

Report

Protecting globally threatened orchid spp. through conservation education programs in Panchase, Nepal



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Project Summary

Orchid species are among the most threatened plants globally due to habitat loss and illegal trade. Community conservation approach has long been recognized as an effective strategy to deal with the emerging threats to such species. In this project, we aimed at enhancing orchid conservation interests among communities and school children to protect globally threatened orchid species in Panchase, an orchid hotspot in west Nepal. We adopted awareness workshops, school conservation camps and knowledge products to inform community people and school children about orchids and ways they can help to protect them in the wild. We also conducted a pre-post awareness survey and obtained a completed response (n=168) which resulted in an overall positive increase of conservation awareness level among the participants. The use of storybooks, artworks, presentations, videos and media articles was found to be effective in imparting a positive conservation mindset. Likewise, enthusiastic and active participation in the workshops and camps, and formation of orchid conservation committee reflected enhanced interests and commitments in conserving threatened orchid species.

Introduction

Orchids are one of the most diverse families of flowering plants, with over 28,000 known species distributed globally (Givnish et. al., 2015). Many species are long known for their medicinal, horticultural, cultural and food values for which their harvest and trade is equally diverse. Although the distribution of orchid family is diverse, individual species often have narrow or restricted habitat, and such species are prone to anthropogenic disturbances making them threatened (Fay, 2018). Globally, 56.5% of orchid species out of 1000 as assessed by IUCN Global Red List are threatened (IUCN, 2017).

Habitat loss is considered a major threat to orchid species worldwide followed by illegal collection for horticulture, medicinal and food purposes (Fay, 2018). This is further compounded by their complex biology including their interactions with the mycorrhizal fungi, unique pollinators and host trees. In these circumstances, in-situ conservation is a priority approach that requires to be adopted, as it is considered the most effective tool for conservation of species if habitat loss is the most prevalent threat in general (Brooks et al., 2002). Improving species related information and communicating them to the general public is an effective activity of this approach.

Orchid conservation is getting a global attention, as leading plant conservation institutions including universities, organizations and plant societies have their focus on improving orchid related information via publications, conservation plannings and collaborations. For example, Conservation Planning Specialist Group have dedicated publications focused on plants and orchids (IUCN, 2017); International Orchid Conservation Congress provides a platform for academics, and practitioners to publish, collaborate and integrate for orchid conservation (Gale et. al., 2018); It is now important to utilize the scientific resources on orchids and communicate to the general public via education and awareness activities.

Conservation education programs play a vital role in empowering communities and school children to actively participate in threatened species conservation,

including orchids. This project aimed at educating communities and school children of Panchase region in western Nepal, which is one of the orchid hotspots with over 140 species including 3 endemic species (Bhandari et. al. 2020) and threatened ones. Given the richness in orchid diversity, it was declared as Panchase Protected Forest in 2012, and since then, a number of researches with major focus on species taxonomy and conservation have been carried out. A community interaction and orchid related consultation conducted by the project host organization, Greenhood Nepal, had highlighted the need of orchid conservation education program. As a continuation of previous efforts and local needs, this project was developed.

Project Objectives

The overall goal of the project is to generate interests of local communities on orchid conservation and allow the existing orchid population to flourish in its wild habitat. The specific project objectives are to:

- i. Educate the local communities about the conservation of orchids and encourage their participation in its conservation
- ii. Develop and implement school level conservation education programs to encourage school children to grow as orchid conservation champions

Methods

The host organization undertook permissions for the project implementation from Nepal government agencies including the Department of Forest and Soil Conservation, Panchase Protected Forest authorities and local government authorities in Annapurna Rural Municipality, Kaski. We coordinated with Panchase Biodiversity Information Centre and Machhapuchhre Development Organization throughout the project. This project was implemented from February 2022 to February 2023.

