

Case study on orchid exports from Lao PDR:

Recommendations for using the Convention on International Trade in Endangered Species of Wild Fauna and Flora to increase sustainable orchid trade



Case Study - Piloting CITES Implementation in Lao PDR



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Case study on orchid exports from the Lao PDR: Recommendations for using the Convention on International Trade in Endangered Species of Wild Fauna and Flora to increase sustainable orchid trade.

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This report is a product of the project “Piloting CITES Implementation in Lao PDR: Strengthening Institutions through Case Studies”. Supported by the Swiss Agency for Development Cooperation (SDC), this initiative was carried out by IUCN (International Union for Conservation of Nature) and partners, including the National University of Laos and TRAFFIC, in 2007-2008. The initiative provided support to the Government of Lao PDR (GoL) to fulfill the international obligations that it committed to by acceding to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) on 30 May, 2004.

The project used the orchid industry in Lao PDR as a case study for analyzing and improving enforcement of trade regulations and incentives for sustainable production, cultivation and export practices in line with the convention.

1. Introduction

The importance of CITES for allowing farmers to better manage and trade valuable plant and animal species, many of which are significant components of agrobiodiversity², is increasingly being understood. There is growing attention domestically and regionally on the over-harvesting of wild orchids from Lao PDR’s forested areas, many of which now exist as forest fragments and as forest areas within working farmscapes. The Lao CITES Management and Scientific Authorities are concerned by reports of thousands of tons of orchids crossing the border each year to China in the north and to Thailand in the south. Staff from the National University of Laos, Faculty of Biology, and members of the agribusiness community are similarly concerned about the decreasing numbers of orchids found in the country’s National Protected Areas (NPAs).

Orchids are a potentially valuable tradable resource for Lao farmers and a good example of how commerce and environmental management can work together to provide a “green” opportunity for economic development, if managed and regulated properly. The relevance and wide-spread interest in orchid harvesting and trade for upland farming communities makes it an ideal case study for improving CITES implementation.

The GoL has been working to implement CITES since it became a party to the convention in 2004. With technical assistance from IUCN Lao PDR, the Government has identified a Scientific and a Management Authority and put in place a *National Wildlife Law* (revised in 2008), as per the requirements of the convention. IUCN has also assisted with implementation by translating and producing copies of the convention in

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² Agrobiodiversity, according to the FAO, refers to “[t]he variety and variability of animals, plants and micro-organisms that are used directly or indirectly for food and agriculture, including crops, livestock, forestry and fisheries”.

Lao language, coordinating a CITES implementation workshop for Customs, Police and Forestry officers, publishing a CITES implementation manual, producing relevant scientific and policy briefs, and assisting with multi-stakeholder preparations for the 14th Conference of the Parties (CoP).

With the CITES awareness-raising activities completed and with renewed national mobilization for institutional implementation of the convention at the central level, the GoL and IUCN Lao PDR are entering into a new phase of CITES implementation. This requires an intensified mobilization of technical resources and coordination of a wide range of stakeholders, yet offers an opportunity for real change in institutional processes toward meeting the objectives of the convention.

2. Objective of this study

The objective of this case study is to present the Lao CITES Management and Scientific Authorities with recommendations on how to implement and enforce CITES in a way that improves regulation and offers incentives for fostering a sustainable orchid industry in Lao PDR that cultivates, produces and exports orchids in line with the convention.

3. Orchids and the orchid trade in Lao PDR

Status of information on orchid species

Orchids can be terrestrial herbs (growing on the ground), epiphytic plants (growing on trees or rocks), saprophytic herbs (growing on raw humus), and occasionally vines, with rhizomes, corms (pseudo bulbs, i.e. underground bulb-shaped stems) or root tubers. Orchids as a species feature many beautiful colored flowers.

The Orchidaceae family includes 775 genera and 19,500 species around the world. Thailand is home to 162 genera and 1,100 species, Vietnam has 142 genera and 751 species, and Cambodia has 61 genera and 164 species. In Lao PDR, 85 genera and 335 species have been identified so far³.

The current checklist of orchids grew out of a UNESCO project entitled “Systematic Study of the Wild Orchids in Lao PDR and their Conservation”. The first project was carried out during 2005 and 146 wild orchids were identified⁴. The some 700 living orchid samples, collected in various localities in Lao PDR, formed the basis of the first orchid collection at the National University of Laos (NUoL) in Vientiane.

The ORCHIS project⁵, carried out during 2006-2008, aimed to develop an identification tool for a significant part of the orchid flora of Lao PDR. Facilitating the monitoring and regulation of the trade in these plants was another main goal. In this project, 1400 living plants were collected and were subsequently cultivated in NUoL. 478 species in 105 genera were recorded, including 11 endemic species.

³ Schuiteman, A and E.F. de Vogel. 2000. *Orchid Genera of Thailand, Laos, Cambodia and Vietnam*.

⁴ Bouakhaykhone, Svensuksa and Vichith Lamxay. 2005. *Field Guide: The Wild Orchids of Lao PDR*.

