

A Review of CITES Appendices I and II Plant Species From Lao PDR



A report for IUCN Lao PDR

by

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June 2006

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Supported by Darwin Initiative for the Survival of the Species Project 163-13-007



Cover illustration: Orchids and Cycads for sale near Gnommalat, Khammouane
Province, Lao PDR, May 2006 (photo courtesy of Darwin Initiative)

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Acronyms and Abbreviations used in this report

| | |
|-----------|---|
| BIOTIK | Biodiversity Informatics and co-Operation in Taxonomy for Interactive shared Knowledge base |
| CITES | Convention on International Trade in Endangered Species of Wild Flora and Fauna |
| CSD | CITES Species Database |
| FCLV | Flore du Cambodge, du Laos et du Viêt Nam |
| FGO | Field Guide to the Orchids of Lao PDR |
| LTSP | Lao Tree Seed Project |
| PADME | Lao National Species Checklist database |
| UNEP-WCMC | United Nations Environmental Programme – World Conservation Monitoring Center |
| WCO | World Checklist Series |

Acknowledgements

The authors of this study wish to acknowledge the financial support of the United Kingdom Government's *Darwin Initiative for the Survival of the Species* for the development of the Preliminary Checklist of the Flora of Lao PDR as part of the project *Taxonomic Training in a neglected biodiversity hotspot in Lao PDR* (grant 163-13-007). Information derived from the World Checklist Series (www.rbgekew.org.uk/wcsp/) has been used with the permission of the Trustees of the Royal Botanic Gardens, Kew. The authors would also like to acknowledge the generosity of the curators at the Nationaal Herbarium Nederland Leiden Branch and the Muséum National d'Histoire Naturelle for contributing valuable herbarium data and advice of Dr Harriet Gillet from World Conservation Monitoring Center, Cambridge, U.K.

Summary

Convention on International Trade in Endangered Species (CITES) - background

- The Convention on International Trade in Endangered Species (CITES) seeks to prevent over-exploitation and extinction of wild animal and plant species through the regulation of the harvesting and trading of the products derived from them.
- Central to the Convention are three Appendices (I, II and III) that list the plants and animals that are considered to be threatened by trade and over-exploitation. Listing on either Appendix I or II obliges signatory countries to implement the articles of the Convention.
- Information relating to the taxonomy, distribution, conservation status and trade status of each species is held and managed on the CITES Species Database (CSD) that is hosted by the World Conservation Monitoring Center (WCMC), based in Cambridge, UK. This information is used to produce international and national lists of species covered by the CITES Appendices.
- The information in the database is derived from a range of sources that vary in terms of accuracy and comprehensiveness. For some groups, such as the Orchidaceae, standardised lists of scientific names and distributions have been produced. These lists are not updated after publication and do not take account of post-publication research. In areas of the world where the biodiversity, for a range of reasons, is poorly known this can be problematic. Lao PDR is an example of such an area – the flora is estimated to contain more than 8 000 species of higher vascular plants but only approximately 2 000 have been documented.

Lao PDR and CITES

Lao PDR has only recently become a signatory to the CITES convention and is in the early stages of implementation. The IUCN country office has started capacity building programmes to assist the implementation of Lao PDR's obligations under the convention. As part of this process the IUCN commissioned a review of the current CITES listings for Lao PDR from botanists working on the UK funded Darwin Initiative Project *Taxonomic Training in a Neglected Biodiversity Hotspot in Lao PDR*. The focus of the review is the 56 plant species currently listed on Appendix I and II

Review of Plant Species Listed Under CITES Appendix I and II

The review had three aims

1. To assess the taxonomic validity of the names being used and the reliability and accuracy of the distribution information associated with each species
2. To compare the current list with those from surrounding countries to establish which species, if any, should also be listed for Lao PDR
3. To identify particular species that are currently being traded

Results of the Review

Aim 1 taxonomic validity and reliability and accuracy of the distribution information.

Results: of the 56 species listed

- One species is no longer on any of the CITES appendices
- Eight species are currently considered to be synonyms
- Only one species had a distribution record that was specific to Lao PDR

- Two species could not be confirmed as occurring in Lao PDR.
- All other distribution records in the CSD were either noted to be uncertain or were non-specific

Aim 2: comparison with from surrounding countries (Table 4)

Results:

- Twelve non-orchid/ Cycadaceae species were identified that had not previously been listed for Lao PDR (see Table 4). All of these species occur in surrounding countries except for the endemic *Gyrinops vidalii*.
- Two of the twelve species are important medicinal plants in either India (*Rauvolfia serpentine*) or China *Cibotium barometz*; their distribution in Lao is poorly known and it is uncertain if they are being traded.
- *Aquilaria crassna* was not officially listed although its presence and status has been known for some time. This species is already listed as critically endangered as most natural populations have already been harvested.
- All orchids are covered by CITES legislation as a result of the whole family being listed. The reason for this lies in the problems in identification of individual species by non-botanical CITES staff. Consequently, species that are not actively threatened by trade are also covered.
- The review identified a total of 478 orchids from Lao PDR. Most of these occur in either Thailand or Vietnam but had not been recorded from Lao PDR. The CITES Species Database only lists species that have been listed in reports or other forms of information sent to the WCM and it is unlikely that the database will ever list all the orchid species that occur in Lao PDR. In view of this, a checklist of the orchid species currently known or strongly suspected to occur in Lao has been compiled as part of this review (see Annex 5). This list should be updated by researchers at NUoL as new records are discovered.
- Two genera and six species of orchids are listed under Appendix I. Of these, one genus (*Paphiopedilum*) occurs in Lao PDR. Appendix I species tend to be the most threatened by trade; the majority of *Paphiopedilums* are thought to be critically endangered. The review identified four *Paphiopedilum* species not previously recorded from Lao PDR (see Table 7). It is likely that the Lao populations are larger than those in the neighbouring countries; however, they are likely to be the targets of illegal collecting.
- All Cycad species are covered by Appendix II. This group is known to be well represented in Lao PDR and to be in trade. However, the identification of individual species is problematic due to lack of botanical records and recent revisions. The extent of the trade, and the degree to which particular species are being exploited is unknown and should be investigated further.
- A revised list of Appendix I and II species was compiled (see Table 1).

Table 1: Revised abbreviated list of Appendix I and II species known to occur in Lao PDR listed by family (excluding Appendix II orchids)

| Appendix | Family and Name |
|----------|--|
| | CYATHEACEAE |
| 2 | <i>Alsophila gigantea</i> Wall. ex. Hook. |
| 2 | <i>Alsophila glabra</i> (Blume) Hook. |
| 2 | <i>Alsophila latebrosa</i> Wall. |
| 2 | <i>Cyathea contaminans</i> (Wall. ex Hook.) Copel. |
| 2 | <i>Cyathea podophylla</i> (Hook.) Copel. |
| 2 | <i>Sphaeropteris brunoniana</i> (Wall.) R.M. Tryon |
| | CYCADACEAE |
| 2 | <i>Cycas chevalieri</i> Leandri |
| 2 | <i>Cycas simplicipinna</i> (Smitinand) K.D. Hill |

| Appendix | Family and Name |
|----------|--|
| 2 | <i>Cycas pectinata</i> Buch.-Ham. |
| 2 | <i>Cycas siamensis</i> Miq. |
| | DICKSONIACEAE |
| 2 | <i>Cibotium barometz</i> (L.) J. Smith |
| | EUPHORBIACEAE |
| 2 | <i>Euphorbia lacei</i> Craib |
| 2 | <i>Euphorbia sessiliflora</i> Roxb. |
| | NEPENTHACEAE |
| 2 | <i>Nepenthes mirabilis</i> (Lour.) Druce |
| | ORCHIDACEAE |
| 1 | <i>Paphiopedilum appletonianum</i> (Gower) Rolfe |
| 1 | <i>Paphiopedilum bellatulum</i> (Rchb.f.) Stein |
| 1 | <i>Paphiopedilum callosum</i> (Rchb.f.) Stein |
| 1 | <i>Paphiopedilum concolor</i> (Lindl.) Pfitzer |
| 1 | <i>Paphiopedilum gratixianum</i> (Mast.) Rolfe |
| 1 | <i>Paphiopedilum hirsutissimum</i> (Hook.) Stein |
| 1 | <i>Paphiopedilum hirsutissimum</i> var. <i>esquirolei</i> (Schltr.) Karas. & Saito |
| 1 | <i>Paphiopedilum insigne</i> (Wall.) Pfitzer |
| 1 | <i>Paphiopedilum villosum</i> (Lindl.) Stein |
| 1 | <i>Paphiopedilum villosum</i> var. <i>annamense</i> Rolfe |
| | THYMELAEACEAE |
| 2 | <i>Aquilaria crassna</i> Pierre |
| 2 | <i>Gyrinops vidalii</i> P.H. Hô |

Aim 3: identification of particular species currently in trade

Results

- After reviewing the revised national CITES list, it is apparent that *Aquilaria* and many orchid species are certainly threatened by over-exploitation for trade. Cycads are a third group that are likely to be threatened by trade. The remaining species are too poorly documented for any conclusions to be made (see Table 8).
- During the course of this review Darwin project staff have been working on the assessment of conservation status of selected NTFP species. So far, this work has been limited to rattans and a few other select species. The aim of the work is to produce a preliminary list of threatened species.
- Four additional species were identified as being highly threatened by trade but are not currently covered by CITES legislation. They are *Coscinium fenestratum*, *Fibraurea recusa* Pierre, both highly valued medicinal plants in the Menispermaceae, *Calamus poilanei* Conrard (Palmae) and *Helminthostachys zeylanica* Hook. (Ophioglossaceae)
- As work on conservation assessments progresses, it is likely that other species will be identified as possible candidates for CITES listing

Comments

The CITES Species Database does not provide an accurate list of the CITES listed species that occur in Lao PDR. There are three main reasons for this:

1. the lack of botanical research in Lao PDR over the last 100 years
2. a recent increase in botanical research in Lao PDR that is producing new records for CITES listed species; this information has not been available to the

World Conservation Monitoring Centre (WCMC), the organisation responsible for updating the database.

3. recent taxonomic revisions of particular groups such as the genus *Cycas*

To maintain an accurate list of CITES listed species that occur in Lao PDR, the implementing organisation or department needs to be in close contact with the main botanical research organisations such as the National University of Lao PDR and the Forest Research Centre. It is also important that new information about the status or distribution of CITES listed species in Lao PDR is transferred to the WCMC so that the main database can be updated.

1. CITES Listed Plants in Lao PDR

The IUCN Lao PDR country office has recently started to develop capacity building programmes to assist the government of Lao PDR in implementing its obligations under the CITES treaty. The initial focus is on the 56 plant species listed under Appendices I and II.

These listings are derived from information held by the UNEP-WCMC database in Cambridge, UK. This data is derived from sources of varying quality and reliability that primarily relate to Lao PDR's neighbouring countries. Four of the five neighbouring countries have between three and six times as many species listed under CITES even though they have many floristic similarities with Lao PDR. As one of the first steps in effective implementation of the legislation, it is important to have an accurate list of the species that are currently listed under CITES and are known to occur in Lao PDR. This requires checking the

- Taxonomic validity of the names being used and assessing the reliability and accuracy of the distribution information associated with each species
- Comparing the current list with those from surrounding countries to establish which, if any, should also be listed for Lao PDR
- Identifying particular species that are currently being traded

In January 2006, the IUCN Lao PDR country office commissioned staff from the Darwin Initiative Project *Taxonomic Training in a Neglected Biodiversity Hotspot in Lao PDR* (Project 163-13-007) to review and comment on the current Appendix I and II listings for Lao PDR. This report details the results of that review.

1.1 An Introduction to CITES and Appendices I, II and III

The CITES convention has been in force since 1975. Its primary aim is to prevent over-exploitation and extinction of wild animal and plant species through the regulation of the harvesting and trading of the products derived from them. At the core of the convention are three Appendices which list the species or taxa that are subject to the provisions of the convention and any associated national legislation.

Appendix I include those that are threatened with extinction and that may be affected by trade. In many cases it is that trade which is the driving force towards extinction. Trade in these taxa is only authorised in exceptional circumstances. Appendix II species include those that may become threatened with extinction unless trade is regulated to a sustainable level.

In many cases it may be difficult to identify individual species or the product derived from them. Consequently both Appendix I and II may include **all** species within a genus or even a family even if only one or several of the species are actually traded. Two examples relevant to Lao PDR are the Orchidaceae and Cycadaceae families. Two genera and six species of the Orchidaceae are listed under Appendix I with all remaining species listed under Appendix II. All Cycadaceae are listed under Appendix II. Table 2 details the current state of knowledge relating to the presence of these groups in Lao PDR.

Table 2: Major plant families covered by CITES legislation and the current state of knowledge relating to their presence in Lao PDR

| Plant Group (family) | Estimated Number of Species Worldwide | Number of species currently known from Lao PDR* | Estimated number of species in Lao PDR* |
|-----------------------------|--|--|--|
| Cycadaceae | 150 spp | 1 genus with an uncertain number of species | 10-15 |
| Orchidaceae | Ca 18 000 spp | Ca 250-450 | 700-1200 |

* uncertainty is due to recent taxonomic revisions of the *Cycas* (Hill *et al* 2004) and a generally incomplete knowledge of the orchid flora of Lao PDR (Schuiteman. & de Vogel 2004)

Trade in Appendix II species is permitted only after the granting of export permits from the country of origin. It may also be necessary for an import permit to be granted by the CITES authority in the recipient country. These permits specify the quantity and nature of the material to be traded.

Appendix III species generally include those identified by particular countries as being at risk from trade within their own jurisdiction.

New species may be added to any of the appendices after proposals are made to, and accepted by, the Secretariat at the Conference of the Parties. Existing listings may also be modified or deleted in a similar way.

International lists of species and other taxa on Appendix I, II and III are published annually by the CITES secretariat. These are derived from information held in the CITES Species database (CSD) (www.cites.org/eng/resources/species.html). National lists can also be downloaded from this database. Both types of list are based on two interdependent categories of information - the scientific name that is used and the countries in which that species occurs.

The scientific name forms the basis of each species listing. These are used instead of common (colloquial or local) names as a single species may have many common names or one common name may refer to several different species depending on the people, the area or even the country. Specifying which countries the species occurs in depends on its identification and the use of the correct scientific name. In countries such as Lao PDR, common names are widely used and there are significant problems in matching them to the appropriate scientific name, making it difficult to be certain if a listed species actually occurs in that country.

The CSD collates information about the taxonomy, distribution, conservation status and trade status from a range of sources. It is maintained by the World Conservation Monitoring Centre (WCMC), based in Cambridge, UK. The WCMC and the CITES Secretariat rely on external experts for the validity of the scientific names that are used in each of the Appendices and in the preparation of proposals for new listings or modification of existing listings. For certain groups of species standardised lists of accepted scientific names and their synonyms have been produced for use in the context of CITES legislation. The majority of these are produced by the Royal Botanic Gardens, Kew. Examples include The World Checklist of Conifers (Farjon 2001), and the 3 volumes of Orchid names (Robertson *et al* 1995, 1997, 2001). These lists include information relating to geographic distribution; this information is usually based on herbarium records as the compilers of these official CITES checklists are specialist taxonomists based in major herbaria.

In the absence of dedicated publications, a range of other sources are used in the CSD to determine names and distributions. These may include publicly accessible literature produced by specialist taxonomists e.g. The Genus *Paphiopedilum* (Cribb 1987) or 'grey sources' such as personal communications, letters and emails. The information in the database depends on the quality and availability of the references used and this, in turn, reflects the information used or available to those supplying or publishing those references. This can create problems, especially in countries such as Lao PDR where there is little published or verifiable documentation of the biodiversity, particularly plants. In these cases information about the presence and distribution of a particular species is often based on assumptions or inferred from similarities in vegetation types or unconfirmed field surveys and reports.

