [Santapau & Kapadia, 1966]. Kolar, Mysore, Shimoga [Sharma <i>et al.</i> , 1984]. Palni above Kodaikanal, Nilgiris [Fyson, 1974]. Kollimalais, Servarayanas, Canara to Travancore [Hooker, 1890-1894]. Irpu [Keshvamurthy & Yoganarasimhan, 1990]. Anaikatti - Ebanad, Coonoor, Kodanad, Pykara, Pakasuramalai [Sharma <i>et al.</i> , 1977]. Nilgiris, Southern Konkan, Coonoor, Hareley Konda, Kalamalai, Bababudan, Coimbatore, Palni path, Shembaganur, Silver Cascade top [Seidenfaden, 1999]. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Satara, Sindhudurg, Thane [Lakshminarasimhan, 1996]		
Distribution from Field Studies:	<u>Maharashtra</u> : Panchagani, Wai [S. Phatak, 1980]. <u>Karnataka</u> : Kodagu [V.S. Ramachandran]. Kushalnagar, Kudremukh National Park, Kodagu [T.A. Rao, 1996-98]. Castle Rock [S. Phatak, 1980]. <u>Tamil Nadu</u> : Bikkapathimund, Kodanadu [T. Chhabra, 1995 till date]. Nilgiris [Rajan, 1988]. Anamalai hills [V.S. Ramachandran].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	>2,000		
Number of Subpopulations/location:	400–500/40–50. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10-20 years. Predicted decline <20% in the next 10-20 years due to habitat fragmentation, tourism and human activities. Decrease in the quality of the habitat due to plantations.		
Threats			
Threats to taxon:	Edaphic changes, habitat loss, pollution, trampling, habitat fragmentation, habitat loss due to exotic animals, fire and demographic instability resulting in and may result in population decline. The influence on the population structure well understood, are not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend:	Mature individuals in all populations >10,000. The number of mature individuals declined in the past by <20% and likely to decline by >20% in the future. Generation time 1 year.		
Trends:	The population size/numbers of the taxon declining at a rate of >20% in the last 10 years. Predicted decline <10% in the next 10 years due to habitat loss.		
Recent Field Studies:	T.A.Rao in Kodagu and Kudremukh National Park, 1996-2000, conservation of wild orchids of Kodagu. S. Phatak in Panchagani, Satara, 1998, informal sighting.		
Data quality:	Assessed based on field studies, informal field sightings and literature/herbarium studies.		
Qualifier:	The Area and Extent are estimated based on known locations. The habitat status, threats, mature individuals and population trends are observed in a few areas and inferred for other areas.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	A1ac
IUCN Red List Criteria (2000):	NEAR THREATENED	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Brahmagiri Wildlife Sanctuary, Indira Gandhi Wildlife Sanctuary, Kudremukh National Park		
Uncertainty	Assessed with confidence based on evidence and on the consensus of the field biologists		
Recommendations			
Research:	Survey, taxonomic research, life history studies and limiting factor research		
Management:	Monitoring and habitat management		
Cultivation:	Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Some propagation techniques known for taxon or similar taxa.		
Other comments:	This species was described by A. Richard based on a collection by G.S. Perrotet from Coonoor in Nilgiris. Coal engines release smoke which covers the entire population over 3-4 years, since this species is lithophytic it results in the decline of the population. Sterility is high in this species [S. Phatak]. Medicinal uses known [FRLHT database].		
Sources:	Abraham & Vatsala, 1981: 216; Fyson, 1974: 400, 401; Henry <i>et al.</i> , 1989: 16; Hooker, 1890-1894: 136, 137; Keshvamurthy & Yoganarasimhan, 1990: 447; Lakshminarasimhan, 1996: 43; Rao, 1998: 208; Richard, 1841 ser.2 15:70.t.20; Santapau & Kapadia, 1966: 15, 16; Seidenfaden, 1983: 1562; Seidenfaden, 1999: 1219; Sharma <i>et al.</i> , 1977: 142; Sharma <i>et al.</i> , 1984: 271.		

Compilers:

A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty

Reviewers:

P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, T.A. Rao.

