

Illegal Wildlife Trade (IWT) Challenge Fund Annual Report

IWT Challenge Fund Project Information

Project reference	IWT083
Project title	Illegal trade & sustainable use of medicinal orchids in Nepal
Country/ies	Nepal
Lead partner	Lancaster Environment Centre, Lancaster University
Project partner(s)	Lancaster Environment Centre, Greenhood Nepal, University of Oxford, IUCN SSC Orchid Specialist Group, University of Hawaii
IWTFCF grant value	GBP 132,114
Start/end dates of project	1 October 2020 - 30 September 2022
Reporting period (e.g. April 2021-Mar 2022) and number (e.g. Annual Report 1, 2, 3)	April 2021 - March 2022 (Annual Report 2)
Project Leader name	Dr Jacob Phelps
Project website/blog/social media	#NepalOrchids, @GreenhoodNepal, @IUCN_Orchids
Report author(s) and date	Reshu Bashyal, Jacob Phelps, Kumar Paudel

1. Project summary

Nepal hosts >500 orchid species, more than 100 of which are reportedly exploited for Ayurvedic and Chinese medicinal trade—including charismatic and IUCN-evaluated Endangered, Critically Endangered and Vulnerable species. Most species, however, remain unevaluated, but there are widespread anecdotes of local/regional extirpations due to overharvesting. Indeed, many orchids are sensitive to over-harvest due to their biology. Yet, Nepal's orchids are also economically important to many rural communities across the Chitwan-Annapurna Landscape (CHAL), including to socio-economically disadvantaged Indigenous groups (Fig. 1). A series of policy changes have meant this trade has been, at different times, both legal and illegal—causing confusion, uncertainty, under-reporting and mismanagement. At present, harvest is likely to again become legal with the existence of management plans, but a lack of baseline data, legal clarity, taxa-specific technical expertise and few economic incentives for sustainable sourcing mean that unsustainable and illegal trade remain rampant. This threatens not only orchid conservation, but also the livelihoods dependent on them. It also undermines ecosystem services, destroys natural heritage, and forgoes opportunity costs of sustainable harvest and ecotourism.

This project focuses on all orchids commercially harvested from the wild for trade, specifically those we already know are threatened, such as *Cypripedium himalaicum* (EN), *Gastrochilus calceolaris* (CR), *Gastrodia elata* (VU), *Dactylorhiza hatagirea* (all trade banned in Nepal), and *Dendrobium* spp. (e.g., *D. nobile*, subject to previous CITES actions).

The project involves local and national government stakeholders, orchid experts, plant traders, and harvesters in an effort to reduce illegal trade, fill core data gaps, and promote sustainability

legal trade. This includes the first concerted efforts to trial monitoring, enforcement, and seizures of orchids in the country. It addresses this by preparing the first-ever baseline on the illegal trade to integrate orchids into domestic policy and facilitate appropriate enforcement by highlighting the topic and filling in knowledge gaps needed to enable enforcement.

Concurrently, the project is engaging with international orchid experts to provide the science underpinning more sustainable management of wild orchid populations. Although we know many orchids are threatened by unsustainable harvest, we know little about what could make harvest more sustainable. We are engaging with experts globally to evaluate the available science to make proposals about how wild harvest could be more sustainable.

On the ground in Nepal, the project works with four communities in three districts within the Chitwan-Annapurna Landscape (CHAL): Gorkha, Makawanpur, and Kaski Districts (Fig. 1; summary table of activities taken in teach sites see Annex 4.4). These regions are not only orchid hotspots, but a large number of residents, including many Indigenous groups (e.g., Tamang, Gurung, Dalits) whose livelihood rely on forest products. For example, in Bhadaure Tamagi alone, nearly 4000 people’s livelihoods rely on forest products, particularly in the collection, processing, and trade of medicinal plants.

