
Effective education and outreach program for ecology and conservation of threatened orchids in Godavari-Phulchowki mountain forest, Kathmandu, Nepal



A report submitted to
San Francisco Orchid Society



Dhirendra Kumar Pradhan
Chitwan, Nepal

July 2015
Kathmandu, Nepal

Acknowledgement

My sincere gratitude goes to the **San Francisco Orchid Society** for providing this opportunity to conduct orchid conservation program among the rural people of the Godavari-Phulchowki mountain forest, Kathmandu, Nepal.

My thanks also goes to the respective chairmen of the community forestry users groups, school teachers and forest technician of the Lalitpur district forest office for managing time voluntarily to share and discuss knowledge and information on orchid conservation.

Special thanks go to villagers who patiently listen to our conservation information and actively participate in discussion and giving words of commitment to conserve orchids.

Dhirendra Kumar Pradhan
July 2015

Table of Content

Acknowledgement.....	ii
1. Background Information of the Project	1
2. Rationale of the project	2
3. Project site description	3
4. Objective of the conservation awareness Programme	4
5. Relation of the project to the objectives of the society	4
6. Target groups of the project	4
6.1 Members of community Forestry Users and school students.....	5
7. Preparation for the field level implementation	5
7.1. Co ordination with Naudhara CFUG and Diyale Dada CFUG Community Forestry Users Groups (CFUG).....	5
7.2 Interaction with local authority	5
7.3 Publication of the Brochure.....	6
7.4 Updating of the session plans for discussion with the forest technician and community forest users committee.....	6
8. Activities carried out to attain the project objectives	7
8.1 Reaching Picnickers/Hikers on ecology and conservation of orchids:	7
8.2 Community networks for understanding orchid ecology and conservation	7
8.3 Orchid Conservation talk program in schools	8
8.4 Public talks on ecology and conservation of orchids:	9
8.5 Orchid Conservation Excursion and rehabilitation/relocation of orchids	10
8.6 Participatory identification and preservation of orchid host trees	11
9. Outputs and indicators of success.....	13
10. Financial information:	14

1. Background Information of the Project

Nepal is paradise for orchids because the region has moist atmosphere and cloudy forest that is conducive for the growth of orchids. In Nepal, *Orchidaceae* is the largest family in term of species richness comprising 386 species under 100 genera (Rajbhandari and Dahal, 2004). Rajbhandari et al. (1999) reported about 185 species of epiphytic orchids from Nepal. Press et al. (2000) recorded 323 species including 175 epiphytic orchid species from Nepal. Hara et al. (1978) noted 313 species under 89 genera of orchid from Nepal. Eight species are endemic and *Paphiopedilum insigne*, *Paphiopedilum venustum* are some of the species which are listed in appendix-1 of CITES. However, numbers of epiphytic species are still not distinguished.

Orchids are distributed from tropical to alpine climatic zone in Nepal. Annually large amount of orchids of different varieties are collected and exported to different countries especially India, China and Europe, where these are used for preparation of medicines and stimulating tonics.

Godavari-Phulchowki mountain forest area of Kathmandu valley in Nepal is paradise for orchids because the region has moist atmosphere and cloudy forest conducive for growth and development of orchids. The area is very important habitat for forest birds and huge diversity of sub-tropical to temperate orchid species. Few years ago, orchids were banned for collection and sale in Nepal but currently the government has allowed collection and sale without considering sustainability concepts due to which villagers have exploited orchids to fetch more money. Villagers can collect from government as well private forest except those species listed in CITES. The orchids are collected voraciously from the wild and sell in the flower markets of the valley to meet the growing demand of orchids of urban rich people. Wild orchids are also exported to India and China to prepare stimulating drugs.

Department of Forest, Nepal has set out prescribed techniques for collection of orchids from the wild and released a number of guidelines to be followed by every collector but due to lack of awareness and sufficient extension of collection techniques, orchid's resources are deteriorating in wild at alarming rate. Most of the collectors are rural poor and their livelihoods are based on collection and sale of orchids and other non timber forest products (NTFPs). They have no or little knowledge about sustainable collection of orchids and collect as much as they can without considering sustainability concept and its probable impact in their future livelihood. They have little knowledge that if the resources will extinct what will happen to their livelihoods. Most of the forests in the region are actually open access resources/community managed; therefore, people want to collect as much as they can, it is because if s/he will not collect, other will collect it. Therefore, a high level of conservation awareness among these people is necessary to conserve orchids from being extinct in its wild state.