Scientific name (author: date):	Liparis biloba Wight, 1851		
Habit:	Terrestrial or epiphytic herb		
Habitat:	Shola forests		
Niche/ elevation:	1000-2000 m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Shevroy hills (Karnataka & Tamil Nadu)		
Distribution from Literature:	Nilgiri, Salem [Henry <i>et al.</i> , 1989]. Chickamagalur [Sharma <i>et al.</i> , 1984]. Nilgiris, Kollimund National Park, Udthagamandalam [Hooker, 1886-1890]. Udthagamandalam [Somdeva & Naithani, 1986]. On the way to Hebbe falls, Kemmanagundi [Yoganarasimhan <i>et al.</i> , 1981]. Nilgiris [Sharma, 1977]. Nilgiri Biosphere Reserve, Kollimund, Kundah range [Nayar & Sastry, 1987; Shetty & Vivekananthan, 1981]. Chickamagalur to Nilgiris [Nayar, 1996]. Kollimund [Kunhikrishnan, 1972]. Chickamagalur, Nilgiri [Rathakrishnan & Chitra, 1984]. Nilgiris [Sharma <i>et al.</i> , 1977].		
Distribution from Field Studies:	<u>Tamil Nadu</u> : Kollimund, on the way to Upper Bhavani [M. Mohanan]		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	<10/<10. Fragmented. Continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat <20% in the last 10 years due to loss of habitat, felling of host trees. Decrease in the quality of the habitat due to clearance of area for plantation of wattle [M. Mohanan, 2000].		
Threats			
Threats to taxon:	Habitat loss and habitat loss due to exotic plants. The threats influencing the population structure well understood, not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Unknown		
Trends:	The population of the taxon is declining at a rate of <20% in the last 10 years [Muktesh Kumar]. Predicted decline >10% in the next 10 years due to habitat loss.		
Recent Field Studies:	M. Mohanan, N.P. Balakrishnan and A.V.N. Rao in Kollimund near Upper Bhavani, 1989, Endangered orchids of Nilgiri Biosphere Reserve, India.		
Data quality:	Assessed based on field studies, informal sighting and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed or inferred.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcc
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(ii,iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Vulnerable [Nayar & Sastry, 1987]	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Mukurthi National Park		
Uncertainty	Assessed based on some evidence and precaution. The information is based on a range of opinion.		
Recommendations			
Research:	Survey and limiting factor research		
Management:	Habitat management		
Cultivation:	Cultivated stocks available at National Orchidarium, BSI, Yercaud [M. Mohanan, 2000]. Numbers in cultivation not known. Initiate cultivation programme after 3 years. Some techniques known.		
Other comments:	It was proposed by Wight based on his collection from Ootacamund. This species has been collected from Nilgiris in 1972 and there has been no previous of subsequent collections in Madras Herbarium. Plants collected from Kollimund are being cultivated in the National Orchidarium, BSI, at Yercaud, ca 1360m [Nayar & Sastry, 1987]. A.V.N. Rao collected it from Kollimund on the way to Bhavani in 1973 and introduced it to the National orchidarium, Yercaud. M. Mohanan and N.P. Balakrishnan visited the same area and collected the plant in 1989 from a huge fallen tree and introduced them to the National Orchidarium, Yercaud.		
Sources:	Henry <i>et al.</i> , 1989: 17; Hooker, 1886-1890: 699; Kunhikrishnan, 1972: 112; M. Mohanan, 2000. Unpublished Biological Information Sheet: Muktesh Kumar, 2000, Unpublished Biological Information Sheet: Rathakrishnan & Chitra, 1984: 1005; Sharma <i>et al.</i> , 1977: 141; Sharma <i>et al.</i> , 1984: 272; Nayar, 1996: 225; Nayar & Sastry, 1987: 261; Shetty & Vivekananthan, 1981: 259; Somdeva & Naithani, 1986: 41; Wight, 1851 5(1): 4.t.1633;		
Compilers:	A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty		
Reviewers:	P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, M. Mohanan, Rajendran, S. Phatak, J.L. Ellis, R. Ingalthalli, C. Sathish Kumar, B. Arthur, T.A. Rao.		