⁵ Open (Re)source for Commerce in Horticulture aided by species Identification Systems (ORCHIS), www.orchisasia.org

Economically, the most important orchids in Lao PDR are:

- Three species of *Anoectochilus* (nha bai lai)
- Six species of *Aerides* (kou lab)
- More than 64 species of *Bulbophyllum* (sing to)
- 18 species of *Coelogyne* (euang tiane)
- 85 species of *Dendrobium* (euang vai)
- More than 3 species of *Eria* (euang tan)
- Two species of *Flickingeria* (mak pong peng)
- Four species of *Paphiopedilum* (bia lai)
- Four species of *Rhynchostylis* (chang ka)
- Two species of *Vanda* (khem khao) and
- Two species of *Vanilla* (va ni la)⁶

Based on a collection of wild orchid species, as well as herbarium data and literature, at present more than 700 living samples of species are being cultivated at NUoL. According to the most recent overview of the orchid flora of Indochina (Seidenfaden, 1992) about 335 species are known to occur in Lao PDR. Considering the orchid richness of the neighbouring countries it has been estimated that more than 800 species may eventually be recorded from Lao PDR⁷.

Propagation status

In Lao PDR, a limited number of species are temporarily cultivated in huge nurseries and/or commercial nurseries (for example in Oudomxay Province).

A limited number of species are also propagated through tissue culture (almost all occurring at NUoL). Since 2006, NUoL and the Vientiane Orchidees Company have been collaborating to produce legal Lao orchid species for the local and export trade. At NUoL, two solid culture mediums and one liquid culture medium were used and 26 wild orchid species were tested for in-vitro propagation. Only two species (*Rhynchostylis gigantea* and *Vanda brumea*) were well generated in plantlets and well developed in potting mixture in the orchid nursery. Some seedlings are kept at the orchid nursery of Faculty of Science, NUoL, and at least four species of wild orchid have been tested for micropropagation at STEA (Science, Technology and Environment Agency, now known as the Water Resources and Environment Administration, WREA). Two formula liquid culture mediums and eight formula solid culture mediums were tested. Up until now, all samples were well developed and some seedlings were kept at the nursery of the Biotechnology Center, Vientiane. No orchid garden is currently cultivating the plants by seedlings from in-vitro culture or by tissue culture.

The trade and uses of orchids in Lao PDR

⁶ Grejmans, Martin, Sounthone Ketphanh, Vichith Lamxay and Khamphone Sengdara. 2007. *Non Timber Forest Products in Lao PDR: A Manual of 100 Commercial and Traditional Products*.

⁷ ORCHIS. 2009. "Preliminary checklist of the Orchidaceae of Laos".

Almost all orchids are associated with horticulture and trade. Whole epiphytic orchids in Lao PDR are often collected by picking them from hosts, but also sometimes by cutting trees or branches. Many other orchids are collected including whole plants from the ground from all types of forest, but mainly from dry dipterocarp forest or sandstone plateaus. Yield depends on available materials, travel time, harvesting methods and the type of orchid.

The export of wild and/or semi-cultivated orchids, in any form, such as whole living plants (which occur all around the country) dried stems (which can be seen in Oudomxay and Phongsaly provinces) or otherwise semi-processed, is now illegal in Lao PDR unless CITES permits are obtained. However, there are many types of illegal activities in the orchid trade in Lao PDR. Focusing on the north of the country, orchids are mainly exported to China for medicinal uses. For horticultural purposes, villagers or individual collectors sell plants taken from nature to local or foreign people and commercial nurseries without any reference to sustainable harvesting.

There is less knowledge about the use of orchids in Chinese medicine. This practice mainly utilizes species of *Dendrobium* spp. and *Anoectochilus* spp. *Dendrobium* spp. are collected all over Lao PDR and accumulated around the country for further selection and processing. Hundreds of thousands of plants are in this way taken from the wild. Because of over collecting for this purpose, *Anoectochilus lylei* (Jewel orchid), for example, has already become very rare in Lao PDR. However, in the author's opinion, the greatest threats to orchids in the country are over-harvesting of whole plants (due to a high market demand), as well as habitat loss (such as through forest degradation).

Collecting orchids from the wild on the scale witnessed by the author in Oudomxay and Phongsaly provinces during a field study for the ORCHIS project (April-May 2007) is an unsustainable practice. Plants are typically ten years old or more, and moreover their export cannot be permitted under the CITES rules. In the current situation, all the plants collected from the wild for the Chinese medicine market cannot be legally exported.

4. Regulation of the orchid trade in Lao PDR

Under CITES

All wild orchids species are protected under CITES rules. No wild orchid can be exported in any form (living, dried, or otherwise processed) without CITES permits. For example, the export of dried wild orchid stems on a massive scale to China is not legal under CITES even though it is still practiced in Lao PDR.

CITES has a special provision for exchanges between registered scientific institutes. At present the Faculty of Science of NUoL is a registered scientific institution⁸ under CITES. This makes it easier for NUoL to become a partner in international projects that require the exchange of CITES regulated material.

The exchange of fresh and samples in alcohol or spirit material with partner institutions is carried out in order to:

⁸ Registration CITES Code Number: LA 001. See www.cites.org/common/reg/e_si.html.