District Forest Offices in every district is governmental authority for management and regulation of collection of non-timber forest products including orchids. Government has set limitation; without carrying Initial Environmental Examination (IEE) in a district, traders/villagers cannot collect more than 5 ton/year of each species of NTFPs including orchids and there is also provision to carry out Environmental Impact Assessment (EIA) for the collection of NTFPs more than 50 ton/year. In spite of these legal obligations, orchids are relentlessly collected due to which habitat and survival of orchids in its wild state is in peril. Furthermore, political turmoil in country has exaggerated illegal logging of host trees and collection of orchids. In addition, villagers and some forest technician have wrong perception that orchid harms the growth, development of its host timbers trees, and therefore, during forest management operations they detached and throw it.

Nepal is widely recognized for managing its common property resources by people's participation i.e. community forestry. Community forestry in Nepal is now shifting towards conservation and protection to the commercialization of forest products. The condition of forest is improved largely after the involvement of community people in forest conservation and management. The local villagers manage most of the forests in the Godavari. These community groups have prepared forest management plans (FMPs) and every year they carry out forest management activities like felling trees, thinning etc. Unfortunately, due to wrong perception they harvest those trees which have orchids on it. There are no provisions for sustainable management and conservation of orchids in FMPs. Most of the orchids of the district are epiphytic and when these orchids are detached from their host trees roots get dried and ultimately died.

Villagers have wrong belief that orchid hamper growth and development of commercially important timber. Therefore, they generally detached and throw orchids away from their host trees while operating forest management activities like pruning, cleaning and thinning in forest.

This conservation awareness programme have tried to make aware villagers and lower level forest technician that orchids do not harm the plants but it helps in beautifying the forest and balance ecological processes. Villagers showed sign of changed perception and I am confident that villagers, where this conservation awareness programme has been implemented, will think twice before detaching orchids from their host trees. It is often observed during the field visit that when the orchid's blooms and whole forest looks like a beautiful garden and then people knows the value of orchid and says, "*Orchids are in fact gift of nature*"

2. Rationale of the project

Godavari-Phulchowki mountain forest is some of the few remaining forest located near to Kathmandu, the capital city of Nepal. The huge number of city dwellers who have not access to natural beauty, visit these forest for picnic and nature hike every day especially

Friday and Saturday, the weekends. These people intentionally/unintentionally collect and exploit orchids and wild flowers such as *Rhododendron* for fun and pleasure. Therefore, this conservation project aims to conserve orchids by educating forest dwelling local communities, hikers and picnickers about the conservation values and sustainable collection techniques of orchids and relocate the tufts of detached/fallen orchids on the suitable host trees

The greatest threat to the conservation of orchids is found to be habitat loss, forest destruction and degradation. Due to over exploitation of these orchids for various purposes, many orchids have become rare. Therefore, orchids have been categorized in the group of endangered plants, and are legally protected. Despite the ban imposed by Government of Nepal for collection and trade, orchid species that have high medicinal values are being collected illegally (Ghimire 2009). The indigenous wild orchids of Nepal are smuggled to India from where it is exported to the Europe and other countries; therefore, conservation activities like this play pivotal role to aware the community about the possible impacts of their day today activities in the whole ecosystem.

With this project forest management plan of four community forestry users groups were analyzed in the community forestry users' committee workshops and the user committee were agreed to put the binding provisions in the next amendment of the forest management plan. The amendment of the forest management plan is costly and time consuming therefore their commitment could be a positive sign for the conservation of orchids in the project site.

3. Project site description

Godawari is a southernmost part of the Kathmandu valley. It has a population of 15,572 in 1,825 individual households. It is one of the popular hiking destinations in Nepal for its rich wildlife and splendid environment. Nestling at the foot of forested Phulchoki, the highest peak of the valley rim, it is a gorgeously rural side-valley.



Figure 1 Map of the project site

4. Objective of the conservation awareness Programme

The goal of the project is to contribute for the sustainable conservation of orchids in Godavari-Phulchowki mountain forest

Objective

- To generate conservation awareness and commitment for protection of endangered orchid's species in particular and other orchid species in general among schoolchildren, local community people, picnickers and hikers.
- To identify and conserve orchid host trees
- To encourage villagers (Community forestry users groups) to put binding provisions on sustainable orchid conservation in their respective forest management plans.