1.2 Current State of Knowledge of the Flora of Lao PDR

The Flora of Lao PDR is currently estimated to contain around 8-9 000 species. This estimate is based on comparisons with the documented floras of Thailand and Vietnam; each of these have in excess of 10 000 species. Both countries have been the focus of intensive botanical study and capacity building over the last 30 years and are in the process of producing their own national floras. However the situation in Lao PDR is significantly different. Due to historical factors, botanical work in Lao PDR has been almost absent since World War II with the result that only approximately 2 000 species have been documented to date. The majority of this documentation relates to herbarium specimens collected by French botanists prior to 1930 that have been incorporated into the regional *Flore générale de l'Indo-Chine* and the *Flore du Cambodge, du Laos et du Viêt Nam*. Most of these specimens are deposited in the herbarium at the Natural History Museum in Paris (P). Other European herbaria such as Royal Botanic Gardens, Kew (K), Royal Botanic Garden Edinburgh, (E) and the Nationaal Herbarium Nederland at Leiden (L) also hold significant collections either from Lao PDR or from surrounding countries.

Herbarium specimens are of critical importance in documenting, understanding and conserving the flora of any country. They provide the most reliable proof of the presence of a species within an area, the basis for the identification of new collections and a reference point for the description of new species. They also provide information about past and present distribution that can be used to assess rates of decline or increase as well as ecological data that can be used to determine if plants are indigenous (growing naturally) or cultivated. It is essential that the actual specimens and the information that is associated with them are accessible at a local, national and international level. Lao PDR

Over the last decade, botanical research in Lao PDR has gradually become more active. In recent years, national institutes such as NUoL and the Forest Research Center have undertaken a range of biodiversity surveys of specific protected areas or other special sites of interest (e.g. biodiversity surveys in NBCAs such as Nam-Et Phou Loei and Phou Khao Khouay as well as surveys in the Siphandon wetlands in Champasak). Some of these surveys have been specimen based but the specimens are lodged in a variety of institutions within Lao PDR that have varying capacities for curation and especially databasing. Other Lao organisations such as the Traditional Medicine Institute have had long-standing, nationally based research programmes into particular groups of plants. Some of this research is also specimen based but again, the specimens, and the information associated with them are only partly available.

There has also been an increase in collaboration with foreign botanists and their institutions. Dr Bouakhaykhone Svengsuksa from NUoL has collaborated with French botanists to produce select accounts of particular families for the long running *Flore du Cambodge, du Laos et du Viêt Nam*. There have been a number of broadly based forestry projects with a taxonomic component such as the DANIDA funded Lao Tree

Seed Project (LTSP) that formed part of the regional Indochina Tree Seed Project. A major output from this project was the production of the manual *Forests and Trees of the Central Highlands of Xiang Khouang* (Lehmann *et al* 2003). Some of this work was specimen based.

Other projects have focussed on particular groups of plants e.g. the UK funded Darwin Initiative project *Sustainable Use of Rattans of Lao PDR* During this project the taxonomy and distribution of all the Lao rattan species were reviewed, several new taxa were described and an identification manual produced (Evans *et al* 2001). Much of this work was specimen based with the herbarium collections lodged either at Kew in the United Kingdom or with the Forest Research Center outside Vientiane. Orchids have recently become the focus of botanical research through a range projects based at National University of Lao P.D.R (NUoL). One output from these projects has been the publication of the first *Field Guide to the Orchids of Lao PDR* (Svengsuksa *et al* 2005)

In 2003 a Darwin Initiative project *Taxonomic Training in a Neglected Biodiversity Hotspot in Lao PDR* started. It is focussing on training Lao botanists, researchers and protected area staff in the formal identification of all vascular plant species. One of the major outputs from this project is the creation of a Preliminary National Species Checklist. This will incorporate data relating to plant species derived from historical specimen collections in European herbaria as well as more recent botanical field work, especially in Khammouan. Currently the checklist has records of almost 4 000 taxa, based on herbarium and reliable literature sources. However, it will be a number of years before a full checklist is available.

1.3 Uncertainty and Implications for the Implementation of CITES legislation in Lao PDR

The fragmentary and uncertain nature of the current knowledge of the flora of Lao PDR has several implications for the implementation of CITES legislation. First, species that are listed for Lao PDR may be listed on the basis of old or wrong information. Alternatively, CITES listed species may be present in Lao PDR but not recorded. The lack of herbarium records with their associated geographical, locality and ecological notes makes it difficult to gauge the number of species present, the extent of their distribution and the degree to which exploitation for trade has effected their conservation status. A recent example of these problems involves the Appendix II listed genus *Cycas*. In 2004, members of the IUCN Cycad Specialist Group published a revision of this genus in Vietnam (Hill *et al* 2004). As part of the revision, species from other SE Asian countries were also studied. The final publication listed a total of 24 species from Vietnam alone and included nine new taxa, several of which are recorded from the border provinces close to Lao PDR. The lack of information from Lao PDR prevented Lao species being included (see Figure 1) and the number and identity of those species is uncertain. Although all species of this genus are covered by CITES, not all species are exploited for trade to the same degree, making it difficult to assess the degree of threat to each species and, from that, formulate conservation or mangament strategies. A similar situation applies to orchids.

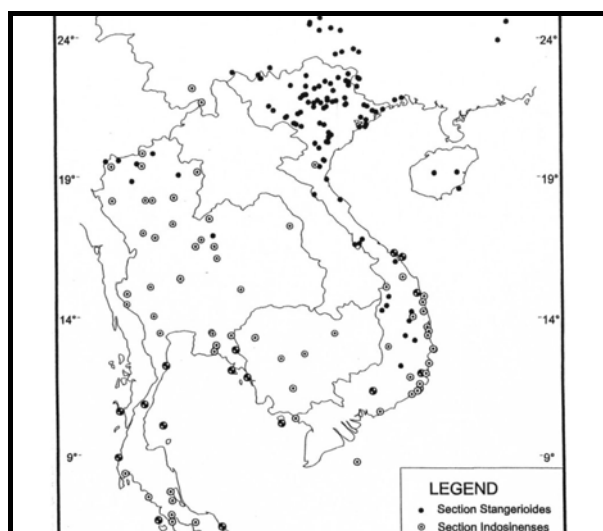


Figure 1: Distribution of the Appendix II listed genus *Cycas* in SE Asia. Note the absence of information for Lao PDR. (adapted from Hill *et al* 2004)

The following sections of this report critically review the current CITES listings for Lao PDR in terms of the information that has been used as a basis for their listing, followed by a review of species listed for surrounding countries but not for Lao PDR. A revised national list is then presented.

1.4 Current Appendix 1 and 2 CITES listings from the Flora of Lao PDR

The current Appendix 1 and 2 CITES listings of plants from Lao PDR total 56 taxa. Six are listed under Appendix 1 and 50 are listed as Appendix 2. Forty nine are from the family Orchidaceae (UNEP-WCMC 2006). Listed species are detailed in Table 3.

Table 3: Current Appendix 1 and 2 CITES listings for Lao PDR listed by Appendix, then by family

| Appendix | Family | Species |
|----------|----------------------------------|---|
| 1 | Orchidaceae | <i>Paphiopedilum appletonianum</i> (Gower) Rolfe |
| 1 | | <i>Paphiopedilum bellatulum</i> (Rchfb.f.) Stein |
| 1 | | <i>Paphiopedilum callosum</i> (Rchfb.f.) Stein |
| 1 | | <i>Paphiopedilum concolor</i> (Lindl.) Pfitzer |
| 1 | | <i>Paphiopedilum gratrixianum</i> (Mast.) Guillaumin |
| 1 | | <i>Paphiopedilum villosum</i> (Lindl.) Stein var. <i>annamense</i> Rolfe |
| | | |
| 2 | Asclepiadiaceae (Apocynaceae) | <i>Ceropegia macrantha</i> Wight var. <i>thorelii</i> (Constantin) H. Huber |
| 2 | Cyatheaceae | <i>Cyathea gigantea</i> (Wall. ex Hook.) Holttum |
| 2 | Cycadaceae | <i>Cycas micholitzii</i> Dyer var. <i>simplicipinna</i> Smitinand |
| 2 | | <i>Cycas pectinata</i> Buch.-Ham. |
| 2 | | <i>Cycas siamensis</i> Miq. |
| 2 | Dioscoraceae | <i>Dioscorea deltoidea</i> Wall. ex Kunth |
| 2 | Nepenthaceae | <i>Nepenthes mirabilis</i> (Lour.) Druce |
| 2 | Orchidaceae | <i>Bulbophyllum laxiflorum</i> (Blume) Lindl. |

| Appendix | Family | Species |
|----------|--------|---|
| 2 | | <i>Cymbidium dayanum</i> Rchb.f. |
| 2 | | <i>Cymbidium ensifolium</i> (L.) Sw. |
| 2 | | <i>Cymbidium finlaysonianum</i> Lindl. |
| 2 | | <i>Cymbidium giganteum</i> Wall. ex Lindl. |
| 2 | | <i>Cymbidium lancifolium</i> Hook. |
| 2 | | <i>Cymbidium macrorhizon</i> Lindl. |
| 2 | | <i>Cymbidium siamense</i> Rolfe ex Downie |
| 2 | | <i>Dendrobium aduncum</i> Wall.ex Lindl. |
| 2 | | <i>Dendrobium aggregatum</i> Roxb. |
| 2 | | <i>Dendrobium aloifolium</i> (Blume) Rchb.f. |
| 2 | | <i>Dendrobium bellatulum</i> Rolfe |
| 2 | | <i>Dendrobium chrysotoxum</i> Lindl. |
| 2 | | <i>Dendrobium crepidatum</i> Lindl. & Paxton |
| 2 | | <i>Dendrobium crystallinum</i> Rchfb.f. |
| 2 | | <i>Dendrobium cumulatum</i> Lindl. |
| 2 | | <i>Dendrobium densiflorum</i> Wall. ex Lindl. |
| 2 | | <i>Dendrobium draconis</i> Rchfb.f. |
| 2 | | <i>Dendrobium farmeri</i> Paxton |
| 2 | | <i>Dendrobium loddigesii</i> Rolfe |
| 2 | | <i>Dendrobium moschatum</i> (Buch.-Ham.) Sw. |
| 2 | | <i>Dendrobium nathanielis</i> Rchfb.f. |
| 2 | | <i>Dendrobium nobile</i> Lindl. |
| 2 | | <i>Dendrobium parishii</i> Rchfb.f. |
| 2 | | <i>Dendrobium pulchellum</i> Roxb. ex Lindl. |
| 2 | | <i>Dendrobium sulcatum</i> Lindl. |
| 2 | | <i>Dendrobium thyrsiflorum</i> Rchfb.f. |
| 2 | | <i>Dendrobium unicum</i> Seidenf. |
| 2 | | <i>Eria dasyphylla</i> Par. & Rchfb.f. |
| 2 | | <i>Galeola javanica</i> (Blume) Benth. & Hook. |
| 2 | | <i>Liparis distans</i> C.B. Clarke |
| 2 | | <i>Luisia filiformis</i> Hook.f. |
| 2 | | <i>Papilionanthe teres</i> (Lindl.) Garay |
| 2 | | <i>Phalaenopsis amabilis</i> (L.) Blume |
| 2 | | <i>Phalaenopsis cornucervi</i> (Breda) Blume & Rchfb.f. |
| 2 | | <i>Phalaenopsis gibbosa</i> Sw. |
| 2 | | <i>Phalaenopsis mannii</i> Rchb.f. |
| 2 | | <i>Pleione hookeriana</i> (Lindl.) B.S.Williams |
| 2 | | <i>Tropidia curculigoides</i> Blume |
| 2 | | <i>Vanda amesiana</i> Rchfb.f. |
| 2 | | <i>Vanda lilacina</i> Teijsm. & Binn.. |
| 2 | | <i>Vanda tricolor</i> Lindl. |

Source: UNEP-WCMC. 8 May, 2006. *UNEP-WCMC Species Database: CITES-Listed Species On the World Wide Web* Web : http://sea.unep-wcmc.org/isdb/CITES/Taxonomy/country_list.cfm?country=LA&col=all&source=plants&displaylanguage=eng

1.5 Verification of Current Appendix 1 and 2 CITES listings of plants for Lao PDR

The CITES Species Database (CSD) entry for each species was checked for the validity of scientific name being used and the specificity of the distribution record

that placed it in Lao PDR. Each entry was verified against the following information sources:

- PADME – this is the database used by the Darwin project *Taxonomic Training in a Neglected Biodiversity Hotspot* to hold information for the Preliminary National Checklist of the Flora of Lao PDR. It contains specimen records from herbaria in Paris, Leiden and Edinburgh as well as records from recent biodiversity surveys in Lao PDR.
- FCLV - *Flore du Cambodge, du Laos et du Viêt Nam* This regional flora covers Indochina. 32 volumes have been published in addition to those published in the much older *Flore Generale*. Species accounts always cite specimens as a basis for the distribution within the area. Most of the records that have been databased in Paris are incorporated in PADME. Major groups such as the Orchids have not been covered by FCLV.
- WCO – World Checklist Series – Orchidaceae and others. This is an electronic resource available from <http://www.kew.org/wcsp/>. Currently 106 vascular plant families have been covered. The taxonomy and distributions presented in these lists are supposed to be based on the most recent taxonomic literature available although for some groups this literature may be quite old. The world checklists do not provide specific references for the source of the distribution information given or for the synonymy attributed to each species. Despite this shortcoming, they are considered to be generally reliable. The majority of the World Checklists are only available online.
- CITES Orchid checklist: these lists, published in three volumes by RBG Kew are not part of the Kew World Checklist Series. The CITES lists are currently accepted as the official list for the genera that they covered at the time that they were published. They have not been republished and consequently do not reflect taxonomic changes or new distribution records since the publication of the checklist.
- The World Checklist of Ferns: this is an independent data set available only on the internet that is maintained by German and New Zealand based experts. It is not part of the Kew World Checklist series
- FGO – Field Guide to the Orchids of Lao PDR (Svengsuksa *et al* 2005). This is a recent publication produced by staff at NUoL. Information is based on a combination of herbarium and living collections made during field work in various parts of Lao PDR over the last 5 -10 years. Most identifications have been done by Dr Bouakhaykhone Svengsuksa, Lao PDR's foremost expert in Orchidaceae.

1.6 Summary of Results from the verification of current Appendix I and II listings (Annex 1 and 2)

1.7.1 General

Species that had their scientific names and distributions verified against all sources or only against PADME and/or FGO (orchids only) have their correct scientific name and are certainly present in Lao PDR. Distribution information may only be at provincial level although orchid species listed in the FGO will have more detailed information available.

Species that have been verified only against the World Checklist for Orchids or Ferns or the Kew CITES list for selected orchid genera will have their correct scientific names but their distribution in Lao may be uncertain.

1.7.2 Specific Results

- One species is no longer on any of the CITES appendices
- Eight species are currently considered to be synonyms
- Only one species had a distribution record that was specific to Lao PDR

- Two species could not be confirmed as occurring in Lao PDR.
- All other distribution records in the CSD were either noted to be uncertain or were non-specific.

Annex 1 gives the detailed results for verification of Appendix I species and Annex 2 gives the detailed results for Appendix II species.

2. CITES listed taxa known or highly likely to occur in Lao PDR but not currently listed (excluding Orchids)

During the verification of the current listings a large number of CITES controlled species were identified that are not currently listed for Lao PDR. The majority of these are orchid species included under either Appendix I or II. The additional species were identified by

- comparing the Lao listings with those from the surrounding countries as recorded on the CSD
- verifying their taxonomic and distribution information against sources cited in Section 1.6 of this report.
- checking for relevant species not listed on the CITES Database. This mainly applies to orchids and Cycads – all orchids and cycads are covered on either Appendix I or II but may not have individual entries in the CITES database.

Table 4 summarises verification results for additional non-orchid species that are known to occur in Lao or have recently been found in the adjoining areas of surrounding countries.