Scientific name (author: date):	Oberonia brunoniana Wight, 1851		
Habit:	Pendulous epiphyte		
Habitat:	Moist deciduous forest.		
Niche/ elevation:	1200m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Kolli Hills (Dadra & Nagarhaveli, Maharashtra, Goa, Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiris, Palni hills, Kulathupuzha, Naterickal, Attapadi, Nelliampathy, Ponmudi and Bonaccord [Abraham & Vatsala, 1981]. Coimbatore, Nilgiri, Salem [Henry <i>et al.</i> , 1989]. Silent Valley dam site [Manilal, 1988]. Kalanadi, Anmod, Castle Rock, Nilgiri, Palni, Malabar, Travancore [Santapau & Kapadia, 1966]. Belgaum, Chickamagalur, Kodagu, Hassan, Mysore, Shimoga [Sharma <i>et al.</i> , 1984]. Nagarhaveli - Chispana area [Rao, 1986]. Cannanore - Chandanathode [Ramachandran & Nair, 1988]. Upper Ghats of Hassan [Saldanha & Nicolson, 1976]. Nilgiris near Udhamandalam, Naduvattom, Upper Ghat in Palghat [Vajravelu, 1990]. Canara, Malabar, Travancore [Hooker, 1886-1890]. Kolli hills [Mathew, 1991]. Bangihalla - Bangitappal, Naduvattom [Sharma <i>et al.</i> , 1977]. Konkan, Canara, Nilgiris, Pykara, Naduvattom, Avalanche [V. Ramasundar, 2000]. Palamalai, Kodaikanal, Law's Ghat road [Seidenfaden, 1999]. Sairandhri [Sathish Kumar, 1999]. Kolhapur, Satara, Thane [Lakshminarasimhan, 1996]. Birunanai and Shuntigutti [Keshavamurthy & Yoganarasimhan, 1990].		
From Field Studies:	<u>Karnataka</u> : Madikeri, Brahmagiri Range, Thalakaveri, Somwarpet, Veerajapet [T.A. Rao]. <u>Kerala</u> : Silent Valley [Sathish Kumar, 1995]. <u>Tamil Nadu</u> : Pykara, Naduvattom, Avalanche [V. Ramasundar, 2000]. Anamalai Hills [V.S. Ramachandran, 1998, 99]. Ellamalai, Nilgiris [K. Sivabalakrishnan, 1995, 96]. Naduvattom [Raman, 1998]. Mukurthi National Park [P.F. Solomons, 1997-99]. Kotagiri, Pykara, T.R. Bazaar [P. S. Udayan, 1992-96].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	>2,000		
Number of Subpopulations/location:	100/ many. Fragmented. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10 years. Predicted decline >20% in the next 10 years due to loss of habitat, denudation of forests and decrease in the shola forests [V. Ramasundar, 2000]. No change in the quality of the habitat.		
Threats			
Threats to taxon:	Climate, edaphic changes, habitat loss, grazing, damming, harvest for timber, drought, fire and landslides resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations >2,500. The number of mature individuals declined in the past by 10% and likely to decline by 10% in the future. Generation time 5-10 years.		
Trends:	The population size/numbers of the taxon is declining at a rate of >20% in the last 10 years. Predicted decline >10% in the next 10 years due to habitat loss.		
Recent Field Studies:	N. Raman in Naduvattom, June 1998, Mycorrhizal association. V.S. Ramachandran in Anamalai Hills, 1998, 99, Conservation studies. K. Sivabalakrishnan and A. Durai in Ellamalai, 1995, 1996, <i>Ex situ</i> Conservation. P.S. Udayan in Kotagiri, Pykara, 1992-96, documentation of vegetation in Nilgiris. P.F. Solomons in Mukurthi National Park, 1997-99, Field studies. T.A. Rao in Kodagu, 1996-98, Conservation of wild orchids of Kodagu.		
Data quality :	Assessed based on field studies, census/monitoring and literature/herbarium studies.		
Qualifier:	The Area and Extent are estimated based on known locations. The habitat status, threats, mature individuals and population trends are observed over many years of field studies.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	A1ac
IUCN Red List Criteria (2000):	NEAR THREATENED	Criteria:	--
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Mukurthi National Park, Silent Valley National Park		
Uncertainty:	Assessed with 95% confidence based on evidence and on the consensus of the field biologists at the workshop.		
Recommendations			
Research:	Survey, life history studies and PHVA pending		
Management:	Monitoring		
Cultivation:	Cultivated stocks available at Kaveri Nisargadhama. Numbers in cultivation 10. There is no coordinated species management programme for this species and one is not recommended. Information on propagation techniques not available with this group of compilers.		
Other comments:	This was proposed by Wight based on a collection from Iyamally Hills near Coimbatore.		