5. Relation of the project to the objectives of the society

Most of the wild orchids in Nepal are under threat, and some are at the verge of extinction. Multiple factors are responsible for the threats to the orchids in Nepal. Overexploitation of orchids for ornamental purpose, medicinal use, illegal trade, deforestation, random construction of roads, overgrazing, forest fire and climate changes are all major threats. Conservation measures such as active enforcement of existing laws, and creating awareness in local communities are issues to address for the conservation of orchids.

Orchids are highly demanded in national and international market especially for ornamental use and preparing stimulating drugs. Collection and sale of orchids are lucrative part of the livelihoods of many poor villagers in the project site. In the flowering season, it is common to see villagers and children voraciously collecting orchid flowers and selling to travelers, hikers and picnickers. However, harvesting orchids without considering sustainability concept have generated concerns over the conservation of these species. Villagers have no knowledge about the identification and sustainable collection of orchid's species and sometimes they collect endangered orchid species such as *Paphiopedilum insigne*, *Paphiopedilum venustum* knowingly/unknowingly listed in CITES and they have to face legal obligations and which ultimately hamper their livelihoods. Therefore, it is necessary for them to identify different orchid species and develop skills for sustainable collection and motivation for sustainable conservation.

6. Target groups of the project

The target groups of the project were community forest users' group members and school students.

6.1 Members of community Forestry Users and school students

Most of the forest areas of the Godavari-Phulchowki mountain forest are managed as community forest. The conservation activities were focused in two CFUGs namely: Naudhara CFUG and Diyale Dada CFUG. Most of the community forest users are the local people residing there since long time. Therefore, this programme focused on these two groups for the delivery of conservation programme and discussed their forest management plan to include the provisions related to orchid conservation as appropriate. Godavari higher secondary school was selected for the school level conservation awareness activities.

7. Preparation for the field level implementation

7.1. Co ordination with Naudhara CFUG and Diyale Dada CFUG Community Forestry Users Groups (CFUG)

Naudhara CFUG and Diyale Dada CFUG were selected for the implementation of the project activities. Meetings and frequent visit to these CFUGs were made to fix time for village level community forestry users' committee awareness camp.

7.2 Interaction with local authority and villagers

Local governmental authority especially sector forest office and area forest officials were consulted and their views and suggestions were taken into account while implementing the conservation programme. Copies of the Forest management Plan of these CFUGs were requested and discussions were made to include binding provisions in the forest management plans.



Figure 2 Interaction with local authority and villagers

7.3 Publication of the Brochure

Brochures on orchid conservation were prepared and published in Nepalese language with some key English words. The content of the brochure were, facts about orchids, how orchids can be conserved at locally and that could be benefited globally. Theses brochures were distributed in village level conservation programme. People believe on that they read and see. Brochures and orchid excursion were effective in motivating people for orchid conservation.



Figure 3: Leaflet on orchid conservation

The flier which were published before were also reprinted to distribute in the village and schools.

7.4 Updating of the session plans for discussion with the forest technician and community forest users committee

Orchid conservation school and village level Session plans that was prepared during the previous orchid conservation awareness programs were updated with the latest information and need of the villagers as discussed during the visit and interaction with the chairperson and local governmental authorities. The conservation sessions were delivered in local language with the help of local resource person.

Glimpse of the session plan

1. Have you heard/see orchids
2. What are orchids? (locally called *Sungabha/sunakhari*)
3. Where you can find orchids?
4. Habitat of orchids in your forest
5. Importance of orchids
 - a. As an ornamental plant and,
 - b. As an indicator of ecosystem health and vitality
6. Current government rules, regulation, directories and guidelines related to Non Timber Forest Products in general and orchids in particular.

7. Local, national and international use of orchids for medicinal and decorative
8. Sustainable conservation - concept
9. Sustainable conservation of orchids and why it is necessary- for regular supply of orchid as source of livelihood and for ecological functioning (some tips)
10. Management of forest considering orchids and carry out thinning, pruning and cleaning considering orchids.
11. Role of student, NTFP collectors, traders and farmers in the conservation and management of orchids and other natural resources

8. Activities carried out to attain the project objectives

8.1 Reaching Picnickers/Hikers/wood cutters on ecology and conservation of orchids:

Godavari- Phulchowki lies only 60 minutes from the centre of Kathmandu, and it is a popular destination for picnic and hiking at weekends. They are the amateurs and most have no or little knowledge and information about the conservation and ecology of orchid. Interactions were conducted with Picnickers/Hikers on ecology and conservation of orchids more than five times. Interactions were informal and we tried to go to their picnic place, requested, and share them information on biodiversity and orchids resources and about the place where they have come for picnic. Most of the picnic groups showed interest to know about the biodiversity, orchid and importance of the place they come for the picnic.