Table 4: Summarised Results for additional CITES listed non-orchid species that are known to occur in Lao or have recently been found in the adjoining areas of surrounding countries.

| FAMILY and Taxa | App. | Status in Lao PDR | CSD Distribution reference ¹ and Verification |
|---|------|-----------------------------|---|
| APOCYNACEAE | | | |
| <i>Rauvolfia serpentina</i> Benth. ex. Kurz | 2 | Highly likely/ confirmed | Found across SE Asia; listed for Vietnam and Thailand; proximity of Thai and Viet specimen collections make it highly likely to occur in Lao PDR; there are also undocumented reports of this species in Champassak (Bouakhaykhone, unpublished data) |
| CYATHEACEAE (<i>Cyathea</i> spp) | | | |
| <i>Alsophila glabra</i> (Blume) Hook. Synonym - <i>Cyathea glabra</i> Blume | 2 | Confirmed | Listed for Malaya; Lao records based on Flore Generale records; |
| <i>Alsophila latebrosa</i> Wall. Synonym - <i>Cyathea latebrosa</i> (Wall. Ex Hook.) Copel. | 2 | Confirmed | Listed for Vietnam; Lao record based on Flore Generale records; |
| <i>Cyathea contaminans</i> (Wallich ex Hook.) Copel. | 2 | Confirmed | Listed for Philippines and Vietnam; Lao record based on Flore Generale records |

| FAMILY and Taxa | App. | Status in Lao PDR | CSD Distribution reference ¹ and Verification |
|---|-------------|-------------------------------|--|
| <i>Cyathea podophylla</i> (Hook.) Copel. | 2 | Confirmed | Listed for Thailand; Lao record based on Flore General records |
| <i>Sphaeropteris brunoniana</i> (Wall.) R.M.Tryon Synonyms <i>Cyathea brunoniana</i> , <i>C. chinensis</i> | 2 | Confirmed | Listed for SE Asia except Lao PDR Lao record based on Flore Generale records |
| CYCADACEAE | | | |
| <i>Cycas chevalieri</i> Leandri | | Confirmed | Lao record based on Hill <i>et al</i> 2004; Seen but not collected during recent botanical work in Nakai Nam Theun |
| DICKSONIACEAE ² | | | |
| <i>Cibotium barometz</i> (L.) J. Smith | 2 | Confirmed | Listed for Thailand and Vietnam and other SE Asian countries. Recent collections from Nakai Nam Theun NBCA in Khammouan |
| EUPHORBIACEAE | | | |
| <i>Euphorbia lacei</i> Craib | 2 | Confirmed (literature record) | Listed for Thailand and countries to the west; Lao records based on World Checklist of Euphorbiaceae |
| <i>Euphorbia sessiliflora</i> Roxb. | 2 | Confirmed (literature record) | Listed for Myanmar and countries west; Lao records based on World Checklist of Euphorbiaceae |
| TAXACEAE | | | |
| <i>Taxus</i> spp. | 2 | Highly Likely | Recent CITES listing; not currently known from Lao PDR; expected to occur in NE Houaphan - known from adjacent areas of Vietnam (Hiep <i>et al</i> 2004) |
| THYMELAEACEAE | | | |
| <i>Aquilaria crassna</i> Pierre | 2 | Confirmed | Lao PDR reference from Red Data Book of Vietnam in PADME |
| <i>Gyrinops vidalii</i> P.H. Hô | 2 | Confirmed | included within generic listing of <i>Aquilaria</i> and related genera in PADME from FCLV 26 |

1 Source: UNEP-WCMC. April, 2006. *UNEP-WCMC Species Database: CITES-Listed Species On the World Wide Web* : <http://sea.unep-wcmc.org/isdb/CITES/Taxonomy/tax-species-result.cfm?displaylanguage=eng>

2. In the CITES listings all species within Dicksoniaceae were originally listed. This was then limited to *Dicksonia* species from the Americas and *Cibotium barometz* from SE Asia and China

2.1 Notes on New Additions

2.1.1 *Rauvolfia serpentina* Benth. ex. Kurz (Apocynaceae)

Lao Vernacular Names: choy, dork, ໂຄ້ນ ຄານ, ຈອຍ, ດອກ (Callaghan 2001)

Other common names: Snakeroot (English) chotachand (Hindii)

Uses: An important traditional Ayurveda medicine. Used as an antidote for snakebites, anxiety, insomnia, and insanity. In parts of India, *R. serpentina* was known as "pagal-ka-dawa," which translates to "the insanity cure." Other local cultures used the plant as a relaxant and as a tranquilizer to put children to sleep for

the night (Anon 2000). There is a significant trade in wild collected material, mainly in India and Thailand (Traffic 2005). Currently there are no known herbarium records for Lao PDR (Middleton, pers.comm, 2005) but there are reports of it from central and southern provinces (Svengsuksa, pers.comm).

2.1.2 *Cyathea* species. (Cyatheaceae)

The most recent taxonomic account of the Indo-Chinese members of the family Cyatheaceae was published in the 1930s as part of the *Flore générale de l'Indo-Chine*. This is the source of new additions to the CITES list. The online World Checklist of Ferns (Swale and Hassler 2005) was used to update the taxonomy. Tree ferns are relatively frequent in primary forest in the mountains of Lao PDR, from Cambodia north to the Chinese border and it is likely that more species occur in Lao PDR than are listed in Table 4. *Cyathea* and some associated genera are CITES listed as a result of the demand for the stems that are used as a substrate for orchid culture. Stem removal results in the death of the remaining plant parts. This type of use has not yet been reported from Lao PDR

2.1.3 *Cycas* spp. (Cycadaceae)

All *Cycas* species are covered by Appendix II. A recent revision of the Vietnamese species (Hill *et al* 2004) recorded 24 species including nine new taxa. This revision post dates the Hiep & Vidal's account in FCLV (Hiep and Vidal 1996) which had been the only account of this family in Lao PDR. In the new revision a lack of specimens from Lao PDR prevented any comprehensive review of Lao species. From Hiep and Vidal's distribution maps and conservation status tables, it seems highly likely that there are at least four species present, possibly as many as ten. Cycads are known to be collected from the wild in Lao PDR in places such as the Khammouan limestone area (see Figure 2). This group is in urgent need of botanical survey work.



Figure 2: Unidentified *Cycas* species for sale at road side stalls near Gnommalat, Khammouan Province, May 2006 (photo: courtesy of Darwin Initiative)

2.1.4 *Cibotium barometz* (L.) J. Smith (Dicksoniaceae)

The current CITES listings include all American species of the genus *Dicksonia* as well as the southeast Asian species *Cibotium barometz* (L.) J. Smith. The CITES database records this species from China, Vietnam and Thailand but not from Lao PDR. Other sources state that it distributed in India, Malaysia, Myanmar, Indonesia, Thailand, Vietnam, Japan, and China. In China, it is concentrated in valleys and forest margins in the tropical and subtropical south and southwestern regions at elevations ranging mostly from 200-600 m asl (Jia and Zhang 2001). It has recently been collected and identified by the Darwin project in the Ban Mak Pheuang area in the Nakai Nam Theun NBCA. *Cibotium* is used in Chinese medicine and there is a significant trade in its rhizomes (Jia and Zhang 2001). Given its known distribution and ecology, it is likely that this species is much more widespread in Lao PDR.



Figure 3: *Cibotium barometz* – recently collected in Lao PDR for the first time (photo: courtesy Darwin Initiative)

2.1.5 *Euphorbia lacei* Craib and *Euphorbia sessiliflora* Roxb. (Euphorbiaceae)

These have been included as a result of information derived from either the World Checklist for Euphorbiaceae and ECOLAO (Callaghan 2001). Neither of these sources give any further reference for the Lao distribution and ECOLAO does not give any common names. Further research is need for these species.

2.1.6 *Taxus* spp (Taxaceae)

The Asian members of this genus are a recent addition to the CITES Appendix II lists. They were added as a result of increasing concern about the unsustainable collection of bark and foliage for the production of the anti-cancer drug Taxol. During the preparation of the documentation for the proposal that led to their listing, one of the authors of this report (P. Thomas, RBGE) prepared a report for the CITES secretariat on the distribution and conservation status of this genus in Vietnam. This was based on field work over 3 years between 2000 and 2003 and included work in the Vietnamese provinces of Son La and Mai Chau close to the Houaphan border. *Taxus* is present in these areas and it is highly likely that it occurs in Lao PDR where there are forests in similar climatic and edaphic conditions. The Vietnamese populations

small and are not currently threatened by exploitation for Taxol production (unlike in China). If this genus does occur in Lao PDR, then populations are also likely to be small and unlikely to be considered as sources of raw material (see also Traffic 2005)

2.1.7 *Aquilaria crassna* Pierre and *Gyrinops vidalii* P.H. Hô (Thymelaeaceae)

Both of these species, along with the other species in those genera, are listed under Appendix II due to concerns about the trade in agarwood.

Aquilaria crassna is relatively well known in Lao PDR and most natural stands have either been logged or are under severe threat throughout its range. Globally it has been assessed as Critically Endangered although this assessment was made without direct information from Lao PDR (IUCN 2006). A recent national assessment has come to a similar conclusion (Thomas *et al* 2006). There is considerable interest in establishing *Aquilaria* plantations in suitable areas of Lao PDR and provenance trials are underway. If these plantations become productive then they need to be regulated by the Lao PDR CITES authority.

Gyrinops vidalii is much less well known; it was described in 1986 from specimens lodged in Paris that were originally collected near Vientiane in 1956. This genus has several species in Malesiana that are often mistaken for *Aquilaria* and therefore exploited. Difficulties in identification resulted in the whole *Gyrinops* genus being included in the proposal for CITES listing. Within Lao PDR *G. vidalii* is only known from Vientiane Province and Bolikhamxay (Pakading area) although it may also occur in other areas. As with other members of the genus, *Gyrinops vidalii* has been confused with *Aquilaria* and the natural populations have been effected to some degree. Its conservation status has recently been determined as Vulnerable (Thomas *et al* 2006)

2.2 Revised Listing of Appendix I and II species for Lao PDR (excluding Orchid species)

On the basis of the information in Tables 2 and 3 a revised list of Appendix I and II species has been collated (Table 4). During the verification process more than 450 additional orchid taxa were identified as occurring in Lao PDR. All of these are covered by Appendix II. The CITES Species Database only lists species that have been listed in reports or other forms of information sent to the WCMC and it is unlikely that the database will ever list all the orchid species that occur in Lao PDR. In view of this, a preliminary checklist of the orchid species currently known or strongly suspected to occur in Lao has been compiled and is included as Annex 5. Only Appendix I orchid species have been included in Table 5.

Table 5: Revised abbreviated list of Appendix I and II species known to occur in Lao PDR listed by family (excluding Appendix II orchids)

| Updated List of CITES Appendix I and II listed species for Lao PDR (excluding Appendix II listed orchids) | | |
|--|---|--|
| Appendix | Family and Name | Comment |
| | CYATHEACEAE | |
| 2 | <i>Alsophila gigantea</i> Wall. ex. Hook. | Formerly listed as <i>Cyathea gigantea</i> (Wall. ex. Hook.) Holttum - synonym |
| 2 | <i>Alsophila glabra</i> (Blume) Hook. | New country record |
| 2 | <i>Alsophila latebrosa</i> Wall. | New country record |

| Updated List of CITES Appendix I and II listed species for Lao PDR (excluding Appendix II listed orchids) | | |
|--|--|--|
| Appendix | Family and Name | Comment |
| 2 | <i>Cyathea contaminans</i> (Wall. ex Hook.) Copel. | New country record |
| 2 | <i>Cyathea podophylla</i> (Hook.) Copel. | New country record |
| 2 | <i>Sphaeropteris brunoniana</i> (Wall.) R.M.Tryon | New country record |
| | CYCADACEAE | |
| 2 | <i>Cycas chevalieri</i> Leandri | New country record |
| 2 | <i>Cycas simplicipinna</i> (Smitinand) K.D. Hill | Formerly listed as <i>Cycas micholitzii</i> Dyer var. <i>simplicipinna</i> Smitinand – synonym |
| 2 | <i>Cycas pectinata</i> Buch.-Ham. | On original listings |
| 2 | <i>Cycas siamensis</i> Miq. | On original listings |
| | DICKSONIACEAE | |
| 2 | <i>Cibotium barometz</i> (L.) J. Smith | New country record |
| | EUPHORBIACEAE | |
| 2 | <i>Euphorbia lacei</i> Craib | New country record |
| 2 | <i>Euphorbia sessiliflora</i> Roxb. | New country record |
| | NEPENTHACEAE | |
| 2 | <i>Nepenthes mirabilis</i> (Lour.) Druce | On original listings |
| | ORCHIDACEAE | |
| 1 | <i>Paphiopedilum appletonianum</i> (Gower) Rolfe | On original listings |
| 1 | <i>Paphiopedilum bellatulum</i> (Rchb.f.) Stein | On original listings |
| 1 | <i>Paphiopedilum callosum</i> (Rchb.f.) Stein | On original listings |
| 1 | <i>Paphiopedilum concolor</i> (Lindl.) Pfitzer | New country record |
| 1 | <i>Paphiopedilum gratixianum</i> (Mast.) Rolfe | On original listings |
| 1 | <i>Paphiopedilum hirsutissimum</i> (Hook.) Stein | New country record |
| 1 | <i>Paphiopedilum hirsutissimum</i> var. <i>esquirolei</i> (Schltr.) Karas. & Saito | New country record |
| 1 | <i>Paphiopedilum insigne</i> (Wall.) Pfitzer | New country record |
| 1 | <i>Paphiopedilum villosum</i> (Lindl.) Stein | On original listings |
| 1 | <i>Paphiopedilum villosum</i> var. <i>annamense</i> Rolfe | New country record |
| | THYMELAEACEAE | |

| Updated List of CITES Appendix I and II listed species for Lao PDR (excluding Appendix II listed orchids) | | |
|--|---------------------------------|--------------------|
| Appendix | Family and Name | Comment |
| 2 | <i>Aquilaria crassna</i> Pierre | New country record |
| 2 | <i>Gynerops vidalii</i> P.H. Hô | New country record |

The actual number of species covered by CITES legislation and occurring in Lao PDR is difficult to determine as all members of the family Orchidaceae, Cycadaceae and Cyatheaceae that occur in Lao PDR are covered. Based on the research done for this report then at least 500 species could be listed. The vast majority of these would be Appendix II orchids that are not directly targeted for trade, either as ornamentals or for medicines. Research into the identification of orchid species that are targeted and threatened by trade is in its early stages and only a limited number of traded species have been positively identified. The majority of this work has been carried out at the National University of Lao PDR. It will be sometime before a final list can be produced, especially given the lack of trained taxonomists in Lao PDR and, ironically, the barriers to foreign researchers presented by the requirements of the CITES legislation itself.

2.3 Orchidaceae

The Orchidaceae are the largest vascular plant family with over 18 500 species in more than 780 genera. They reach their highest diversity in the tropics e.g. New Guinea has 133 genera and 2300 species (Mabberley 1997). In SE Asia, more than 1400 species have been recorded in Thailand, Lao PDR, Cambodia and Vietnam. Table 6 details the approximate number of genera and species in each country. Lao PDR and Cambodia are very poorly known and the number of genera and species in each country is likely to at least double in the near future (Schuitman and Vogel 2004) .

Table 6: Numbers of Orchid Genera and Species in Thailand, Vietnam, Lao PDR and Cambodia (based on Schuitman and Vogel 2004)

| Country | Orchid Genera | Orchid Species |
|----------|---------------|----------------|
| Thailand | 162 | 1100 |
| Vietnam | 142 | 751 |
| Lao PDR | 85 (101)* | 355 (478)* |
| Cambodia | 61 | 164 |

* this report

All orchid species are covered at least under Appendix II. Two genera and six species are also listed under Appendix I and are banned from all trade (Table 7). Of these only one genus (*Pahiopedilum*) is currently known from Lao PDR although 2 species are known from the adjoining areas of Yunnan, Vietnam and Thailand (*Dendrobium cruentum* Rchb.f and *Renanthera imschootiana* Rolfe)

Table 7: Appendix I listed genera and species of Orchidaceae (worldwide)

| Appendix 1 Orchids | Global Distribution | Status in Lao PDR |
|---|---|--|
| <i>Aerangis ellisii</i> Schltr. | Madagascar | not in Lao |
| <i>Dendrobium cruentum</i> Rchb.f. | Thailand and Vietnam | not currently known from Lao |
| <i>Laelia jongheana</i> Rchb.f. | Brazil | not in Lao |
| <i>Laelia lobata</i> (Lindl.) H.J. Veitch (syn of <i>Sophronitis lobata</i> (Lindl.) Van den Bergh & M.W.Chase) | Brazil | not in Lao |
| <i>Paphiopedilum</i> spp. (ca 100 species) | from Himalayas to Western Pacific | Ca 10 species in Lao |
| <i>Peristeria elata</i> Hook. | Central America | not in Lao |
| <i>Phragmipedium</i> spp. (ca 15 species, | all Tropical America | not in Lao |
| <i>Renanthera imschootiana</i> Rolfe | E. Himalaya to China (SE. Yunnan) and Vietnam | not currently known from Lao; <i>Renanthera coccinea</i> Lour. known from Hainan and Indo China, including Lao PDR |

2.3.1 Appendix I orchids in Lao PDR

Members of the genus *Paphiopedilum* are the only Appendix I orchids currently known from Lao PDR. This genus has about 100 species and is distributed from the Himalayas through southern China southwards into Malesiana (Cribb 1987). Throughout their range they are the target of commercial and private collectors so that many species are regarded as critically endangered (Averyanov *et al* 2003).