- confirm identifications;
- describe new species;
- study development and cultivation requirements of living plants.

Domestic trade

CITES does not apply to local trade inside Lao PDR. Special protection laws are therefore necessary to regulate this domestic trade. At present there is a quotation system at the provincial level. These quotas, however, are not based on population studies and may not lead to sustainable utilization.

Legal trade of cultivated orchids

As mentioned above, a number of Lao wild orchids are valuable from a commercial point of view, such as those with attractive flowers (horticultural use) and those used for medicinal purposes. Since orchids are slow growing plants, harvesting from the wild at a large scale is not a sustainable practice. Instead, orchids have to be propagated artificially and cultivated in nurseries. A beginning has been made by Vientiane Orchidees and NUoL to establish a micro propagation laboratory to grow orchids from seed by tissue culture. In this way orchids can be traded without endangering the wild populations.

5. Case study of the orchid trade

The following information and analyses are based on a case study of the orchid trade in Xiengkhuang Province (see map below for location) and several additional places with high levels of orchid collection, cultivation and/or export. Indeed, the most significant operation of orchid cultivation for export is that of a Chinese company in Oudomxay Province. For a more comprehensive picture of the situation, it is recommended that more data be obtained from the Oudomxay orchid nursery in question.



Species identification and analysis

A first and vital step in the orchid trade is to carry out some scientific research on orchids, particularly species identification and analysis. For example, key questions include:

- How many species of orchid do companies need to cultivate at their nurseries?
- Where are the sources of mother plants?
- What is the status of populations occurring in the area? What about from other locations around the country?
- What are their correct scientific names? How to find their scientific name?

Only qualified scientists/botanists understand the scientific processes required for the identification of species. They look for many things to identify species such as:

- Material/specimens/samples from local officers
- Reference resources, such as books, monograph, indexes
- Collaboration between Lao botanists and foreign botanists
- Exchange of material between Lao PDR and overseas to compare specimens
- Information on conservation status, economic value, local potential value, etc.

It is also important that the scientific process for obtaining a scientific name for a newly identified species is followed - the correct scientific name of economic plant species is very important factor for CITES regulation and evaluation.

In the case study at Xiengkhuang, of the many species that are exported to Vietnam and China, at the provincial and district level nobody knew about their scientific names and their economic value. Therefore, it is vital that we improve our knowledge on orchids, their functions and economic value, as well as how to collaborate effectively between local offices and central research institutions.

Mother sources of wild orchids

The second step for orchid growers and traders involves selecting, harvesting, transporting and controlling the mother sources of wild orchids.

There is a need to focus only on the required species, to promote sustainable harvesting and to control the transportation of mother sources. The marketing chain of mother sources should also be regulated. The number of mother sources compared with the whole target area of a garden or cultivated area should be regulated, along with the methods of plantation for each target species.

Companies can export seedlings from gardens at least 3-5 years after starting their growth. Therefore, these should be separated according to the quota of export products and the quota of mother sources. In addition, the Lao CITES authorities must continue to observe and regulate the orchid products that are exported to determine whether they are seedlings from gardens or from nature.

Orchid production and export

The third step is producing and exporting the orchids.

Up until now, no companies in Xiengkhuang Province, or indeed in Lao PDR, utilize the best methods of orchid propagation. In the case of Xiangkhouang, in propagation the wild mother plants were collected from the forest but were only planted on the rocks or bark of trees. Yet during this time the company was exporting orchid stems, which, given the above, could have only been sourced from the wild.

Studies on methods of propagation (both micro-propagation and vegetative character propagation) should be carried out and best practices in orchid production be promoted. The monitoring and evaluating of companies wishing to export orchids should also be carried out.

6. Further recommendations for best practice

- **All species of orchids in Lao PDR should be strictly protected and conserved.**
- **Only seedlings from micro-propagation should be permitted to be exported or be assigned a quota for local and national trade.** Therefore all companies which need to propagate orchids for export should be building and developing micro-propagation laboratories/ tissue culture laboratories.
- **Training of customs officials and other stakeholders in orchid identification should be carried out.** In order to enforce regulations, officials have to be able to identify wildlife that is being exported or collected. For example, people may try to export rare or endangered wild collected orchids with a permit that was issued for cultivated hybrids.
- **NGOs and/or associations should be encouraged to participate in monitoring the trade of endangered plants and animals.** Their staff are also interested in the development and use of a tool to identify orchids and other forms of wildlife. For example, a graphic identification tool, like multimedia orchid species identification software, will be used for future training sessions of customs officials and other interested parties (such as CITES, Ministry of Agriculture and Forestry, Economic Police, research institutes, postal workers and Provincial Agriculture and Forestry officers who work at border checkpoints). This tool is multilingual and easily used without botanical knowledge. It will enable the better identification of orchid species.
- **Communications material, such as field guides and leaflets, should be produced and distributed.**
- **Further collaborative activities should be pursued,** such as: collaboration with the Lao PDR CITES Management Authority to analyze current orchid trade regulations and CITES permitting processes; engagement with other partners doing work in orchid conservation; and engagement with regional experts and regional processes.

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