Sources:

Abraham & Vatsala, 1981: 422, 425; Henry *et al.*, 1989: 20; Hooker, 1886-1890: 681; Keshavmurthy & Yoganarasimhan, 1990: 450; Lakshminarasimhan, 1996: 51; Manilal, 1988: 296; Ramachandran & Nair, 1988: 457, 458; Ramasundar, 2000. Unpublished Biological Information Sheet; Rao, 1986: 422; Saldanha & Nicolson, 1976: 838; Santapau & Kapadia, 1966: 69, 70; Sathish Kumar, 1999: 206; Seidenfaden, 1999: 1244, 1245; Sharma *et al.*, 1977: 142; Sharma *et al.*, 1984: 274; Vajravelu, 1990: 486; Wight, 1851 5(1): 3.t.1622.

Compilers:

A. Durai, E. Mohan, R. Hegde, V.S. Ramachandran, N. Raman, K.G. Selvi, B.V. Shetty.

Reviewers:

P.F. Solomons, R. Gopalan, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, R. Thamilarasi, M.B. Vishwanathan, S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Mohanan, S. Rajendran, S. Phatak, J.L. Ellis, R. Ingalhalli, C. Sathish Kumar, B. Arthur, T.A. Rao.

Scientific name (author: date):	Oberonia proudlockii King & Pantl., 1897		
Synonym:	<i>Oberonia sedgwickii</i> Blatter & McCann, 1931		
Habit:	Pendulous epiphytic herbs		
Habitat:	Moist deciduous forest, semi evergreen forests.		
Niche/ elevation:	1200m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Kolli Hills (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Nilgiris, Gudalur, Uttara Kannada [Abraham & Vatsala, 1981]. Nilgiri, Salem [Henry <i>et al.</i> , 1989]. Uttara Kannada [Sharma <i>et al.</i> , 1984]. Silent Valley - Poochapura [Manilal, 1988]. Kollimalais, Gudalur [Matthew, 1983]. Kolli hills [Mathew, 1991]. Kariashola [Sharma, <i>et al.</i> , 1977]. Anmode, Castle Rock, Nilgiri, Ponmudi [Mohanani & Henry, 1994]. Nadugani in Nilgiris [Mohanani & Balakrishnan, 1991]. Poochapura [Sathish Kumar, 1999].		
Distribution from Field Studies:	<u>Karnataka</u> : Castle Rock, Anmode [S. Phatak, 1978, 98]. <u>Kerala</u> : Ponmudi [M. Mohanan, 1978]. Silent Valley [Sathish Kumar, 1995]. <u>Tamil Nadu</u> : Kolli Hills [M. Mohanan, 1983].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	10-500		
Number of Subpopulations./location:	10/3. Fragmented. Continuing decline and extreme fluctuation in the number of locations or subpopulations. All individuals not in one population		
Habitat status:	Decrease in the habitat >20% in the last 10 years. Predicted decline >20% in the next 10 years due to habitation, mining and deforestation. Decrease in the quality of the habitat.		
Threats			
Threats to taxon:	Habitat loss, habitat fragmentation and mining resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased to be a threat.		
Trade:	Not in trade.		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <2,500. The numbers of mature individuals declined in the past by >10% and likely to decline by >10% in the future. Generation time – perennial.		
Trends:	The population size/numbers of the taxon is declining at a rate of <10% in the last 10 years.		
Recent Field Studies:	S. Phatak in Anmode, 1998, Orchids of Anmode.		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2abcde+3c
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(i,ii,iii,iv,v)+c(iii)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Silent Valley National Park		
Uncertainty	Assessed with 95% confidence based on evidence and on the consensus of the field biologists		
Recommendations			
Research:	Survey, taxonomic research		
Management:	Wild population management and monitoring		
Cultivation:	Cultivation is recommended for research. Cultivated stocks are available at National Orchidarium, Yercaud. Numbers in cultivation 10. There is no coordinated species management programme for this species and one is not recommended. Some propagation techniques known for similar taxa.		
Other comments:	This was described by King & Prantling based on R.L. Proudlock's collection from near Gudalur in Nilgiri hills.		
Sources:	Abraham & Vatsala, 1981: 422; Blatter & McCann, 1931 35:257; Henry <i>et al.</i> , 1989; King & Pantling, 1897 66(3): 580; Mathew, 1991: 505; Manoharan <i>et al.</i> , 1999: 207; Mohanan & Balakrishnan, 1991: 196; Mohanan & Henry, 1994: 465; Sathish Kumar, 1999: 207; Seidenfaden, 1983: 1578; Sharma <i>et al.</i> , 1977: 142.		
Compilers:	M. Mohanan, R. Gopalan, S. Phatak, S.S.R. Bennet, S. Rajendran, R. Thamilarsi		
Reviewers:	P.F. Solomons, R. Manickam, M. Thapliyal, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingalthalli, N. Raman, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao.		