The CSD records 6 species from Lao PDR. After following the same verification procedure detailed in Section 2 of this report, an additional four species have been added. All species recorded from Lao PDR are listed in Table 8.

Table 8: Appendix I orchids in Lao PDR

| Appendix 1 Orchids in Lao PDR | Information source |
|--|--|
| * <i>Paphiopedilum appletonianum</i> (Gower) Rolfe | World Checklist Series (RBG Kew) |
| * <i>Paphiopedilum bellatulum</i> (Rchb.f.) Stein | Kew CITES checklist V1 |
| * <i>Paphiopedilum callosum</i> (Rchb.f.) Stein | World Checklist Series (RBG Kew) & FGO |
| * <i>Paphiopedilum concolor</i> (Lindl.) Pfitzer | World Checklist Series (RBG Kew) & FGO |
| * <i>Paphiopedilum gratixianum</i> (Mast.) Rolfe | World Checklist Series (RBG Kew) |
| <i>Paphiopedilum hirsutissimum</i> (Hook.) Stein | World Checklist Series (RBG Kew) |
| <i>Paphiopedilum hirsutissimum</i> var. <i>esquirolei</i> (Schltr.) Karas. & Saito | World Checklist Series (RBG Kew) |
| <i>Paphiopedilum insigne</i> (Wall.) Pfitzer | World Checklist Series (RBG Kew) |

| Appendix 1 Orchids in Lao PDR | Information source |
|---|--|
| <i>Paphiopedilum villosum</i> (Lindl.) Stein | World Checklist Series (RBG Kew), herbaria & FGO |
| * <i>Paphiopedilum villosum</i> var. <i>annamense</i> Rolfe | World Checklist Series (RBG Kew) |

* *Paphiopedilum* species recorded for Lao PDR by CITES Species Database

2.3.2 Appendix II Orchids in Lao PDR

The CSD Lao PDR list included 43 orchid species listed under Appendix II. These were reviewed in the same way as the non-orchid species. At the same time, those references were checked to identify other species not listed on the CSD national list; this added an additional 435 taxa. Together with the Appendix I orchids, this creates the most up to date checklist of the orchids for Lao PDR. This list is included in Annex 5.

The main reason for orchids being CITES listed is their popularity as ornamental plants, especially those species with large showy flowers such as *Cymbidium*, *Dendrobium* and *Paphiopedilum*. Orchids are collected for local use and for export. Particular species A few species have medicinal uses – in Lao PDR *Cymbidium simulans* Rolfe is locally used in areas around Vientiane for the treatment of ear inflammations (Bouamanivong & Souliya 2005)

3. CITES listed species in trade in Lao PDR

3.1 General comments

The final aim of this report is to identify particular CITES listed species that are being traded. This poses considerable problems due to the lack of documentation relating to the identification and the distribution of CITES listed species as well as problems in matching local names with scientific names.

After reviewing the revised national CITES list, *Aquilaria* and orchids are the main species that are threatened by over-exploitation for trade. Cycads are a third group that are likely to be threatened by trade. The remaining species are too poorly documented for any conclusions to be made (see Table 9).

Table 9: CITES listed species in trade in Lao PDR. IUCN 2001 categories have been used. NE is Not Evaluated, NT is near threatened, VU is vulnerable and CR is critically endangered

| CITES App. | Global IUCN status ¹ (National) ² | Name (s) | Trade status in Lao PDR |
|------------|---|--|---|
| | | ORCHIDACEAE | |
| 1 | NE | <i>Paphiopedilum all species</i> | probably threatened by local collection and for export to other countries for horticulture |
| | | CYATHACEAE | |
| 2 | NE | CYATHACEAE (all species) | uncertain; no known medicinal use; CITES listed due to use of stems for orchid cultivation but this technique has not been noted in Lao PDR |
| 2 | NT | <i>Cycas chevalieri</i> | Known to be traded but identification of species is uncertain |
| 2 | NT | <i>Cycas simplicipinna</i> | as for <i>C. chevalieri</i> |
| 2 | VU | <i>Cycas pectinata</i> | as for <i>C. chevalieri</i> |
| 2 | VU | <i>Cycas siamensis</i> | as for <i>C. chevalieri</i> |
| | | DICKSONIACEAE | |
| 2 | NE | <i>Cibotium barometz</i> | uncertain; trade mainly based in China, possibly NE Lao; only recorded from Khammouan |
| | | EUPHORBIACEAE | |
| 2 | NE | <i>Euphorbia lacei</i> | uncertain; trade mainly based in India |
| 2 | NE | <i>Euphorbia sessiliflora</i> | as for <i>E. lacei</i> |
| | | NEPENTHACEAE | |
| 2 | NE | <i>Nepenthes mirabilis</i> | uncertain; trade mainly for horticulture; concentrated in Cambodia, Thailand and Vietnam |
| | | ORCHIDACEAE | |
| 2 | NE | <i>Anoectochilus lylei</i> and other species | Collected for medicinal use; traded to China and Vietnam; terrestrial orchid; whole plant collected |
| 2 | NE | <i>Cymbidium ensifolium</i> | ornamental |
| 2 | NE | <i>Dendrobium anosum</i> | ornamental |
| 2 | NE | <i>Dendrobium aphyllum</i> | ornamental |
| 2 | NE | <i>Dendrobium bellatulum</i> | ornamental |
| 2 | NE | <i>Dendrobium chrysotoxum</i> | ornamental |
| 2 | NE | <i>Dendrobium compactum</i> | ornamental |
| 2 | NE | <i>Dendrobium crystallinum</i> | ornamental |
| 2 | NE | <i>Dendrobium cumulatum</i> | ornamental |
| 2 | NE | <i>Dendrobium gratiosissimum</i> | ornamental |

| CITES App. | Global IUCN status ¹ (National) ² | Name (s) | Trade status in Lao PDR |
|---------------------|---|------------------------------|--|
| 2 | NE | <i>Dendrobium primulinum</i> | possibly medicinal |
| 2 | NE | <i>Dendrobium pulchellum</i> | possibly medicinal |
| 2 | NE | <i>Eria dasyphylla</i> | possibly medicinal |
| 2 | NE | <i>Ludisia species</i> | Collected for medicinal use; traded to China and Vietnam; terrestrial orchid; whole plant collected |
| 2 | NE | <i>Luisia species</i> | Collected for medicinal use; traded to China and Vietnam; terrestrial orchid; whole plant collected |
| 2 | NE | <i>Phalaenopsis amabilis</i> | possibly medicinal |
| THYMELEACEAE | | | |
| 2 | CR ² (CR) ² | <i>Aquilaria crassna</i> | Heavily traded for agarwood; most natural stands have already been logged; some remaining in Oudomxay and Xekong; plantation work starting |
| 2 | VU ² (VU) ² | <i>Gyrinops vidalli</i> | Sometimes mistaken for <i>Aquilaria</i> |

¹Source: IUCN Redlist available from www.redlist.org. Accessed June 15 2006

²National Assessments using IUCN Version 3.1 categories and criteria (Thomas *et al* 2006). National assessments of endemic species are automatically considered to be the equivalent of global assessments e.g. *Gyrinops vidali*

3.2 *Aquilaria* (Eaglewood, mai ketsana)

Aquilaria crassna is relatively well known and organisations such as the Forest Research Center have already undertaken a considerable amount of research into this species. The degree of exploitation that has already occurred suggests that implementing CITES legislation is unlikely to have a significant beneficial effect. However, the growth of plantations and potential commercial production may provide opportunities for licensing under CITES regulation. It is also likely that there is more than one *Aquilaria* species, especially in the southern provinces close to the Vietnamese and Cambodian borders where other species have been recorded. (Thomas and Sengdala *in prep*) *Gyrinops* is effected by the trade as a result of misidentification.

3.3 Orchids

The orchids of Lao PDR have been the subject of increasing interest over the last 5 years with the majority of the research based in the Faculty of Science at NUoL and led by Dr Bouakhaykhone Svengsuksa. Research is mainly focussed on taxonomy and identification although there is also increasing interest in the cultivation of selected species for the cut-flower and plant market. There have been a number of preliminary studies into the orchid trade (e.g. Foppes *et al* 1996) but these have tended to focus on the economic and social aspects of the trade and have only listed local names which could relate to several different species. In surrounding countries such as Thailand, CITES authorities have been monitoring border points and confiscating plants. Specimens have been identified by researchers at Bangkok Forestry Herbarium; a list of identified species is included as Annex 4. Many species are likely to occur in the surrounding areas of Vietnam, China, Cambodia and Thailand and it is difficult to distinguish orchids in transit from those collected from within Lao PDR. Despite these problems there are particular species and genera that are particularly at risk from over-exploitation. All species from the genus

Paphiopedilum are highly prized by orchid growers. In Vietnam, most species are critically endangered and the Lao populations are probably under similar pressure.



Figure 4: *Paphiopedilum appletonianum*, *P. villosum* and *P. hirsutissimum* (photos courtesy of www.orchidsphotos.com)

Members of the genus *Dendrobium* are similarly sought after; specific species include *D. chrysotoxum*, *D. palpebrae* and *D. parishii*.



Figure 5: *Dendrobium palpebrae*, *D. parishii* and *D. thysiflorum* (photos courtesy of www.orchidsphotos.com)

3.4 Species with the potential to meet CITES criteria for listing.

The current Darwin Initiative *Taxonomic Training in a Neglected Biodiversity Hotspot* has recently reviewed the conservation status of selected economically important NTFP species that may be threatened by over-exploitation. These species are listed in Table 10.

Table 10: Threatened economically important species that may be eligible for CITES listing.

| Species and Family | Status | Rationale for conservation assessment |
|---|------------|--|
| <i>Fibraurea recusa</i> Pierre (Menispermaceae) | EN A4cd | High value medicinal NTFP; misidentified as <i>Coscinium fenestratum</i> ; stems and roots used; occurs from Vientiane Province southwards; harvesting has increased in the last 10 years and is likely to continue to increase. Forestry department report declines of up to 50% over last 10 years; may qualify for CR within 10 years |

| | | |
|--|-------------|--|
| <i>Coscinium fenestratum</i> (Menispermaceae) | EN A4cd | High value medicinal NTFP stems and roots used; occurs from Vientiane Province southwards; harvesting has increased in the last 10 years and is likely to continue to increase. Forestry department report declines of up to 50% over last 10 years; may qualify for CR within 10 years |
| <i>Calamus poilanei</i> Conrard (Palmae) | CR A4cd | This species is the most heavily exploited rattan in Lao PDR. Large diameter, mature stems are harvested for furniture; young shoots are widely collected for eating. Plants reach sexual maturity between 10 and 15 years; edible shoots are harvested from plants less than 10 years old. In many areas throughout its distribution, large diameter stems have been removed – this species only forms a single stem and does not sucker/ regenerate from cut stumps or form clusters. Regeneration is only from seed. Over the last 10 years 50% of the rattan processing plants have closed due to high prices and scarcity of raw materials. |
| <i>Helminthostachys zeylanica</i> Hook. (Ophioglossaceae) | CR A4acd | Heavily exploited NTFP; young shoots and leaf edible; rhizome medicinal; whole plant collected. Generally found on sandy loam soils (makes removal of whole plant easier), near rivers and in shrub forest. Widely distributed but at low densities. Difficult to cultivate. Assessment; CR A4acd based on surveys by FRC NTFP unit staff |

The conservation status for the species listed in Table 10 were evaluated using IUCN 2001 categories and criteria. These are similar to the biological criteria used for evaluating species as candidates for CITES listing. The Critically Endangered status strongly suggests that they would qualify for listing, especially as they are exploited in similar ways in neighbouring countries. Listing would require more detailed investigation in each country and would entail a significant amount of regional cooperation.

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Annex 1: Appendix I Taxa: Verification Of Scientific Names And Distribution Data

| Family and Name | CSD Distribution reference | Verification |
|--|--|--|
| Orchidaceae | | |
| <i>Paphiopedilum appletonianum</i> (Gower) Rolfe | CSD listing based on Cribb, Phillip J. (1987) Distribution reference restricted to Vietnam | Name and distribution confirmed from WCO |
| <i>Paphiopedilum bellatulum</i> (Reichb. f.)Stein | CSD Distribution reference based on Cribb, P.J., Wood, M.W. (1983) | Confirmed from CITES Orchid checklist |
| <i>Paphiopedilum callosum</i> (Reichb.f.) Stein | CSD listing based on Cribb, Phillip J. (1987) | Confirmed from WCO and FGO |
| <i>Paphiopedilum concolor</i> (Lindl.) Pfitzer | CSD listing based on Cribb, Phillip J. (1987) | Confirmed from WCO and FGO |
| <i>Paphiopedilum gratixianum</i> (Masters) Guillaumin | CSD listing based on Cribb, Phillip J. (1987) | Name and distribution confirmed from WCO |
| <i>Paphiopedilum villosum</i> (Lindl.) Stein var. <i>annamense</i> Rolfe | CSD listing based on Cribb, Phillip J. (1987) | confirmed from WCO |