Figure 4 Discussions with Picnickers/Hikers/wood cutters on ecology and conservation of orchids

8.2 Community networks for understanding orchid ecology and conservation

Three workshops on orchid ecology were organized among forest users' committee members of two forest user groups to share and emphasize the need of understating the

importance of orchid in ecosystem, its conservation followed by discussion on possible measures to be included in their respective forest management plans. In the workshop, the local resource person made conservation talks. Their forest management plans were participatory assessed to include provisions for orchid conservation. User committee members were very happy to have such awareness workshop focusing on orchid species. They share that this is the first orchid program they have ever attend. They also share their understanding of orchid and how it is locally used to feed their cattle. They expressed that as the forest is near to the city people often seen selling the orchids flowers to the picnickers and hikers to earn livelihood. Therefore, it is difficult for them to conserve the orchids. They commit to protect the orchid species as much as they can and request to forest authorities to help them amend the Forest management plan to include the provisions related to the conservation of orchids.



Figure 5 Community networks for understanding orchid ecology and conservation

8.3 Orchid Conservation talk program in schools

Orchid conservation education programme were conducted at the Godavari Secondary Schools in Godavari-Phuchowki area. The students of grade 8 and 9 were participated in the conservation awareness talks.

The curriculum, which was developed in the previous year, was updated with the recent information and government rules and regulations. A short glimpse of curriculum is given below

1. Pre evaluation of the students before the start of the session by asking a series of questionnaires about the orchids and its conservation
2. What are orchids?
3. Where we can find orchids
4. How to identify orchids and how it differs from other plant kingdom
5. What are the uses of orchids in local, national and international level?

6. Ecology of orchids
7. Government rules and regulation on orchid's conservation and trade
8. Current practice of orchid's collection in Nepal
9. Importance of orchids and its conservation
10. Sharing of Students' view on orchids conservation and identification
11. Students' role for the conservation of orchids
12. Way forward for the sustainable conservation of orchids in its natural state
13. Post evaluation of the students



Figure 6 Orchid Conservation talk program in schools

A problem tree was formed to show the causes of orchid destruction in the region. Problems tree showed that excessive use of orchids for ornamental purposes, clearing of orchids during the forest management operation, exploitation of orchids for fun by picnickers and hikers, use of orchids as compost manure are some of the main reason for the extinction of orchids from the wild.



Figure 7 Problem tree formation exercise to show the causes of orchid destruction in the region

8.4 Public talks on ecology and conservation of orchids:

The economic activities of the Godavari Fulchowki mountain forest people are dominated by serving city hikers and picnickers and by rearing animals and agriculture. As the place is near the capital city and people are too much busy in their economic activities, therefore it was not easy for us to bring them together to conduct conservation awareness program without paying them daily allowances for their opportunity cost. Chairperson of the community forestry users groups were consulted for their interest in attending and informing the group members. We have requested the chairperson of the community forestry users groups to gather the villagers for at least 2-3 hours to participate in the orchid conservation program.

The conservation information were delivered for 3- 4 hours. The programs were participatory and villagers took active participation in discussion and curious about different facts on orchids. In most of the conservation program people were interested to know about the uses of orchids. People generally used orchids as bedding material for cattle and some time to feed the goat and sheep and also used some times to cure the loose stool of their cattle. As the place is near to the capital city villagers often collect the wild orchids and sell it to the picnickers and hikers to make additional income for their livelihoods. Villagers argues that before few year orchids were abundant in their forest but due to heavy collection the orchids are rare in their forest.

The forest management plan of the two users groups were participatory analyzed and discussed. None of them had any provisions related to the conservation of wild flowers (rhododendron) including orchid resources that were found abundantly in their forest. When the importance of orchids and its sustainable collection measures were discussed with the committee members and the villagers, they were empowered and committed to include some binding provisions and management options for orchids in subsequent amendment of their CFUGs plans.