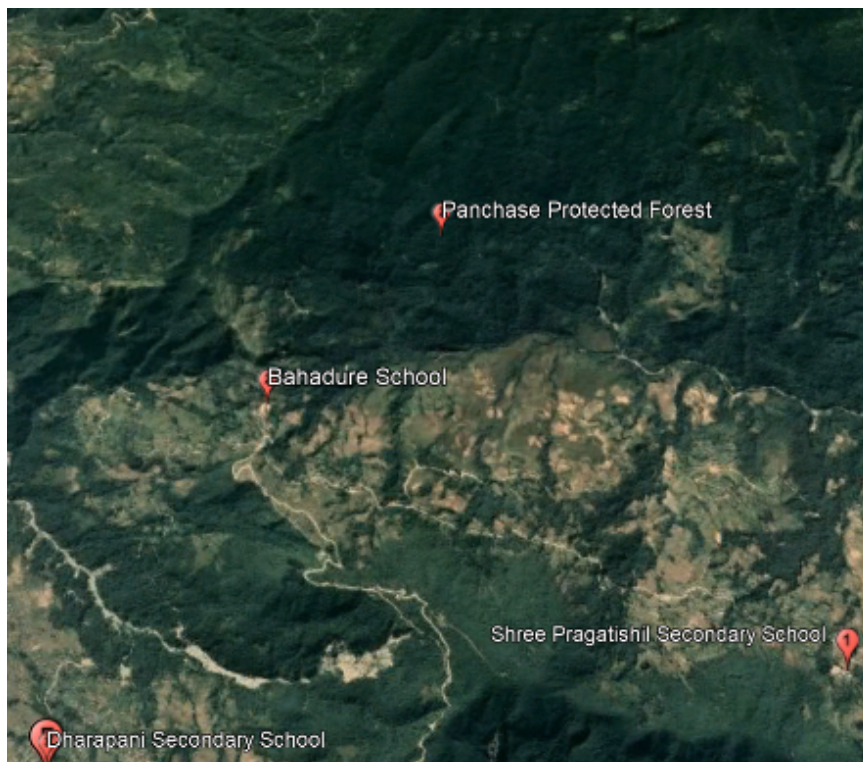


Figure: The project site in Kaski district, Nepal

Documentation of orchid conservation education

To assess the orchid conservation awareness among the communities and school children, we firstly reviewed the existing published and unpublished literature related to Panchase, biodiversity and orchids of the region. We then prepared questionnaires focusing on existing knowledge on orchid, conservation, trade and livelihood followed by community people (n=10) and school children (n=10) interviews. Further knowledge products were planned according to the response and used in upcoming education and awareness programs.

Pre-post awareness survey

We conducted structured questionnaire surveys with the workshop participants, both community participants and school children to compare the pre- and post-event knowledge on orchids. The questionnaires included indicators regarding knowledge on orchids, their legal status, identification and conservation importance. Before conducting the workshop, we interviewed the participants about the existing knowledge on orchids. After conducting the workshop, we interviewed every one of them and tested whether the understanding has improved or not.

Community Awareness

We organized community level workshops (n=3) to aware people on the presence of orchid resources in their area, and their importance. The workshop focused parallelly on existing status of orchid trade in area, impacts of orchid conservation on livelihood and motivations to conserving valuable plant species. We prepared relevant presentations and presented it to the community people followed by discussions. The workshops were conducted on two different villages of the region, namely Bhadaure Tamagi and Dharapani, as the area had incidents of illegal harvest and trade previously, as identified from the scoping field visit. Panchase Protected Forest representatives, user groups, medicinal plant harvesters and local representatives attended the workshop.





Photo: Community interaction regarding orchids

School Conservation Camp

We organized school awareness program/ conservation camp (n=3) among the secondary schools in the vicinity of Panchase Protected Forest.

Camp 1:

Our first school conservation camp was done in Pragatishil Secondary School in Salyan village of Annapurna Rural Municipality. It was attended by students from Grade 6 to Grade 10. During our first session, we conducted pre surveys using questionnaires followed by an introductory presentation on orchids. We shared about orchids, their taxonomy, legal status and conservation importance. The second session focused on i) understanding orchids and their importance ii) fostering a sense of responsibility for protecting threatened orchids and iii) safeguarding children from being mis-used in harvesting orchids and other protected plant species. Finally, we organized artwork session where participants identified orchids from the given set of flower images and were asked to draw the species and present it. This was followed by a post survey using the same questionnaire. Teachers and school children showed their willingness to understand orchids and help them protect in the future. The environment club at this school also committed to form an orchid conservation committee aiming to organize orchid awareness campaigns in their school and nearby communities.



Photos: Presentation and discussion on threatened orchids.

Camp 2:

We coordinated with Panchase Biodiversity Centre and Bahadure Secondary School in Bhadaure Tamagi village to conduct awareness camp among the students from class 8, 9 and 10. We first conducted a pre survey to understand existing knowledge on orchids among the participants. We then shared a brochure on orchids, that included basics on orchids, their importance and checklist of orchid species in Panchase region. It was followed by presentation from our team, where participants were allowed to discuss and interact in between. We focused on understanding orchids, trends of using orchids as decorative in their communities and incidences of illegal orchid trade in the region.

Some of the participants were excited to share about the ongoing orchid conservation trail in their region, actively functioning biodiversity centre of the region and how they are working to protect orchids in the region. It was followed by a post survey and a common voice to conserve orchids of their region.