Annex 2: Appendix II Taxa: Verification of Scientific Names and Distribution Data

| Family and Name | CSD Distribution reference | Verification |
|---|---|---|
| ASCLEPIADACEAE | | |
| <i>Ceropegia macrantha</i> Wight var. <i>thorelii</i> (Constantin) H. Huber | Based on type specimen from 'Stung Treng' Thorel 2148 (specimen in Paris (Huber, H. 1957) | deleted from Appendix II July 2000 |
| CYATHEACEAE | | |
| <i>Cyathea gigantea</i> (Wallich ex. Hook.) Holttum ¹ | CSD distribution record not specific to Lao | Not listed in PADME; World Checklist of Ferns (Hassler and Swale 2005) lists this taxon as <i>Alsophila gigantea</i> and records it from Lao |
| CYCADACEAE | | |
| <i>Cycas micholitzii</i> Dyer var. <i>simplicipinna</i> Smitinand | CSD Lao distribution based on uncertain records | In PADME as <i>Cycas simplicipinna</i> (Smit.) K.D. Hill; distribution from Hill Hiep & Loc (2004); also cited in FCLV vol 28 from Louang Prabang |
| <i>Cycas pectinata</i> Buch.-Ham. | CSD Lao distribution based on uncertain records | Name confirmed from PADME; distribution confirmed (Hill Hiep & Loc 2004) |
| <i>Cycas siamensis</i> Miq. | CSD Lao distribution based on uncertain records | in PADME from herbarium record (Siphandone Wetland Survey 1999) |
| DIOSCOREACEAE | | |
| <i>Dioscorea deltoidea</i> Wallich ex. Kunth | CSD information from Shah, N.C. (1983) in reference to Uttar Pradesh; no specific reference for Lao. See also Traffic 2005 for a report on trade (Annex xx) | not listed in PADME; general distribution suggests that it may occur. |
| NEPENTHACEAE | | |
| <i>Nepenthes mirabilis</i> (Lour) Druce | CSD - no specific reference given; likely to be included within much wider SE Asian distribution | Confirmed from PADME record based on Flore General records |
| ORCHIDACEAE | | |
| <i>Bulbophyllum laxiflorum</i> (Blume) Lindley | CSD Distribution reference based on Comber, J.B. (1990) Checklist of Javan Orchidaceae.. | Confirmed from WCO ⁴ and FGO ⁵ |
| <i>Cymbidium dayanum</i> Rchb.f. | CSD reference based on uncertain source; CSD distribution limited to Japan and Taiwan | Confirmed from CITES Orchid checklist (Robertson <i>et al</i> 1997) |
| <i>Cymbidium ensifolium</i> (L.) Sw. | CSD reference based on uncertain source; CSD | Confirmed from WCO and PADME |

| Family and Name | CSD Distribution reference | Verification |
|--|---|---|
| | distribution limited to Malaya | |
| <i>Cymbidium finlaysonianum</i> Lindl. | CSD reference based on uncertain source; CSD distribution limited to Japan and Taiwan; extensive synonymy may have 'caught' Lao listing | Name confirmed from WCO; not recorded from Lao PDR by WCO but listed by Kew CITES checklist 2 (Robertson <i>et al</i> 1997) |
| <i>Cymbidium giganteum</i> Wall. ex Lindley | CSD Distribution reference based on Du Puy, David, Cribb, Phillip J. (1988). Lao distribution uncertain | WCO - synonym for <i>C. iridioides</i> D. Don; not currently recorded from Lao PDR although likely to occur in northern Lao PDR |
| <i>Cymbidium lancifolium</i> Hook. | CSD reference based on uncertain source | Name and distribution confirmed from WCO |
| <i>Cymbidium macrorhizon</i> Lindl. | CSD Distribution reference based on Du Puy, David, Cribb, Phillip J. (1988) | Confirmed from WCO and PADME |
| <i>Cymbidium siamense</i> Rolfe ex Downie | CSD Distribution reference based on Du Puy, David, Cribb, Phillip J. (1988) Lao distribution uncertain | WCO synonym for <i>Cymbidium ensifolium</i> subsp. <i>haematodes</i> (Lindl.) Du Puy & P.J.Cribb ex Govaerts; not recorded from Lao PDR |
| <i>Dendrobium aduncum</i> Wall.ex Lindl. | CSD reference based on uncertain source; | Name and distribution confirmed from WCO |
| <i>Dendrobium aggregatum</i> Roxb. | CSD reference based on uncertain source; | WCO synonym for <i>D. lindleyi</i> which is recorded from Lao by WCO |
| <i>Dendrobium aloifolium</i> (Blume) Rchb.f. | CSD Distribution reference based on Roberts <i>et al</i> 1997, CITES Orchid Checklist Volume 2 | Confirmed from WCO and PADME |
| <i>Dendrobium bellatulum</i> Rolfe | CSD reference based on uncertain source; | Confirmed from WCO and FGO |
| <i>Dendrobium chrysotoxum</i> Lindley | CSD reference based on uncertain source; | Confirmed from WCO, FGO and PADME |
| <i>Dendrobium crepidatum</i> Lindley & Paxton | CSD reference based on uncertain source; | Confirmed from WCO, FGO and PADME |
| <i>Dendrobium crystallinum</i> Reichb.f. | CSD reference based on uncertain source; | Confirmed from WCO, FGO and PADME |
| <i>Dendrobium cumulatum</i> Lindley | CSD reference based on uncertain source; | Confirmed from WCO and FGO |
| <i>Dendrobium densiflorum</i> Wallich ex Lindley | CSD reference based on uncertain source; | Confirmed from WCO and PADME |
| <i>Dendrobium draconis</i> Reichb.f. | CSD reference based on uncertain source; | Confirmed from WCO, FGO and PADME |
| <i>Dendrobium farmeri</i> Paxton | CSD reference based on uncertain source; | Name and distribution confirmed from WCO |
| <i>Dendrobium loddigesii</i> Rolfe | CSD reference based on uncertain source; | Name and distribution confirmed from WCO |
| <i>Dendrobium moschatum</i> (Buch.-Ham.) Sw. | CSD reference based on uncertain source; | Name and distribution confirmed from WCO |

| Family and Name | CSD Distribution reference | Verification |
|--|---|--|
| <i>Dendrobium nathanielis</i> Reichb.f. | CSD reference based on uncertain source; | Confirmed from WCO and PADME |
| <i>Dendrobium nobile</i> Lindley | CSD reference based on uncertain source; | Confirmed from WCO and PADME |
| <i>Dendrobium parishii</i> Reichb.f. | CSD reference based on uncertain source; | Confirmed from WCO and PADME |
| <i>Dendrobium pulchellum</i> Roxb. ex Lindley | CSD reference based on uncertain source; | Confirmed from WCO, PADME and FGO |
| <i>Dendrobium sulcatum</i> Lindley | CSD reference based on uncertain source; | Confirmed from WCO and FGO |
| <i>Dendrobium thysiflorum</i> Reichb.f. | CSD: no specific reference for Lao | Confirmed from WCO, FGO and PADME |
| <i>Dendrobium unicum</i> Seidenf. | CSD: no specific reference for Lao; restricted to Thailand and Lao | Confirmed from WCO, FGO and PADME |
| <i>Eria dasyphylla</i> Par. & Reichb.f. | CSD Distribution reference based on Hegde, S.N., Rao, A.N. (1983) refers to Himalayas | synonym for <i>Trichotosia dasyphylla</i> (C.S.P.Parish & Rchb.f.) Kraenzl. Confirmed from PADME |
| <i>Galeola javanica</i> (Blume) Benth. & Hook. | CSD Distribution reference based on Hegde, S.N., Rao, A.N. (1983) refers to Himalayas | synonym for <i>Cyrtosia javanica</i> Blume; not recorded from Lao PDR |
| <i>Liparis distans</i> C.B. Clarke | CSD Distribution reference based on Mehrotra, A. (1983) (India) | Name and distribution confirmed from WCO |
| <i>Luisia filiformis</i> Hook.f. | CSD Distribution reference based on Mehrotra, A. (1983) (India) | Name and distribution confirmed from WCO |
| <i>Papilionanthe teres</i> (Lindley) Garay | CSD Distribution restricted to NE India - no reference for Lao | Confirmed from WCO, FGO and PADME |
| <i>Phalaenopsis amabilis</i> (L.) Blume | CSD: no specific reference for Lao | confirmed from WCO; not recorded from Lao PDR |
| <i>Phalaenopsis cornucervi</i> (Breda) Blume & Reichb.f. | CSD: no specific reference for Lao | Confirmed from WCO and FGO |
| <i>Phalaenopsis gibbosa</i> Sweet | CSD: no specific reference for Lao | Name and distribution confirmed from WCO |
| <i>Phalaenopsis mannii</i> Rchb.f. | CSD: no specific reference for Lao | Name confirmed from WCO; not recorded from Lao PDR |
| <i>Pleione hookeriana</i> (Lindl.) B.S.Williams | CSD Distribution reference for Lao noted to be questionable; no specific reference | Confirmed from WCO and PADME |
| <i>Tropidia curculigoides</i> Blume | CSD Distribution reference based on Hegde, S.N., Rao, A.N. (1983) Himalayas | Confirmed from WCO and PADME |
| <i>Vanda amesiana</i> Reichb.f. | CSD: no specific reference for Lao | synonym of <i>Holcoglossum amesianum</i> (Rchb.f.) Christenson; recorded from Lao by WCO |

| Family and Name | CSD Distribution reference | Verification |
|--|-------------------------------------|---|
| <i>Vanda lilacina</i> Teijsm. & Binn.. | CSD: no specific reference for Lao; | Confirmed from WCO, FGO and PADME; restricted to Thailand and Lao |
| <i>Vanda tricolor</i> Lindley | CSD: no specific reference for Lao | confirmed from WCO |

¹In the CITES listings the following genera are included under *Cyathea*: - *Alsophila*, *Nephelea*, *Sphaeropteris*, *Trichipteris*

Annex 3: Detailed Results for verification of CITES listed taxa known or highly likely to occur to occur in Lao PDR but not currently listed (excluding Orchids)

During the verification of the current listings a large number of CITES controlled species were identified that are not currently listed for Lao PDR. The majority of these are orchid species included under either Appendix I or II. The additional species were identified by

- comparing the Lao listings with those from the surrounding countries as recorded on the CSD
- verifying their taxonomic and distribution information against sources cited in Section XX of this report. In Table 3 (below) WCE refers to World Checklist of Euphorbiaceae One additional source (ECOLAO) was used. ECOLAO refers to a list of Lao plants and their common names published in Lao PDR (Callaghan 2001). This list is unreferenced although its compiler has said that it is based on field work, interviews with local people and some literature. The accuracy of the association between scientific names and local names is difficult to assess.
- checking for relevant species not listed on the CITES Database. This mainly applies to orchids and Cycads – all orchids and cycads are covered on either Appendix I or II but may not have individual entries in the CITES database.

| FAMILY and Taxa | App. | CSD Distribution reference ¹ | Verification |
|--|-------------|--|--|
| APOCYNACEAE | | | |
| <i>Rauvolfia serpentina</i> Benth. ex. Kurz | 2 | Listed for majority of SE Asia except Lao PDR | listed in PADME from ECOLAO - no specimens, no listing for Lao from FCLV (Apocynaceae account in press, D Middleton, RBGE pers.comm) but thought to be likely to occur due to proximity of Thai and Viet collections |
| CYATHEACEAE (<i>Cyathea</i> spp) | | | |
| <i>Alsophila glabra</i> (Blume) Hook. | 2 | listed for Malaya | new PADME record based on Flore Generale records; CSD distribution based on Malaysian references. Synonym - <i>Cyathea glabra</i> Blume from World Fern Checklist |
| <i>Alsophila latebrosa</i> Wall. | 2 | listed for Vietnam | new PADME record based on Flore Generale records; CSD distribution based on Viet work Synonym - <i>Cyathea latebrosa</i> (Wall. Ex Hook.) Copel. from World Fern Checklist |
| <i>Cyathea contaminans</i> (Wallich ex Hook.) Copel. | 2 | listed for Philippines and Vietnam | new PADME record based on Flore Generale records; CSD distribution based on Philippines references and Vietnamese work |
| <i>Cyathea podophylla</i> (Hook.) Copel. | 2 | listed for Thailand | new PADME record based on Flore General records; CSD distribution based on Flora of |

| FAMILY and Taxa | App. | CSD Distribution reference ¹ | Verification |
|---|-------------|---|--|
| | | | Thailand |
| <i>Sphaeropteris brunoniana</i> (Wall.) R.M.Tryon | 2 | listed for SE Asia except Lao PDR | new PADME record based on Flore Generale records; CSD distribution based on Nepal work that gives broader SE Asian distribution but excludes Lao. Synonyms <i>Cyathea brunoniana</i> , <i>C. chinensis</i> ; from World Fern Checklist |
| CYCADACEAE | | | |
| <i>Cycas chevalieri</i> Leandri | | not listed | In PADME ; distribution from Hill Hiep & Loc 2004; probably occurs in Nakai Nam Theun |
| DICKSONIACEAE ² | | | |
| <i>Cibotium barometz</i> (L.) J. Smith | 2 | listed for Thailand and Vietnam and other SE Asian countries; not recorded from Lao PDR | In PADME; recent collections from Nakai Nam Theun NBCA in Khammouan |
| EUPHORBIACEAE | | | |
| <i>Euphorbia lacei</i> Craib | 2 | listed for Thailand and countries to the west; not listed for Lao PDR | listed in PADME based on WCE |
| <i>Euphorbia sessiliflora</i> Roxb. | 2 | listed for Myanmar and countries west; not listed for Lao PDR | Listed in PADME based on ECOLAO; and by WCE |
| TAXACEAE | | | |
| <i>Taxus</i> spp. | 2 | recent listing; not recorded for Lao PDR | Not currently known from Lao PDR; expected to occur in NE Houaphan - known from adjacent areas of Vietnam (Hiep <i>et al</i> 2004) |
| THYMELEACEAE | | | |
| <i>Aquilaria crassna</i> Pierre | 2 | Lao PDR reference from Red Data Book of Vietnam | in PADME |
| <i>Gyrinops vidalli</i> P.H. Hô | 2 | included within generic listing of <i>Aquilaria</i> and related genera | in PADME from FCLV 26 |

1 Source: UNEP-WCMC. April, 2006. *UNEP-WCMC Species Database: CITES-Listed Species* On the World Wide Web : <http://sea.unep-wcmc.org/isdb/CITES/Taxonomy/tax-species-result.cfm?displaylanguage=eng>

2. In the CITES listings all species within Dicksoniaceae were originally listed. This was then limited to only *Dicksonia* species from the Americas and *Cibotium barometz*

Annex 4: Orchids from the Thai-Laos Border

Collected in May 2006; identified at Bangkok Forestry Herbarium from material collected by Thai CITES officials at Nong Khai and Nakhon Phanom investigating orchid traffic from Lao PDR into Thailand. Officials were uncertain if the orchids had been collected in Lao PDR or were in transit from China or Vietnam

Appendix 1 species

| Scientific Name | Comments |
|---|------------------------------------|
| <i>Paphiopedilum callosum</i> (Rchb. f.) Stein | |
| <i>Paphiopedilum parishii</i> (Rchb. f.) Stein | |
| <i>Paphiopedilum sukhakulii</i> Schoser & Senghas | currently only known from Thailand |
| <i>Paphiopedilum villosum</i> (Lindl.) Stein | |
| <i>Pleione praecox</i> (Sm.) D. Don | |

Appendix 2 species

| Scientific Name | Comments |
|---|--|
| <i>Bulbophyllum secundum</i> Hook. f. | |
| <i>Bulbophyllum siamense</i> Rchb. f. | |
| <i>Bulbophyllum sigaldiae</i> Guillaumin; | WCO records from 'Annam' |
| <i>Cleisostoma duplicilobum</i> (J.J.Sm.) Garay | |
| <i>Coelogyne lactea</i> Rchb. f. | |
| <i>Coelogyne trinervis</i> Lindl. | |
| <i>Cymbidium eberneum</i> Lindl. | |
| <i>Cymbidium insigne</i> Rolfe | |
| <i>Dendrobium aphyllum</i> (Roxb.) C.E.C. Fisch. | |
| <i>Dendrobium cariniferum</i> Rchb. f. | |
| <i>Dendrobium chrysanthum</i> Lindl. | |
| <i>Dendrobium chrysotoxum</i> Lindl. | |
| <i>Dendrobium crepidatum</i> Lindl. & Paxton | |
| <i>Dendrobium falconeri</i> Hook. | |
| <i>Dendrobium fimbriatum</i> Hook. | |
| <i>Dendrobium findlayanum</i> C.S.P. Parish & Rchb. f. | |
| <i>Dendrobium gratiosissimum</i> Rchb. f. | |
| <i>Dendrobium jenkinsii</i> Wall. ex Lindl. | |
| <i>Dendrobium linawianum</i> Rchb. f. | known from SE China and Taiwan |
| <i>Dendrobium lindleyi</i> Steud. | |
| <i>Dendrobium pendulum</i> Roxb. | |
| <i>Dendrobium primulinum</i> Lindl. | |
| <i>Dendrobium senile</i> C.P.S. Parish & Rchb. f. | |
| <i>Dendrobium signatum</i> Rchb. f. | |
| <i>Dendrobium thyrsoflorum</i> Rchb. f. | |
| <i>Dendrobium tuananhii</i> Aver. | described from N Vietnam Lai Chau in 2004 |
| <i>Dendrobium wardianum</i> Warn. | |
| <i>Flickingeria</i> sp | |
| <i>Grammatophyllum speciosum</i> Blume | |
| <i>Hygrochilus parishii</i> (Veitch & Rchb. f.) Pfitzer | |
| <i>Podochilus microphyllus</i> Lindl. | |
| <i>Rhynchostylis gigantea</i> (Lindl.) Ridl. | |
| <i>Rhynchostylis retusa</i> (L.) Blume | |

Annex 5: Draft checklist of the Orchids of Lao P.D.R. (478 taxa)