Figure 8 Public talks on ecology and conservation of orchids

8.5 Orchid Conservation Excursion and rehabilitation/relocation of orchids

A conservation excursion was organized which include few talented students and influential villagers. The excursion was organized in a local forest area and National Botanical Garden located in the Godavari. The objective of the excursion was to make students identify some available species of orchids in their local forest area and get some idea on orchid conservation. The excursion was organized in the morning so that villagers can join irrespective of their daily schedule and they can watch bird species in their forest. The participant especially students were delighted to see different varieties of orchids in the orchid garden located inside the national botanical garden. They were also taken to the nearby forest that was managed by local community. In such excursion the fallen orchids were collected which were relocated with the help of students and villagers.



Figure 9 Orchid conservation excursion in the Botanical Garden



Figure 10: Orchid rehabilitation/relocation

8.6 Participatory identification and preservation of orchid host trees

Host trees in Diyaledanda community forest were surveyed. Species were identified with the help of local forest authorities and forest watcher man. A transect line was used as survey route for the identification of the host trees. The trees, which were not identified with the help of local people, were identified in the National Herbarium and plant laboratory.



Figure 11 Destruction of orchid host trees



Figure 12 Participatory identification and preservation of orchid host tree

The forest was dominated by *Schima castonopsis*. The host trees identified in the forest were

SN	Host tree speices	Orchid species
1	<i>Dalbergia sissoo</i>	<i>Vanda</i>
2	<i>Schima wallichii.</i>	<i>Vanda, Rhynchostylis retusa</i>
3	<i>Shorea robusta</i>	<i>Acampe papillosa</i>

4	<i>Castanopsis indica</i>	<i>Aerides odoratum</i>
5	<i>Quercus glauca, Lyonia ovalifolia, Schima wallichii</i>	<i>Agrostophyllum callosum</i>
6	<i>Rhododendron arboreum</i>	<i>Bulbophyllum affine</i>
7	<i>Quercus glauca</i>	<i>B. careyanum</i>
8	<i>Pyrus pashia</i>	<i>Chiloschista parishii</i>
9	<i>Rhododendron sp., Schima wallichii</i>	<i>Rhododendron sp., Schima wallichii</i>

9. Outputs and indicators of success

The focus groups of this conservation programme were picnickers/hikers, villagers and school students. It is hard to change the attitude of the local people in a short period of time and with few conservation awareness programs. It need continue efforts for a longer time to make people aware of their day today activities so that they can change their behavior and attitude for good and ultimately act in environmental sensitive way.

The success of the programme is the participation of villagers, users' committee members and forest technician during the implementation of project activities. Some are directly involved where some are indirectly involved. Therefore, the people who directly benefited from the programme could be one of the ways to evaluate the success of the conservation endeavor.

- More than 200 picnickers and 50 hikers from different cities of Kathmandu and 100 villagers get information on the importance of orchid conservation. Their commitment to conserve orchids and host trees is obviously an important achievement for the conservation of targeted species.
- It has changed the negative belief among the forest users group member and field level Forest Technicians that orchids do not impede growth and development of host trees.
- Commitments of the community forestry users groups to amend their forest management plan to include the orchid management measures are indeed an important achievement.
- The transfer of knowledge, skill and awareness among Forest User Committee members, villagers, forest guards and community forest watcher men have helped in Capacity building at local community level and they will be able to work as local change agent for sustainable conservation of orchids in long run.
- The distribution of brochure prepared in local language will certainly help them to remind their commitment often when they read the brochure.
- Relocation of more than 30 orchid tufts on host trees inside forest not only conserve orchids but also flow a conservation message in the community that orchids should be conserved.

10. Financial information:

Description	Proposed Amount in US\$	Actual expenditure in US\$
Personnel		
Accommodation Allowances	250.00	275.00
Travel		
Travel to and within the project site	150.00	150.00
Holding conservation awareness programs		
Publication of Posters and leaflet	300	300
Reaching Picnickers/Hikers on ecology and conservation of orchid	255	230
Community networks for orchid conservation	300	300
Public talks on ecology and conservation of orchids	300	350
Orchid Conservation talk program in schools	250	200
Identification and preservation of orchid host trees	240	240
Participatory rehabilitation /relocation of orchidsOrchid Conservation Excursion	405	405
SFCOS contribution	2250.00	2250
Local Community Forestry User's Group Contribution	200.00	200
Total Project Budget	2450.00	2450.00



**Lets Join Hands
to Conserve Orchids**