Photos: Group discussions on use aspects of orchids

Camp 3:

We conducted our final school conservation camp in Dharapani Secondary school in Dharapani village. We assessed the prevalent conservation knowledge using pre-survey questionnaires among the student from Grade 6 and above. We first presented a video on orchid conservation followed by slides on introduction of orchids, threats to the species, conservation importance and ways to protect them. After presentation, we provided the images of orchid species in their region, including the herbarium sheets of some common species. We then organized artwork session artwork session where participants were asked to draw the species and present among the participants.



Photos: Participants presenting their artwork on orchids

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Outputs and Results

Orchid awareness

Orchid awareness was the most important component of the project. We directly reached more than 250 school children and around 60 community people through awareness workshops among the communities and schools. We received a complete pre-post survey response (n=168) from the workshop. The analysis of complete response showed that the overall level of awareness on orchids increased after the workshop.

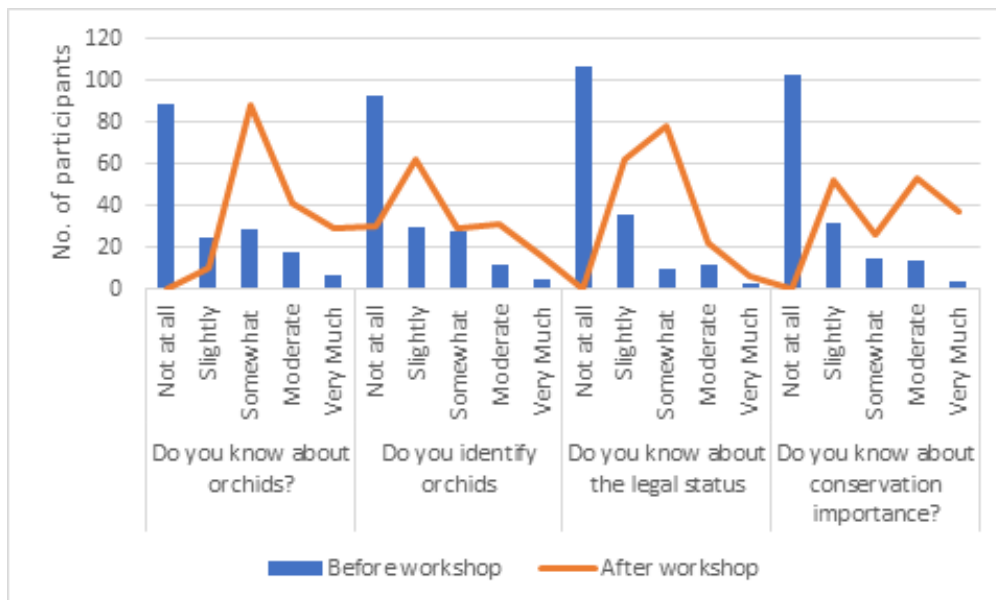


Fig 2. Changes in orchid related awareness after the workshop

Greenhood Nepal collectively used the hashtag #nepalorchids and posted information on some orchid species on platforms like facebook, twitter and instagram to inform social media followers about these charismatic species.

Formation of Orchid Conservation Committee

The environment club at Pragatishil Secondary School has formed an orchid conservation committee aiming to organize orchid awareness campaigns in their school and nearby communities.

Storybook

We prepared an illustrative storybook on orchids focused on educating school children. It is expected to impart positive conservation mindset among the school children targeted to the school children for raising orchid awareness. It was distributed among the libraries in Panchase Biodiversity Centre and to the school libraries.



Photos: Children friendly storybook on orchids

Conclusions

Many studies have shown that community plays a significant role in species and their habitat conservation. While implementing this project, we also learnt that communicating science and scientific findings to the ground level in easy-to-understand methods encourages them to protect biodiversity in their vicinity. The active participation of school children in the workshop as well as art event also showed their interests in understanding biodiversity and with proper resources and guidance, they might grow as a conservation champion in future. Further, these kind of projects on a regular basis will enhance conservation literacy and reduce the probability of school children being hired by the illegal traders to exploit orchids.

The approaches we used during the project implementation are easy to adopt, and effective to reach out to a larger audience at the same time. As the participants enjoyed the pre-post surveys, it demonstrated that such methods are really helpful to assess the existing knowledge on biodiversity/ species and quantify the level of understanding improved after the conservation interventions. The findings from the comparison between these two reflected the perception of people towards orchid conservation which gave an idea of project impact as well. Although, it did not give us the exact level of change in understanding, we were able to understand the level of motivation of the participants to change their existing behavior, level of ownership and contribute to conservation of the resources they host.

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