Abbreviations Used

- CITES Orchid checklist: this list, published in three volumes by RBG Kew, is not part of the Kew World Checklist Series. The CITES lists are currently accepted as the official lists for the genera that they covered at the time that they were published. They have not been republished and consequently do not reflect taxonomic changes that have happened since their publication.
- ECOLAO - refers to a list of Lao plants and their common names published in Lao PDR (Callaghan 2001). This list is unreferenced although its compiler has said that it is based on field work, interviews with local people and some literature. The accuracy of the association between scientific names and local names is difficult to assess.
- FGO – Field Guide to the Orchids of Lao PDR (Svengsuksa *et al.* 2004). This is a recent publication produced by staff at NUoL. Information is based on a combination of herbarium and living collections made during field work in various parts of Lao PDR over the last 5 -10 years. Identifications have been done by Dr Bouakhaykhone Svengsuksa, Lao PDR's foremost expert in the Orchidaceae.
- L sp. – refers to living specimens collected from various parts of the country and cultivated in the orchid nursery of the Faculty of Science, National University of Lao PDR. Most collections are from the wild but some have been purchased from markets.
- PADME – this database is used by the Darwin project to hold information for the Preliminary National Checklist of the Flora of Lao P.D.R. It contains specimen records from herbaria in Paris, Leiden and Edinburgh as well as records from recent biodiversity surveys in Lao PDR.
- WCO – World Checklist Series – Orchidaceae and others. This is an electronic resource available from <http://www.kew.org/wcsp/>. Currently 106 vascular plant families have been covered. The taxonomy and distributions presented in these lists are supposed to be based on the most recent taxonomic literature available although for some groups this literature may be quite old. The majority of the World Checklists are only available online. These versions do not provide specific references for the source of the distribution information given or for the synonymy attributed to each species. Despite this shortcoming, they are considered to be generally reliable.

| Full Name | Reference |
|---|------------------|
| Acampe Lindl. | |
| <i>Acampe carinata</i> (Griff.) Panigrahi | WCO |
| <i>Acampe ochracea</i> (Lindl.) Hochr. | WCO |
| <i>Acampe papillosa</i> (Lindl.) Lindl. | FGO |
| <i>Acampe praemorsa</i> Blatt. & McCann | WCO |
| <i>Acampe rigida</i> (Sm.) Hunt | FGO |
| Acriopsis Blume | |
| <i>Acriopsis indica</i> C.Wright | WCO, FGO, PADME |
| <i>Acriopsis liliifolia</i> (J.König) Seidenf. | WCO |
| <i>Acriopsis liliifolia</i> (J.König) Seidenf. var. <i>liliifolia</i> | WCO |
| Aeranthus Lindl. | |
| <i>Aeranthus arachnitis</i> (Thouars) Lindl. | WCO |
| Aerides Lour. | |
| <i>Aerides crassifolium</i> C.S.P.Parish ex Burb. | WCO & FGO |
| <i>Aerides falcatum</i> Lindl. & Paxton | WCO, FGO, PADME |
| <i>Aerides flabellatum</i> Rolfe ex Downie | WCO & PADME |
| <i>Aerides houlettianum</i> Rchb.f. | WCO & FGO |
| <i>Aerides multiflorum</i> Roxb. | WCO & FGO |
| <i>Aerides odoratum</i> Lour. | WCO & FGO |
| <i>Aerides pallidum</i> Roxb. | WCO |
| <i>Aerides roseum</i> Lodd. ex Lindl. & Paxton | WCO & FGO |

| Full Name | Reference |
|---|---|
| Agrostophyllum Blume | |
| <i>Agrostophyllum brevipes</i> King & Pantl. | WCO |
| <i>Agrostophyllum planicaule</i> (Lindl.) Rchb.f. | PADME |
| Anoectochilus Blume | |
| <i>Anoectochilus burmannicus</i> Rolfe | WCO & PADME |
| <i>Anoectochilus lylei</i> Rolfe ex Downie | FGO |
| <i>Anoectochilus setaceus</i> Blume | WCO |
| <i>Anoectochilus siamensis</i> Schltr. | L sp. |
| Anthogonium Wall. ex Lindl. | |
| <i>Anthogonium gracile</i> Wall. ex Lindl. | WCO |
| Aphyllorchis Blume | |
| <i>Aphyllorchis cf. annamensis</i> Aver. | FGO |
| Apostasia Blume | |
| <i>Apostasia odorata</i> Blume | WCO & PADME |
| <i>Apostasia wallichii</i> R.Br. | PADME |
| Arundina Blume | |
| <i>Arundina graminifolia</i> (D.Don) Hochr. | WCO, FGO, PADME |
| Ascocentropsis Senghas & Schildh. | |
| <i>Ascocentropsis pusillum</i> (Aver.) Senghas & Schildh. | PADME and Kew CITES checklist V3 as <i>Ascocentrum pusillum</i> |
| Ascocentrum Schltr. ex J.J.Sm. | |
| <i>Ascocentrum ampullaceum</i> (Roxb.) Schltr. | WCO and Kew CITES checklist V3 |
| <i>Ascocentrum curvifolium</i> (Lindl.) Schltr. | WCO |
| <i>Ascocentrum garayi</i> Christenson | Kew CITES checklist V3 |
| <i>Ascocentrum miniatum</i> (Lindl.) Schltr. | WCO & FGO |
| Brachycorythis Lindl. | |
| <i>Brachycorythis acuta</i> (Rchb.f.) Summerh. | WCO & PADME |
| <i>Brachycorythis helferi</i> (Rchb.f.) Summerh. | WCO & PADME |
| <i>Brachycorythis laotica</i> (Gagnep.) Summerh. | WCO & PADME |
| <i>Brachycorythis thorelii</i> (Gagnep.) Summerh. | WCO & PADME |
| Brachypeza Schltr. ex Garay | |
| <i>Brachypeza laotica</i> (Seidenf.) Seidenf. | WCO |
| Bromheadia Lindl. | |
| <i>Bromheadia aporoides</i> Rchb.f. | WCO & PADME |
| <i>Bromheadia finlaysonianana</i> (Lindl.) Miq. | WCO & PADME |
| Bulbophyllum Thouars | |
| <i>Bulbophyllum affine</i> Wall. ex Lindl. | WCO, L sp. |
| <i>Bulbophyllum allenkerrii</i> Seidenf. | WCO |
| <i>Bulbophyllum amplifolium</i> (Rolfe) N.P.Balakr. | WCO |
| <i>Bulbophyllum bittnerianum</i> Schltr. | FGO |
| <i>Bulbophyllum blepharistes</i> Rchb.f. | WCO, FGO, PADME |
| <i>Bulbophyllum clandestinum</i> Lindl. | PADME |
| <i>Bulbophyllum coweniorum</i> J.J.Verm. & P. O'Byrne | WCO |
| <i>Bulbophyllum crassipes</i> Hook.f. | WCO, L sp. |
| <i>Bulbophyllum fascinator</i> (Rolfe) Rolfe | WCO |
| <i>Bulbophyllum flabellum-veneris</i> (J.König) Aver. | WCO |
| <i>Bulbophyllum haniffii</i> Carr | WCO |
| <i>Bulbophyllum intricatum</i> Seidenf. | FGO |
| <i>Bulbophyllum laoticum</i> Gagnep. | WCO & PADME |
| <i>Bulbophyllum laxiflorum</i> (Blume) Lindl. | WCO & FGO |
| <i>Bulbophyllum lemniscatoides</i> Rolfe | FGO |

| Full Name | Reference |
|---|---|
| <i>Bulbophyllum longibracteatum</i> Seidenf. | WCO |
| <i>Bulbophyllum medusae</i> (Lindl.) Rchb.f. | WCO |
| <i>Bulbophyllum microtepalum</i> Lindl. | FGO |
| <i>Bulbophyllum moniliforme</i> C.S.P.Parish & Rchb.f. | WCO, L sp. |
| <i>Bulbophyllum odoratissimum</i> (Sm.) Lindl. ex Hook.f. | WCO |
| <i>Bulbophyllum odoratissimum</i> (Sm.) Lindl. ex Hook.f. var. <i>odoratissimum</i> | WCO |
| <i>Bulbophyllum patens</i> King | ECOLAO |
| <i>Bulbophyllum pecten-veneris</i> (Gagnep.) Seidenf. | WCO |
| <i>Bulbophyllum polyrhizum</i> Lindl. | L sp. |
| <i>Bulbophyllum proboscideum</i> (Gagnep.) Seidenf. | PADME |
| <i>Bulbophyllum putidum</i> (Teijsm. & Binn.) J.J.Sm. | WCO |
| <i>Bulbophyllum reclusum</i> Seidenf. | FGO |
| <i>Bulbophyllum reptans</i> (Lindl.) Lindl. | WCO |
| <i>Bulbophyllum retusiusculum</i> Rchb.f. | WCO, FGO |
| <i>Bulbophyllum retusiusculum</i> Rchb.f. var. <i>retusiusculum</i> | WCO, FGO |
| <i>Bulbophyllum rufinum</i> Rchb.f. | WCO |
| <i>Bulbophyllum sanguineopunctatum</i> Seidenf. & Kerr | WCO |
| <i>Bulbophyllum secundum</i> Hook.f. | WCO |
| <i>Bulbophyllum stenobulbon</i> C.S.P.Parish & Rchb.f. | WCO |
| <i>Bulbophyllum stenophyllyum</i> C.S.P.Parish & Rchb.f. | WCO |
| <i>Bulbophyllum suavissimum</i> Rolfe | PADME |
| <i>Bulbophyllum sutpense</i> (Downie) Seidenf. & Smitinand | WCO |
| <i>Bulbophyllum taeniophyllum</i> C.S.P.Parish & Rchb.f. | WCO |
| <i>Bulbophyllum tortuosum</i> (Blume) Lindl. | WCO |
| <i>Bulbophyllum tripudians</i> C.S.P.Parish & Rchb.f. | WCO |
| <i>Bulbophyllum vaginatum</i> (Lindl.) Rchb.f. | WCO |
| <i>Bulbophyllum violaceolabellum</i> Seidenf. | WCO |
| <i>Bulbophyllum wallichii</i> Rchb.f. | FGO |
| Calanthe R.Br. | |
| <i>Calanthe cardioglossa</i> Schltr. | WCO, Kew CITES checklist Vol 3 & PADME |
| <i>Calanthe lyroglossa</i> Rchb.f. | Kew CITES checklist Vol 3 and PADME |
| <i>Calanthe odora</i> Griff. | WCO and Kew CITES checklist Vol 3 as <i>Calanthe angusta</i> Lindl. |
| <i>Calanthe poilanei</i> Gagnep. (= <i>Spathoglottis plicata</i> Blume) | Kew CITES checklist Vol 3 |
| <i>Calanthe pulchra</i> (Blume) Lindl. | WCO & PADME |
| <i>Calanthe succedanea</i> Gagnep. | WCO, Kew CITES checklist Vol 3 & PADME |
| <i>Calanthe triplicata</i> (Willemet) Ames | WCO, Kew CITES checklist Vol 3 & PADME |
| Cephalanthera Rich. | |
| <i>Cephalanthera exigua</i> Seidenf. | WCO |
| <i>Cephalanthera longibracteata</i> Blume | WCO & PADME |
| Cephalantheropsis Guillaumin | |
| <i>Cephalantheropsis obcordata</i> (Lindl.) Ormerod | WCO & PADME |
| Ceratostylis Blume | |
| <i>Ceratostylis himalaica</i> Hook.f. | WCO |
| <i>Ceratostylis siamensis</i> Rolfe ex Downie | WCO & PADME |
| <i>Ceratostylis subulata</i> Blume | WCO |
| Chiloschista Lindl. | |
| <i>Chiloschista lunifera</i> (Rchb.f.) J.J.Sm. | WCO |
| Cirrhopetalum Lindl. | |

| Full Name | Reference |
|---|--|
| <i>Cirrhopetalum lepidum</i> (Blume) Schltr. | FGO |
| <i>Cirrhopetalum retusiusculum</i> (Rchb.f.) Hemsley | FGO |
| Cleisomeria Lindl. ex G.Don | |
| <i>Cleisomeria lanatum</i> (Lindl.) Lindl. ex G.Don | WCO & PADME |
| <i>Cleisomeria pilosulum</i> (Gagnep.) Seidenf. & Garay | WCO & FGO |
| Cleisostoma Blume | |
| <i>Cleisostoma arietinum</i> (Rchb.f.) Garay | WCO, FGO, PADME |
| <i>Cleisostoma birmanicum</i> (Schltr.) Garay | ECOLAO, L sp. |
| <i>Cleisostoma crochetii</i> (Guillaumin) Garay | WCO & FGO |
| <i>Cleisostoma duplicilobum</i> (J.J.Sm.) Garay | WCO & FGO |
| <i>Cleisostoma filiforme</i> (Lindl.) Garay | PADME |
| <i>Cleisostoma fuersternbergianum</i> Kraenzl. | WCO, FGO, PADME |
| <i>Cleisostoma lanatum</i> Lindl. | PADME |
| <i>Cleisostoma pilosulum</i> Gagnep. | PADME |
| <i>Cleisostoma racemiferum</i> (Lindl.) Garay | WCO & PADME |
| <i>Cleisostoma recurvum</i> Hook. | WCO |
| <i>Cleisostoma simondii</i> (Gagnep.) Seidenf. | WCO, FGO, PADME |
| Coelogyne Lindl. | |
| <i>Coelogyne assamica</i> Lindl. & Rchb.f. | WCO & FGO |
| <i>Coelogyne brachyptera</i> Rchb.f. | WCO, FGO, PADME |
| <i>Coelogyne brunnea</i> Lindl. | PADME |
| <i>Coelogyne calcicola</i> Kerr | WCO & PADME |
| <i>Coelogyne fimbriata</i> Lindl. | WCO, PADME, L sp. |
| <i>Coelogyne flaccida</i> Lindl. | WCO & PADME |
| <i>Coelogyne fuscescens</i> Lindl. | WCO & PADME |
| <i>Coelogyne fuscescens</i> var. <i>brunnea</i> (Lindl.) Lindl. | WCO & PADME |
| <i>Coelogyne huettneriana</i> Rchb.f. | WCO |
| <i>Coelogyne lactea</i> Rchb.f. | WCO |
| <i>Coelogyne longipes</i> Lindl. | WCO & PADME |
| <i>Coelogyne nitida</i> (D.Don) Lindl. | WCO & PADME |
| <i>Coelogyne pallens</i> Ridl. | WCO & PADME |
| <i>Coelogyne parishii</i> Hook.f. | PADME |
| <i>Coelogyne prolifera</i> Lindl. | WCO |
| <i>Coelogyne raizadae</i> S.K.Jain & S.Das | WCO |
| <i>Coelogyne stricta</i> (D.Don) Schltr. | WCO & PADME |
| <i>Coelogyne trinervis</i> Lindl. | WCO, FGO, PADME |
| <i>Coelogyne viscosa</i> Rchb.f. | WCO, FGO, PADME |
| Corymborchis Thouars | |
| <i>Corymborchis veratrifolia</i> (Reinw.) Blume | WCO |
| Crepidium Blume | |
| <i>Crepidium acuminatum</i> (D.Don) Szlach. | PADME |
| Cryptopylos Garay | |
| <i>Cryptopylos clausus</i> (J.J.Sm.) Garay | WCO |
| Cymbidium Sw. | |
| <i>Cymbidium aloifolium</i> (L.) Sweet | World Checklist, Kew CITES list vol 2, FGO and PADME |
| <i>Cymbidium bicolor</i> Lindl. | WCO & FGO |
| <i>Cymbidium bicolor</i> subsp. <i>obtusum</i> Du Puy & P.J.Cribb | WCO and Kew CITES list vol 2 |
| <i>Cymbidium dayanum</i> Rchb.f. | Kew checklist V2 |
| <i>Cymbidium ensifolium</i> (L.) Sw. | WCO, Kew CITES list vol 2 & PADME |
| <i>Cymbidium ensifolium</i> subsp. <i>ensifolium</i> | WCO & PADME |