Scientific name (author; date):	Oberonia santapau Kapadia, 1960		
Synonyms:	<i>Malaxis lindleyana</i> Wight <i>Oberonia lindleyana</i> Wight, 1851 non Brongn. ex Duperrey, 1834		
Habit:	Epiphytic herbs		
Habitat:	Semi evergreen forests		
Niche/ elevation:	Above 1300m.		
Distribution			
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Servarayans and Kolli Hills (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Upper ghats of Hassan [Saldanha & Nicolson, 1976]. Coimbatore, Madurai, Thirunelveli, Nilgiris, Salem [Henry <i>et al.</i> , 1989]. Chickamagalur, Hassan, Mysore, Uttara Kannada [Sharma <i>et al.</i> , 1984]. Silent Valley dam site [Manilal, 1988, Vajravelu, 1990]. Silent Valley dam site, Kollimalais, Servarayanas [Mathew, 1983]. On the way to Bhagavathi [Yoganarasimhan <i>et al.</i> , 1981]. Ponmudi [Abraham & Vatsala, 1981]. Udhagamandalam [Sharma, <i>et al.</i> , 1977]. Anmode, Nilgiri, Travancore hills, Thiruvananthapuram [Mohan & Henry, 1994]. Church Cliff, Kodaikanal [Seidenfaden, 1999]. Sairandhri [Sathish Kumar, 1999]. Irpu, Thadiandamol [Keshavmurthy & Yoganarasimhan, 1990]. Idukki, Coimbatore [Rathakrishnan & Chitra, 1984]		
From Distribution field Studies:	<u>Karnataka</u> : Thadiandamol, Thalakaveri, Sampagii, Madikeri [T.A. Rao, 1996-98]. Anmode [S. Phatak, 1991, 92]. <u>Tamil Nadu</u> : Kolli Hills [M.B. Viswanathan, 1992].		
Extent of Occurrence (Sq. km.):	>20,000		
Area of Occupancy (Sq. km.):	>2,000		
Number of Subpopulations/location:	8/6. Fragmented. Continuing decline and no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in the habitat >20% in the last 10 years. Predicted decline >20% in the next 10 years due to human interference. No change in the quality of the habitat.		
Threats			
Threats to taxon:	Habitat loss, damming, poisoning and construction of roads resulting in and may result in population decline. The influence on the population structure well understood, not reversible and have not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <2,500. The numbers of mature individuals declined in the past 10 years by 10% and likely to decline by 10% in the future. Generation time 3 years.		
Trends:	The population size/numbers of the taxon is declining at a rate of <10% in the last 10 years. Predicted decline <10% in the next 10 years due to habitat loss.		
Recent Field Studies:	S. Phatak in Anmode, 1998, Orchids of Anmode. T.A. Rao in Kodagu, 1996-98, Conservation of wild Orchids of Kodagu. M.B. Viswanathan in Kolli Hills, 1992, Conservation studies.		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent estimated based on known locations. The habitat status, threats, mature individuals and population trends observed over many years of field studies.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	C1
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	C1
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Brahmagiri Wildlife Sanctuary, Silent Valley National Park, Talakaveri Wildlife Sanctuary		
Uncertainty	Assessed with confidence based on evidence and on the consensus of the field biologists		
Recommendations			
Research:	Survey		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Information on propagation techniques not available with this group of compilers.		
Other comments:	Originally proposed by Wight based on his collection from lamallay Hills in Coimbatore. The presence of semi lunar cresent shaped nectary is charecteristic of this taxon [T.A. Rao].		
Sources:	Abraham & Vatsala, 1981: 429; Henry <i>et al.</i> , 1989: 20; Kapadia, 1960 57: 265; Keshavmurthy & Yoganarasimhan, 1990: 453; Manilal, 1988: 297; Mohanan & Henry, 1994: 465; 320; Rathakrishnan & Chitra, 1984: 1005; Rao, 1998: 217; Saldanha & Nicolson, 1976: 840; Sathish Kumar, 1999: 207; Seidenfaden, 1983: 1581; Seidenfaden, 1999: 1245; Sharma <i>et al.</i> , 1984: 275; Wight, 1851 5(1): 3.t.1624; Yoganarasimhan <i>et al.</i> , 1981: 319,		
Compilers:	S.S.R. Bennet, B. A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, R. Thamilarasi		