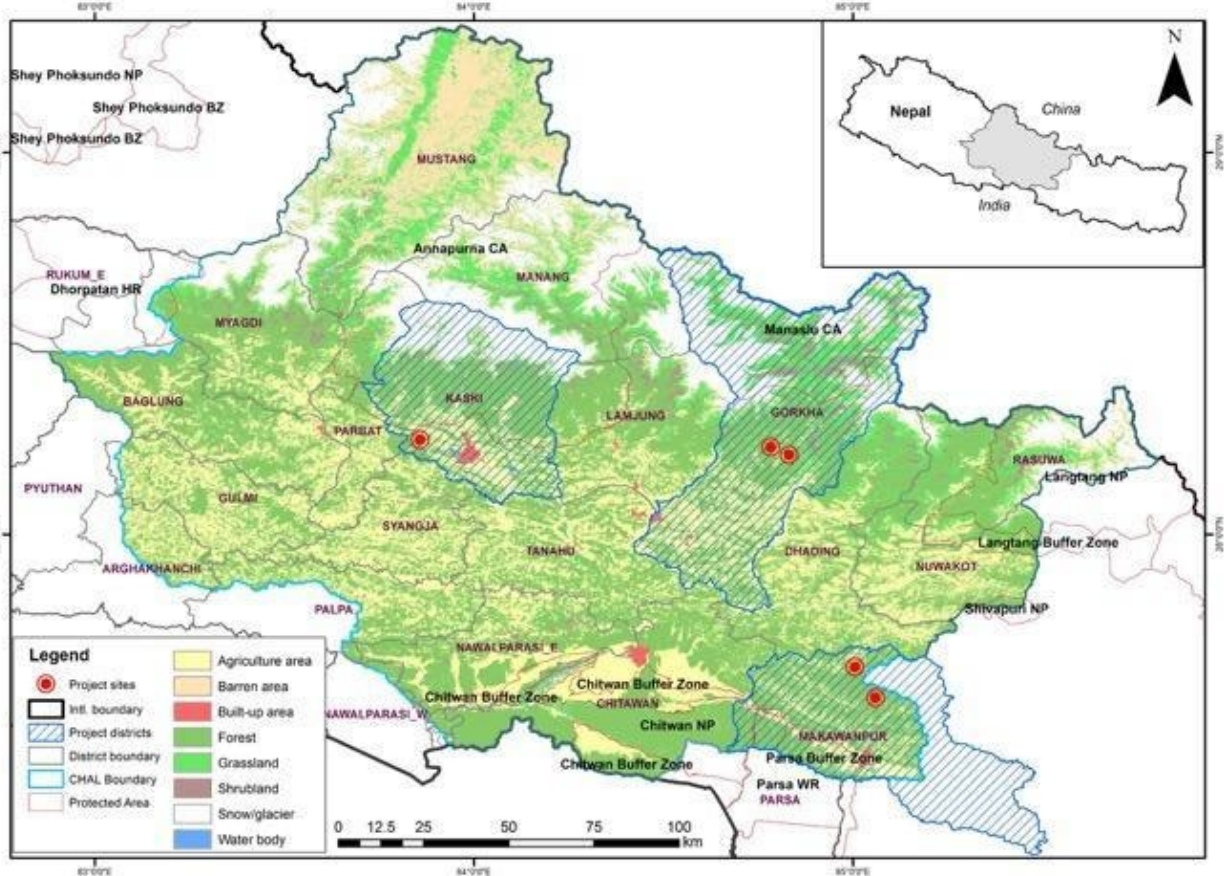


Figure 1. Five project sites across Kaski, Makawanpur, and Gorkha Districts, all within the Chitwan Annapurna Landscape (CHAL).

2. Project partnerships

The project is led by Lancaster University’s Lancaster Environment Centre, with field implementation led by the Nepali NGO, Greenhood Nepal. It involves further partnership with orchid experts at the University of Oxford, University of Hawaii and the IUCN SSC Orchid Specialist Group. These partners have long-standing relationships, which have actively strengthened over the project period as a result of very regular communication, joint work, and trouble-shooting throughout the pandemic. The international partners have worked together in good faith and with regular communication primarily via email and regular WhatsApp (See AR1). Besides, we also held regular team meetings over zoom (for all project partners, and

notably between LU-Greenhood and LU-Hawaii), and in-person (in case of Nepal team) at least twice a month where we discuss major updates and upcoming activities including any major issues incurred. The key meeting details are updated in a record-keeping minute sheet with key highlights and action points (so far we have had 65 meetings) (**Annex 4.1**).