| Full Name | Reference |
|--|--|
| <i>Cymbidium lancifolium</i> Hook. | WCO and Kew CITES list vol 2 |
| <i>Cymbidium lancifolium</i> var. <i>lancifolium</i> | WCO and Kew CITES list vol 2 |
| <i>Cymbidium macrorhizon</i> Lindl. | WCO, Kew CITES list vol 2 & PADME |
| <i>Cymbidium nanulum</i> Y.S. Wu & S.C. Chen | L sp. |
| <i>Cymbidium nitidum</i> Wall. ex D. Don | PADME |
| <i>Cymbidium strictum</i> D. Don | PADME |
| Cyrtosia Blume | |
| <i>Cyrtosia integra</i> (Downie) Garay | WCO & PADME |
| Dendrobium Sw. | |
| <i>Dendrobium acerosum</i> Lindl. | ECOLAO |
| <i>Dendrobium acinaciforme</i> Roxb. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium aduncum</i> Lindl. | WCO; Kew CITES list vol 2 |
| <i>Dendrobium albosanguineum</i> Lindl. & Paxton | FGO |
| <i>Dendrobium aloefolium</i> (Blume) Rchb.f. | WCO, Kew CITES list vol 2 & PADME |
| <i>Dendrobium anceps</i> Sw. | WCO and Kew CITES list vol 2 |
| <i>Dendrobium anosmum</i> Lindl. | WCO, Kew CITES list vol 2 & PADME, FGO |
| <i>Dendrobium aphyllum</i> (Roxb.) C.E.C. Fisch. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium bellatulum</i> Rolfe | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium binoculare</i> Rchb.f. | WCO |
| <i>Dendrobium brymerianum</i> Rchb.f. | WCO, Kew CITES list vol 2 & PADME |
| <i>Dendrobium capillipes</i> Rchb.f. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium cariniferum</i> Rchb.f. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium cariniferum</i> var. <i>wattii</i> Hook.f. | WCO, FGO and PADME |
| <i>Dendrobium cathcartii</i> Hook.f. | WCO & PADME |
| <i>Dendrobium chittimae</i> Seidenf. | FGO |
| <i>Dendrobium christyanum</i> Rchb.f. | FGO |
| <i>Dendrobium chrysanthum</i> Wall. ex Lindl. | WCO, Kew CITES list vol 2 & PADME, L sp. |
| <i>Dendrobium chryseum</i> Rolfe | WCO, Kew CITES list vol 2 & PADME |
| <i>Dendrobium chrysotoxum</i> Lindl. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium compactum</i> Rolfe | FGO |
| <i>Dendrobium crepidatum</i> Lindl. & Paxton | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium cretaceum</i> Lindl. | WCO and Kew CITES list vol 2 |
| <i>Dendrobium crumenatum</i> Sw. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium crystallinum</i> Rchb.f. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium cumulatum</i> Lindl. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium delacourii</i> Guillaumin | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium deltatum</i> Seidenf. | Kew CITES list V2 |
| <i>Dendrobium densiflorum</i> Lindl. | WCO, Kew CITES list vol 2 & PADME, |
| <i>Dendrobium devonianum</i> Paxton | WCO, L sp. |
| <i>Dendrobium dixanthum</i> Rchb.f. | WCO, Kew CITES list vol 2 & PADME |
| <i>Dendrobium donnaiensis</i> Gagnep. | PADME |
| <i>Dendrobium draconis</i> Rchb.f. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium ellipsophyllum</i> Tang S.Liu & F.T.Wang | WCO, FGO and PADME |
| <i>Dendrobium farmeri</i> Paxton | WCO and Kew CITES list vol 2 |
| <i>Dendrobium fimbriatum</i> Lindl. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium findlayanum</i> C.S.P. Parish & Rchb.f. | WCO and Kew CITES list vol 2 |
| <i>Dendrobium friedericksianum</i> Rchb.f. | Kew checklist V2 |
| <i>Dendrobium gratiosissimum</i> Rchb.f. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium harveyanum</i> Rchb.f. | L sp. |
| <i>Dendrobium hercoglossum</i> Rchb.f. | WCO and Kew CITES list vol 2 |
| <i>Dendrobium heterocarpum</i> Wall. ex Lindl. | WCO, Kew CITES list vol 2 & FGO |

| Full Name | Reference |
|---|--|
| <i>Dendrobium indivisum</i> (Blume) Miq. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium indivisum</i> var. <i>indivisum</i> | WCO, |
| <i>Dendrobium indivisum</i> var. <i>lampangense</i> Rolfe | WCO |
| <i>Dendrobium infundibulum</i> Lindl. | Kew CITES list vol 2 |
| <i>Dendrobium jenkinsii</i> WWCO, FGO, PADME. ex Lindl. | WCO, Kew CITES list vol 2 & PADME |
| <i>Dendrobium jenkinsii</i> Wall. ex Lindl. | L sp. |
| <i>Dendrobium kentrophyllum</i> Hook.f. | WCO |
| <i>Dendrobium lamellatum</i> (Blume) Lindl. | Kew CITES list V2 |
| <i>Dendrobium lanyai</i> Seidenf. | WCO & PADME, FGO |
| <i>Dendrobium leonis</i> (Lindl.) Rchb.f. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium lindleyi</i> Steud. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium linguella</i> Rchb.f. | FGO |
| <i>Dendrobium lituiflorum</i> Lindl. | WCO Kew CITES list vol 2 & PADME |
| <i>Dendrobium loddigesii</i> Rolfe | WCO and Kew CITES list vol 2 |
| <i>Dendrobium mannii</i> Ridl. | WCO and Kew CITES list vol 2 |
| <i>Dendrobium moschatum</i> Sw. | WCO and Kew CITES list vol 2, L sp. |
| <i>Dendrobium multilineatum</i> Kerr | WCO, Kew CITES list vol 2 & PADME |
| <i>Dendrobium nathanielis</i> Rchb.f. | WCO, Kew CITES list vol 2 & PADME |
| <i>Dendrobium nobile</i> Lindl. | WCO, Kew CITES list vol 2 & PADME |
| <i>Dendrobium ochreatum</i> Lindl. | WCO and Kew CITES list vol 2 |
| <i>Dendrobium oligophyllum</i> Gagnep. | FGO |
| <i>Dendrobium pachyglossum</i> C.S.P.Parish & Rchb.f. | WCO and Kew CITES list vol 2, L sp. |
| <i>Dendrobium palpebrae</i> Lindl. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium parcifolium</i> Rchb.f. ex Lindl. | WCO and Kew CITES list vol 2 |
| <i>Dendrobium parcum</i> Rchb.f. | FGO |
| <i>Dendrobium parishii</i> Rchb.f. | WCO, Kew CITES list vol 2 & PADME, L sp. |
| <i>Dendrobium pendulum</i> Roxb. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium perulatum</i> Gagnep. | ECOLAO |
| <i>Dendrobium porphyrophyllum</i> Guillaumin | Kew CITES list vol 2 |
| <i>Dendrobium primulinum</i> Lindl. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium pulchellum</i> Roxb. ex Lindl. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium revolutum</i> Lindl. | WCO & PADME |
| <i>Dendrobium salaccense</i> (Blume) Lindl. | WCO & PADME, L sp. |
| <i>Dendrobium scabrilingue</i> Lindl. | WCO and Kew CITES list vol 2 |
| <i>Dendrobium schildhaurei</i> Ormerod & H.A.Pedersen | WCO |
| <i>Dendrobium secundum</i> (Blume) Lindl. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium senile</i> C.S.P.Parish & Rchb.f. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium signatum</i> Rchb.f. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium spatella</i> Rchb.f. | WCO |
| <i>Dendrobium sulcatum</i> Lindl. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium terminale</i> C.S.P.Parish & Rchb.f. | Field guide to the Orchids of Lao PDR |
| <i>Dendrobium thyrsoiflorum</i> Rchb.f. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium tortile</i> Lindl. | WCO and Kew CITES list vol 2 |
| <i>Dendrobium trigonopus</i> Rchb.f. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium trinervium</i> Ridl. | WCO |
| <i>Dendrobium unicum</i> Seidenf. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium venustum</i> Teijsm. & Binn. | WCO, Kew CITES list vol 2, FGO & PADME |
| <i>Dendrobium virgineum</i> Rchb.f. | WCO, Kew CITES list vol 2 & FGO |
| <i>Dendrobium wattii</i> (Hook.f.) Rchb.f. | WCO and Kew CITES list vol 2 |
| <i>Dendrobium williamsonii</i> Day & Rchb.f. | FGO |
| Dienia Lindl. | |

| Full Name | Reference |
|--|------------------|
| <i>Dienia ophrydis</i> (J.König) Ormerod & Seidenf. | WCO & FGO |
| Diploprora Hook.f. | |
| <i>Diploprora championii</i> (Lindl.) ex Benth. | L sp. |
| Doritis Lindl. | |
| <i>Doritis pulcherrima</i> Lindl. | FGO |
| Drymoda Lindl. | |
| <i>Drymoda siamensis</i> Schltr. | WCO, L sp. |
| Epigeneium Gagnep. | |
| <i>Epigeneium clemensiae</i> Gagnep. | PADME |
| Epipactis Zinn | |
| <i>Epipactis flava</i> Seidenf. | WCO & PADME |
| Epipogium S.G.Gmel. ex Borkh. | |
| <i>Epipogium roseum</i> (D.Don) Lindl. | WCO |
| Eria Lindl. | |
| <i>Eria acervata</i> Lindl. | WCO |
| <i>Eria amica</i> Rchb.f. | WCO |
| <i>Eria bilobulata</i> Seidenf. | WCO |
| <i>Eria biflora</i> Griff. | WCO & PADME |
| <i>Eria bipunctata</i> Lindl. | L sp. |
| <i>Eria bractescens</i> Lindl. | WCO & PADME |
| <i>Eria discolor</i> Lindl. | WCO, FGO, PADME |
| <i>Eria donnaiensis</i> (Gagnep.) Seidenf. | PADME |
| <i>Eria globulifera</i> Seidenf. | WCO & PADME |
| <i>Eria harmandii</i> Gagnep. | herbarium |
| <i>Eria javanica</i> (Sw.) Blume | WCO |
| <i>Eria laniceps</i> Rchb.f. | PADME |
| <i>Eria lasiopetala</i> (Willd.) Ormerod | WCO & FGO |
| <i>Eria muscicola</i> (Lindl.) Lindl. | WCO |
| <i>Eria mysorensis</i> Lindl. | WCO |
| <i>Eria obesa</i> Lindl. | FGO |
| <i>Eria obvia</i> W.W. Smith | L sp. |
| <i>Eria ornata</i> (Blume) Lindl. | FGO |
| <i>Eria paniculata</i> Lindl. | WCO, FGO, PADME |
| <i>Eria pannea</i> Lindl. | WCO & FGO |
| <i>Eria perpusilla</i> C.S.P.Parish & Rchb.f. | WCO |
| <i>Eria porteri</i> Seidenf. & A.D.Kerr | WCO |
| <i>Eria spicata</i> (D.Don) Hand.-Mazz. | WCO |
| <i>Eria sutepensis</i> Rolfe ex Downie | WCO |
| <i>Eria tomentosa</i> (J.König) Hook.f. | WCO & PADME, FGO |
| <i>Eria truncata</i> Lindl. | WCO |
| Eulophia R.Br. | |
| <i>Eulophia andamensis</i> Rchb.f. | WCO, L sp. |
| <i>Eulophia dufosseii</i> Guillaumin | WCO |
| <i>Eulophia flava</i> (Lindl.) Hook.f. | WCO |
| <i>Eulophia graminea</i> Lindl. | WCO & FGO |
| <i>Eulophia herbacea</i> Lindl. | WCO |
| <i>Eulophia macrobulbon</i> (C.S.P.Parish & Rchb.f.) Hook.f. | WCO, L sp. |
| <i>Eulophia pauciflora</i> Guillaumin | WCO & PADME |
| <i>Eulophia promensis</i> Lindl. | WCO |
| <i>Eulophia spectabilis</i> (Dennst.) Suresh | WCO, FGO, PADME |
| Flickingeria A.D.Hawkes | |

| Full Name | Reference |
|---|------------------|
| <i>Flickingeria albopurpurea</i> Seidenf. | WCO, FGO, PADME |
| <i>Flickingeria fimbriata</i> (Blume) A.D.Hawkes | WCO & FGO |
| <i>Flickingeria macraei</i> Seidenf. | WCO |
| Gastrochilus D.Don | |
| <i>Gastrochilus bellinus</i> (Rchb.f.) Kuntze | WCO, FGO |
| <i>Gastrochilus calceolaris</i> (Buch.-Ham.) D.Don | FGO |
| <i>Gastrochilus dasypogon</i> (Sm.) Kuntze | WCO |
| <i>Gastrochilus obliquus</i> (Lindl.) Kuntze | WCO, FGO, PADME |
| <i>Gastrochilus obliquus</i> var. <i>obliquus</i> | WCO, FGO, PADME |
| Geodorum Jacks. | |
| <i>Geodorum candidum</i> (Roxb.) Lindl. | WCO & PADME |
| <i>Geodorum densiflorum</i> (Lam.) Schltr. | WCO |
| <i>Geodorum recurvum</i> (Roxb.) Alston | FGO |
| Glomera Blume | |
| <i>Glomera erythrosma</i> Blume | WCO |
| Goodyera R.Br. | |
| <i>Goodyera procera</i> (Ker Gawl.) Hook. | WCO & PADME |
| Grammatophyllum Blume | |
| <i>Grammatophyllum speciosum</i> Blume | WCO |
| Habenaria Willd. | |
| <i>Habenaria acutifera</i> Wall. ex Lindl. | ECOLAO |
| <i>Habenaria amplexicaulis</i> Rolfe ex Downie | PADME |
| <i>Habenaria bassacensis</i> Gagnep. | PADME |
| <i>Habenaria chlorina</i> C.S.P.Parish & Rchb.f. | WCO |
| <i>Habenaria dentata</i> (Sw.) Schltr. | WCO, FGO, PADME |
| <i>Habenaria denti-rostrata</i> Tang S.Liu & F.T.Wang | WCO |
| <i>Habenaria digitata</i> Lindl. | PADME |
| <i>Habenaria foliosa</i> A.Rich. | PADME |
| <i>Habenaria holotricha</i> Gagnep. | WCO & PADME |
| <i>Habenaria housseusii</i> Schltr. | WCO |
| <i>Habenaria khasiana</i> Hook.f. | WCO & PADME |
| <i>Habenaria lindleyana</i> Steud. | WCO & PADME |
| <i>Habenaria lucida</i> Wall. ex Lindl. | WCO & PADME |
| <i>Habenaria mandersii</i> Collett & Hemsl. | WCO & PADME |
| <i>Habenaria medioflexa</i> Turrill | ECOLAO |
| <i>Habenaria medusa</i> Kraenzl. | WCO & PADME |
| <i>Habenaria reniformis</i> (D.Don) Hook. | PADME |
| <i>Habenaria rhodocheila</i> Hance | WCO, FGO, PADME |
| <i>Habenaria rostrata</i> Wall. ex Lindl. | WCO & PADME |
| <i>Habenaria rumphii</i> (Brongn.) Lindl. | WCO, FGO, PADME |
| <i>Habenaria rumphii</i> var. <i>rumphii</i> | WCO |
| <i>Habenaria tonkinensis</i> Seidenf. | PADME |
| <i>Habenaria trichosantha</i> Lindl. | PADME |
| <i>Habenaria viridiflora</i> (Sw.) Lindl. | WCO |
| Holcoglossum Schltr. | |
| <i>Holcoglossum amesianum</i> (Rchb.f.) Christenson | WCO |
| <i>Holcoglossum kimballianum</i> (Rchb.f.) Garay | PADME |
| Hygrochilus Pfitzer | |
| <i>Hygrochilus parishii</i> (Veitch & Rchb.f.) Pfitzer | WCO, FGO, PADME |
| <i>Hygrochilus parishii</i> (Veitch & Rchb.f.) Pfitzer var. <i>marriottiana</i> (Rchb.f.) | Lsp. |