Reviewers:

P.F. Solomons, R. Manickam, S. Rajan, V.S. Ramachandran, R. Singh, N.C. Rathakrishnan, T. Chhabra, M.B. Vishwanathan, A. Durai, N. Raman, J.L. Ellis, R. Ingalhali, N. Raman, C. Sathish Kumar, B. Arthur, B.V. Shetty, T.A. Rao.

Scientific name (author; date):	Oberonia verticillata Wight, 1851		
Habit:	Epiphytic herb		
Habitat:	Semi-evergreen to evergreen forests		
Niche/ elevation:	500-2200m		
Distribution			
Historical Distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Salem (Karnataka, Kerala & Tamil Nadu)		
Distribution from Literature:	Yellappur & Sirsi, North Kanara [Fischer]. Salem [Matthew]		
Distribution from Field Studies:	Bonaccord, Thiruvananthapuram [Sathish Kumar]		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	11-500		
Number of Subpopulations/location:	10/10. Fragmented. There is a continuing decline but no extreme fluctuation in the number of locations or subpopulations. All individuals not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Decrease in habitat quality and continuing decline in habitat due to human interference.		
Threats			
Threats to taxon:	Habitat loss		
Trade:	Not in trade		
Population			
Numbers/Generation time/trend:	<500 mature individuals.		
Population trend:	Declining		
Recent Field Studies:	C. Sathish Kumar in Pongalappara, Attayar, Bonaccord, Palode, 1985. M. Mohanan in Kurusumalai, Anchunazhikathode, Kottur.		
Data quality:	General field studies, literature/herbarium studies		
Qualifier:	Area and Extent estimated and habitat status observed. Population estimated based on observation.		
Status			
IUCN Red List Criteria (1994):	ENDANGERED	Criteria:	B1+2bcd
IUCN Red List Criteria (2000):	ENDANGERED	Criteria:	B2a+b(ii,iii,iv)
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative List of Exports (EXIM Policy), 1999.		
Known presence in Protected Areas:	None		
Uncertainty	Assessment based on precaution due to changes expected in habitat. Assessment is exclusive to the below listed compilers and reviewers.		
Recommendations			
Research:	Life history studies recommended		
Management:	Monitoring		
Cultivation:	None.		
Other comments:	Described by Wight based on his collection from Nilgiris. Thwaites collection from Sri Lanka cited by Seidenfaden (1968) under <i>O. verticillata</i> actually belongs to <i>O. thwaitesii</i> Hook. f., a closely related species. The reported record of its occurrence in Orissa needs confirmation.		
Sources:	Seidenfaden 1968; Seidenfaden, 1983; Wight (1851)		
Compilers:	C. Sathish Kumar		
Reviewers:	B.V. Shetty, B. Arthur, S. Molur		