| Full Name | Reference |
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| Kingidium P.F. Hunt | |
| <i>Kingidium deliciosum</i> (Rchb.f.) Sweet | FGO |
| Liparis Rich. | |
| <i>Liparis acutissima</i> Rchb.f. | PADME |
| <i>Liparis anatina</i> Szlach. | WCO |
| <i>Liparis averyanoviana</i> Szlach. | WCO |
| <i>Liparis bootanensis</i> Kerr | WCO |
| <i>Liparis brunneolobata</i> Kerr | WCO & PADME |
| <i>Liparis caespitosa</i> (Lam.) Lindl. | WCO |
| <i>Liparis chapaensis</i> Gagnep. | PADME |
| <i>Liparis deflexa</i> Hook.f. | PADME |
| <i>Liparis delicatula</i> Hook.f. | WCO |
| <i>Liparis distans</i> C.B. Clarke | WCO |
| <i>Liparis gibbosa</i> Finet | WCO |
| <i>Liparis nervosa</i> (Thunb.) Lindl. | WCO |
| <i>Liparis nervosa</i> subsp. <i>nervosa</i> | WCO |
| <i>Liparis odorata</i> (Willd.) Lindl. | WCO |
| <i>Liparis paradoxa</i> (Lindl.) Rchb.f. | WCO |
| <i>Liparis regnierii</i> Finet | PADME, FGO |
| <i>Liparis siamensis</i> Rolfe ex Downie | WCO, FGO |
| <i>Liparis viridiflora</i> (Blume) Lindl. | WCO & PADME, FGO |
| <i>Liparis wightiana</i> Thwaites | WCO |
| Ludisia A.Rich. | |
| <i>Ludisia acutilabris</i> Guillaumin | PADME |
| <i>Ludisia discolor</i> (Ker Gawl.) A.Rich. | PADME |
| Luisia Gaudich. | |
| <i>Luisia brachystachys</i> (Lindl.) Blume | WCO |
| <i>Luisia filiformis</i> Hook.f. | WCO |
| <i>Luisia macrotis</i> Rchb.f. | CO |
| <i>Luisia morsei</i> Rolfe | WCO |
| <i>Luisia psyche</i> Rchb.f. | WCO & PADME, FGO |
| <i>Luisia secunda</i> Seidenf. | PADME, FGO |
| Malaxis Sol. ex Sw. | |
| <i>Malaxis acuminata</i> D.Don | WCO, L sp. |
| <i>Malaxis biaurita</i> (Lindl.) Kuntze | WCO, |
| <i>Malaxis polyodon</i> (Hook.f.) Kuntze | WCO |
| <i>Malaxis prasina</i> (Ridl.) Seidenf. | WCO |
| <i>Malaxis purpurea</i> (Lindl.) Kuntze | WCO |
| Micropera Lindl. | |
| <i>Micropera pallida</i> (Roxb.) Lindl. | WCO & PADME |
| Mischobulbum Schltr. | |
| <i>Mischobulbum longiscapum</i> Seidenf. | L sp. |
| Neogyna Rchb.f. | |
| <i>Neogyna gardneriana</i> (Lindl.) Rchb.f. | WCO & FGO |
| Nervilia Comm. ex Gaudich. | |
| <i>Nervilia aragoana</i> Gaudich. | WCO, FGO, PADME |
| <i>Nervilia infundibulifolia</i> Blatt. & McCann | WCO & PADME |
| <i>Nervilia maculata</i> (C.S.P. Parish & Rchb.f.) Schltr. | WCO |
| <i>Nervilia plicata</i> (Andrews) Schltr. | WCO, FGO, PADME |
| Oberonia Lindl. | |
| <i>Oberonia delacourii</i> Gagnep. | WCO, FGO, PADME |

| Full Name | Reference |
|--|--------------------------------|
| <i>Oberonia ensiformis</i> (Sm.) Lindl. | WCO, FGO, PADME |
| <i>Oberonia falconeri</i> Hook.f. | WCO & PADME |
| <i>Oberonia gammiei</i> King & Pantl. | WCO |
| <i>Oberonia integerrima</i> Guillaumin | WCO |
| <i>Oberonia mucronata</i> (D.Don) Ormerod & Seidenf. | WCO, L sp. |
| <i>Oberonia myosurus</i> (Sw.) Lindl. | PADME |
| Ornithochilus Wall. ex Benth. | |
| <i>Ornithochilus difformis</i> (Lindl.) Schltr. | WCO, FGO, PADME |
| <i>Ornithochilus difformis</i> var. <i>difformis</i> | WCO |
| Otochilus Lindl. | |
| <i>Otochilus fuscus</i> Lindl. | FCO & PADME |
| <i>Otochilus lancilabius</i> Seidenf. | WCO & PADME |
| <i>Otochilus porrectus</i> Lindl. | WCO & PADME |
| <i>Otochilus pseudoporrectus</i> Seidenf. ex Aver. | PADME |
| Pachystoma Blume | |
| <i>Pachystoma pubescens</i> Blume | WCO & PADME |
| Panisea Steud. | |
| <i>Panisea demissa</i> (D.Don) Pfitzer | WCO |
| <i>Panisea tricallosa</i> Rolfe | WCO |
| <i>Panisea uniflora</i> (Lindl.) Lindl. | WCO & PADME, L sp. |
| Paphiopedilum Pfitzer | |
| <i>Paphiopedilum appletonianum</i> (Gower) Rolfe | WCO and Kew CITES checklist V1 |
| <i>Paphiopedilum bellatulum</i> (Rchb.f.) Stein | Kew checklist V1 |
| <i>Paphiopedilum callosum</i> (Rchb.f.) Stein | WCO, FGO and Kew checklist V1 |
| <i>Paphiopedilum concolor</i> (Lindl.) Pfitzer | WCO, FGO and Kew checklist V1 |
| <i>Paphiopedilum gratixianum</i> (Mast.) Rolfe | WCO and Kew CITES checklist V1 |
| <i>Paphiopedilum hirsutissimum</i> (Hook.) Stein | WCO |
| <i>Paphiopedilum hirsutissimum</i> var. <i>esquirolei</i> (Schltr.) Karas. & Saito | WCO |
| <i>Paphiopedilum insigne</i> (Wall.) Pfitzer | WCO, FGO, PADME |
| <i>Paphiopedilum villosum</i> (Lindl.) Stein | WCO, FGO, PADME |
| <i>Paphiopedilum villosum</i> var. <i>annamense</i> Rolfe | WCO and Kew CITES checklist V1 |
| Papilionanthe Schltr. | |
| <i>Papilionanthe teres</i> (Roxb.) Lindl. | WCO, FGO, PADME |
| Pecteilis Raf. | |
| <i>Pecteilis henryi</i> Schltr. | WCO & PADME |
| <i>Pecteilis susannae</i> (L.) Raf. | WCO & PADME, FGO. |
| Pelatantheria Ridl. | |
| <i>Pelatantheria ctenoglossum</i> Ridl. | WCO, FGO, PADME |
| <i>Pelatantheria rivesii</i> Tang S.Liu & F.T.Wang | WCO & PADME |
| Peristylus Blume | |
| <i>Peristylus affinis</i> (D.Don) Seidenf. | PADME |
| <i>Peristylus constrictus</i> (Lindl.) Lindl. | PADME |
| <i>Peristylus densus</i> (Lindl.) Santapau & Kapadia | PADME |
| <i>Peristylus goodyeroides</i> (D.Don) Lindl. | WCO & PADME |
| Phaius Lour. | |
| <i>Phaius flavus</i> (Blume) Lindl. | WCO |
| <i>Phaius indigoferus</i> Hassk. | PADME |
| <i>Phaius mishmensis</i> (Lindl. & Paxton) Rchb.f. | WCO & PADME |
| <i>Phaius tankervilleae</i> (L'Hér.) Blume | WCO & PADME, L sp. |
| Phalaenopsis Blume | |

| Full Name | Reference |
|---|---|
| <i>Phalaenopsis buysonnia</i> Rchb.f. | WCO |
| <i>Phalaenopsis cornucervi</i> (Breda) Blume & Rchb.f. | WCO & FGO |
| <i>Phalaenopsis deliciosa</i> Rchb.f. | WCO |
| <i>Phalaenopsis gibbosa</i> Sweet | WCO and Kew CITES checklist V1 |
| <i>Phalaenopsis pulcherrima</i> (Lindl.) J.J.Sm. | WCO |
| <i>Pholidota</i> Lindl. ex Hook. | |
| <i>Pholidota articulata</i> Lindl. ex Hook. | WCO, FGO, PADME |
| <i>Pholidota chinensis</i> Lindl. | L sp. |
| <i>Pholidota convallariae</i> (Rchb.f.) Hook. | FGO |
| <i>Pholidota imbricata</i> Lindl. | WCO & PADME, FGO |
| <i>Pholidota pallida</i> Lindl. | WCO & PADME |
| Pleione D.Don | |
| <i>Pleione bulbocodioides</i> (Franch.) Rolfe | Kew checklist V1 |
| <i>Pleione hookeriana</i> (Lindl.) J.P.Moore | WCO, PADME and Kew CITES checklist V1 |
| <i>Pleione maculata</i> (Lindl.) Lindl. & Paxton | WCO |
| <i>Pleione praecox</i> (Sm.) D.Don | WCO and Kew CITES checklist V1 |
| Polystachya Hook. | |
| <i>Polystachya concreta</i> (Jacq.) Garay & H.R.Sweet | WCO |
| Pomatocalpa Breda, Kuhl & Hasselt | |
| <i>Pomatocalpa naevata</i> J.J.Sm. | FGO |
| <i>Pomatocalpa siamensis</i> (Downie) Summerh. | WCO & PADME |
| <i>Pomatocalpa spicatum</i> Breda | WCO, FGO, PADME |
| <i>Pomatocalpa tonkinense</i> (Gagnep.) Seidenf. | WCO |
| Porpax Lindl. | |
| <i>Porpax elwesii</i> (Rchb.f.) Rolfe | WCO & PADME |
| <i>Porpax fibuliformis</i> (King & Pantl.) King & Pantl. | WCO |
| <i>Porpax reticulata</i> Lindl. | WCO |
| Pteroceras Hasselt ex Hassk. | |
| <i>Pteroceras teres</i> (Blume) Holttum | WCO & PADME, FGO |
| Renanthera Lour. | |
| <i>Renanthera coccinea</i> Lour. | WCO, Kew CITES checklist Vol 3 & PADME, L sp. |
| <i>Renanthera coccinea</i> var. <i>coccinea</i> | WCO & PADME, L sp. |
| Rhynchostylis Blume | |
| <i>Rhynchostylis coelestis</i> Rchb.f. | Kew CITES checklist Vol 3 and FGO |
| <i>Rhynchostylis gigantea</i> (Lindl.) Ridl. | WCO, Kew CITES checklist Vol 3, FGO & PADME |
| <i>Rhynchostylis gigantea</i> subsp. <i>gigantea</i> | |
| <i>Rhynchostylis retusa</i> (L.) Blume | WCO, Kew CITES checklist Vol 3, FGO & PADME |
| Rhytionanthos Garay, Hamer & Siegerist | |
| <i>Rhytionanthos spathulatum</i> (Rolfe ex Cooper) Garay, hamer & Siegerist | L sp. |
| Robiquetia Gaudich. | |
| <i>Robiquetia spathulata</i> (Blume) J.J.Sm. | WCO, L sp. |
| <i>Robiquetia succisa</i> (Lindl.) Seidenf. & Garay | WCO & PADME, FGO |
| Sarcoglyphis Garay | |
| <i>Sarcoglyphis mirabilis</i> (Rchb.f.) Garay | WCO, FGO, PADME |
| <i>Sarcoglyphis smithianus</i> (Kerr) Seidenf. | WCO & PADME |
| Schoenomorphus Thorel ex Gagnep. | |
| <i>Schoenomorphus capitatus</i> Thorel ex Gagnep. | WCO & PADME |
| Schoenorchis Reinw. ex Blume | |

| Full Name | Reference |
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| <i>Schoenorchis fragrans</i> (C.S.P.Parish & Rchb.f.) Seidenf. & Smitinand | ECOLAO |
| <i>Schoenorchis gemmata</i> (Lindl.) J.J.Sm. | WCO & PADME, FGO |
| Smitinandia Holttum | |
| <i>Smitinandia helferi</i> (Hook.f.) Garay | WCO |
| <i>Smitinandia micrantha</i> (Lindl.) Holttum | WCO, FGO, PADME |
| Spathoglottis Blume | |
| <i>Spathoglottis affinis</i> de Vriese | WCO, FGO, PADME |
| <i>Spathoglottis eburnea</i> Gagnep. | WCO & PADME |
| <i>Spathoglottis plicata</i> Blume | WCO & FGO |
| <i>Spathoglottis pubescens</i> Lindl. | WCO & PADME |
| Staurochilus Ridl. ex Pfitzer | |
| <i>Staurochilus dawsonianus</i> (Rchb.f.) Schltr. | WCO & PADME |
| <i>Staurochilus fasciatus</i> (Rchb.f.) Ridl. | WCO & FGO |
| Sunipia Buch.-Ham. ex Sm. | |
| <i>Sunipia scariosa</i> Lindl. | WCO & FGO |
| Tainia Blume | |
| <i>Tainia latifolia</i> (Lindl.) Rchb.f. | WCO |
| <i>Tainia latifolia</i> subsp. <i>latifolia</i> | WCO |
| <i>Tainia hookeriana</i> King & Plantl. | L sp. |
| Thecostele Rchb.f. | |
| <i>Thecostele alata</i> (Roxb.) C.S.P.Parish & Rchb.f. | WCO & PADME, L sp. |
| Thrixspermum Lour. | |
| <i>Thrixspermum centipeda</i> Lour. | WCO & FGO |
| <i>Thrixspermum hystrix</i> (Blume) Rchb.f. | WCO |
| <i>Thrixspermum leucarachne</i> Ridl. | WCO & FGO |
| <i>Thrixspermum merguense</i> (Hook.f.) Kuntze | WCO & FGO |
| <i>Thrixspermum pusillum</i> (Guillaumin) Garay | WCO & PADME |
| <i>Thrixspermum trichoglottis</i> (Hook.f.) Kuntze | WCO |
| Thunia Rchb.f. Hot nee | PADME |
| <i>Thunia alba</i> (Lindl.) Rchb.f. | L sp. |
| Trias Lindl. | |
| <i>Trias disciflora</i> (Rolfe) Rolfe | WCO |
| <i>Trias rosea</i> (Ridl.) Seidenf. | FGO |
| Trichoglottis Blume | |
| <i>Trichoglottis cirrhifera</i> Teijsm. & Binn. | WCO, FGO, PADME |
| <i>Trichoglottis tomentosa</i> Seidenf. | FGO |
| Trichotosia Blume | |
| <i>Trichotosia dasyphylla</i> (C.S.P.Parish & Rchb.f.) Kraenzl. | WCO & PADME |
| <i>Trichotosia pulvinata</i> (Lindl.) Kraenzl. | WCO & PADME, L sp. |
| Tropidia Lindl. | |
| <i>Tropidia curculigoides</i> Lindl. | WCO & PADME |
| <i>Tropidia pedunculata</i> Blume | WCO |
| Vanda Jones ex R.Br. | |
| <i>Vanda brunnea</i> Rchb.f. | FGO |
| <i>Vanda concolor</i> Blume | Kew CITES checklist Vol 3 |
| <i>Vanda denisoniana</i> Benson & Rchb.f. | WCO, Kew CITES checklist Vol 3 & PADME |
| <i>Vanda lilacina</i> Teijsm. & Binn. | WCO, Kew CITES checklist Vol 3, FGO & PADME |
| <i>Vanda liouvillei</i> Finet | WCO and Kew CITES checklist Vol 3 |
| <i>Vanda pumila</i> Hook.f. | WCO, Kew CITES checklist Vol 3, FGO & PADME |

| Full Name | Reference |
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| <i>Vanda simondii</i> Gagnep. | PADME |
| <i>Vanda tricolor</i> Lindl. | WCO and Kew CITES checklist Vol 3 |
| Vandopsis Pfitzer | |
| <i>Vandopsis gigantea</i> (Lindl.) Pfitzer | WCO and Kew CITES checklist Vol 3 |
| <i>Vandopsis lissochiloides</i> (Gaudich.) Pfitzer | WCO, Kew CITES checklist Vol 3 & FGO |
| Vanilla Plum. ex Mill. | |
| <i>Vanilla annamica</i> Gagnep. | PADME |
| <i>Vanilla aphylla</i> Blume | WCO & FGO |
| Zeuxine Lindl. | |
| <i>Zeuxine affinis</i> (Lindl.) Benth. ex Hook.f. | WCO, L sp. |
| <i>Zeuxine parvifolia</i> (Ridl.) Seidenf. | WCO & PADME |
| <i>Zeuxine strateumatica</i> (L.) Schltr. | WCO |