Scientific name (author; date):	Robiquetia josephiana Manilal & Sathish, 1984		
Synonyms:	<i>Saccolabium roseum</i> auct. non Lindley, 1883: Joseph 1962 <i>Malleola rosea</i> auct. non (Lindley) Schltr., 1903: Joseph 1982		
Habit:	Epiphytic herb		
Habitat:	Moist deciduous forest, shola or semi evergreen forests.		
Niche/ elevation:	800-1850m.		
Historical distribution:	India		
Current Global Distribution:	ENDEMIC to Western Ghats + Kolli Hills (Karnataka, Kerala & Tamil Nadu)		
From Literature:	Anamalai, Ponmudi, near Munnar, Thariode [Abraham & Vatsala, 1981]. Coimbatore, Nilgiri, Ramanathapuram [Henry <i>et al.</i> , 1989]. Silent Valley [Nayar, 1996]. Silent Valley, Chembotti [Manoharan <i>et al.</i> , 1999; Sathish Kumar, 1999].		
From Field Studies:	<u>Karnataka</u> : Kudremukh National Park, Thirthahalli [T.A. Rao, 2000]. <u>Kerala</u> : Silent Valley [C. Sathish Kumar, 1990s] <u>Tamil Nadu</u> : Kolli Hills [M.B. Viswanathan, 1992]. Kakachi, Kodayar, Kalakad-Mundanthurai Tiger Reserve [R. Ganesan, 2000].		
Extent of Occurrence (Sq. km.):	5,001-20,000		
Area of Occupancy (Sq. km.):	501-2,000		
Number of Subpopulations/location:	5/ 2. Fragmented. No continuing decline or extreme fluctuation in the number of locations or subpopulations. All individuals are not in one population and one subpopulation does not hold 95% or more of the total population.		
Habitat status:	Predicted decline of <20% in the next 10 years due to habitat loss.		
Threats			
Threats to taxon:	Habitat loss resulting in and may result in population decline. The influence on the population structure well understood, not reversible and not ceased.		
Trade:	Not in trade		
Population			
Numbers/Generation time/Trend	Mature individuals in all populations <2,500. The numbers of mature individuals have declined in the past and likely to decline by 10% in the future. Generation time 2 years.		
Trends:	The population size/numbers of the taxon declining at a rate of <10% in the last 10 years and <10% predicted decline in the next 10years due to habitat loss.		
Recent Field Studies:	T.A. Rao in Kudremukh, Thirthahalli, 1998. M.B. Viswanathan in Kolli Hills, 1992, Conservation. R. Ganesan in Kakachi-Kodayar, 1997-2000.		
Data quality:	Assessed based on field studies and literature/herbarium studies.		
Qualifier:	The Area and Extent are estimated based on known locations. The habitat status, threats, mature individuals and population trends are observed in some areas and inferred in other areas.		
Status			
IUCN Red List Criteria (1994):	VULNERABLE	Criteria:	B1+2be; C1
IUCN Red List Criteria (2000):	VULNERABLE	Criteria:	B1a+b(ii,v), 2a+b(ii,v); C1
CITES:	Appendix II	Indian WL. (P) Act:	Not listed
National Red Data Book:	Not listed	International RDB:	Not listed
Other legislation:	Included in the Negative list of Exports (EXIM Policy), 1999		
Known presence in Protected Areas:	Kalakad-Mundanthurai Tiger Reserve, Kudremukh National Park, Silent Valley National Park		
Uncertainty:	Assessed with 95% confidence based on evidence and on the consensus of the field biologists		
Recommendations			
Research:	Survey		
Management:	Monitoring, cultivation/breeding		
Cultivation:	Cultivated stocks are not available. There is no coordinated species management programme for this species and one is not recommended. Initiate cultivation programme within 3 years. Information on propagation techniques not available with this group of compilers.		
Other comments:	Described by Manilal & Sathish based on a collection from Silent Valley. No change observed in Kolli Hills. In Kakachi and Kodayar there is no threat as the area is under protection [R. Ganesan, 2000]. Only five individuals were recently recorded in Kudremukh Medicinal Plants Conservation Area [T.A. Rao]		
Sources:	Abraham & Vatsala, 1981: 494; R. Ganesan, 2000. Unpublished Biological Information Sheet; Henry <i>et al.</i> , 1989: 24; Joseph, 1962 16 (2): 297; Joseph, 1982: 125; Manilal & Sathish, 1984 92 (1091): 293; Manoharan <i>et al.</i> , 1999: 210; Nayar, 1996: 226; Sathish Kumar, 1999: 210.		
Compilers:	S.S.R. Bennet, B.A. Daniel, R. Gopalan, M. Thapliyal, M. Mohanan, S. Rajendran, S. Phatak, Thamilarasi		
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