The partnerships were based on demand stemming from Greenhood Nepal in response to observations they have made during previous fieldwork, and supported by the IUCN SSC Orchid Specialist Group's recognition that Nepal's orchid trade remains virtually unstudied (See AR1). Beginning from the project design phase, all the project partners have been involved in project implementation (as required). Much of day-to-day tasks are led by Greenhood Nepal, but in frequent consultation with the other partners—with Universities of Hawaii and Oxford providing technical inputs, and LU providing technical, management, reporting, budget, and monitoring inputs. The project host, Greenhood Nepal has actively communicated with in-country conservation and enforcement authorities including local community. Notes of each in-person and virtual meetings is recorded regularly in our shared GoogleDoc (**Annex 4.1**).

The project partners are also working in collaboration with national government offices in Nepal (CITES focal point, Ministry of Forests and Environment, Department of Forest and Soil Conservation), and divisional forest offices and Community Forest User groups in 3 districts in the CHAL landscape. These relationships have been slower to develop as a result of the pandemic and office closure and travel restrictions. However, across the board, there has been genuine interest in the topic, stemming from broad recognition that orchid trade is happening and likely economically significant, but that the related monitoring, rules and science are very unclear.

Key lessons

- Be cautious in engaging both enforcement and illegal harvesters/traders simultaneously: Working with both enforcement agencies and communities who are often involved in illegal harvest can put us in an awkward position. On one hand, we want to reduce illegal trade, on the other hand we do not want to affect the livelihoods of those involved in illegal trade or compromise our respondents. This requires careful management, honesty and clarity about research ethics and confidentiality (**Annex 4.2**).
- Invest in building trust: Researching illegal trade requires trust-building with respondents and patience in response to unpredictability of respondent availability, and so it is helpful to plan for more/longer scoping days. The harvest monitoring, an important part of our project, faced many hurdles before initiation, due to the need for additional relationship-building with participants and we had to take additional visits to the harvesting communities so that they would agree to participate (**Annex 4.3, 4.4**). We anticipated/planned for some of this but it was greater than expected and after scoping and trialling decided to focus monitoring efforts in Gorkha rather than Makwanpur District because of relative receptiveness (**Annex 4.4**). information on the project team is, however, led to some delay and increased workloads.

Key strengths:

- Fostering diverse teams: Our team reflects diversity on several axes, including nationality, religion, gender, disciplines (law, ecology, economics), and between academics and practitioners.
- Building on existing partnerships: Starting with partners and individual collaborators who have strong existing relationships is important to overcoming inevitable challenges and stresses. Our team had a strong foundation, which has served us extremely well in this regard.
- Supporting early-career colleagues: The key project staff in Nepal are early-career researchers. This project has helped them to enhance their capacity in implementing and leading a substantial project.
- Participating with outside experts in shaping the project: the support we received from outside orchid experts, conservation practitioners, and traders, who are lending their expertise to the project, including the project site selection and the development of research tools is still ongoing (see **AR1, Annex 4.2, 4.5, 4.6**).

- Adapting to on-the-ground challenges: Faced with considerable challenges of COVID-19, as well as unpredictable challenges in the field (e.g., related to harvester participation), we have cooperated as a group very well to adapt our plans in ways that are still tightly aligned to our original vision and logframe (**Annex 4.4**).

Summary of relationships:

LEC - Greenhood Nepal: This is the primary, long-term and strengthening partnership that leverages UK technical expertise and personal/professional networks to support a growing Nepali NGO. LEC has been effectively coordinating among the partners, including providing technical expertise on IWT and orchidology (Outputs 1, 2), and engagement at the science-policy interface (Output 5) which has strengthened the technical capacity of Greenhood to implement activities on the ground.

University of Oxford - Greenhood Nepal: This long-term partnership with A.Hinsley has been important to collaborating on the analysis of trade data and trade dynamics (Output 1). She will contribute to the analysis and writing and international communications (Output 5).

LEC - University of Hawaii: Tamara Ticktin has been co-leading the technical analysis (Output 2) and helping inform the harvester monitoring (Output 2). This has involved convening global orchid experts to inform the project.

Greenhood Nepal - government institutions: The team is working closely with the Department of Forests and Soil Conservation (DoFSC), Division Forest Offices (DoF), and Community Forestry User's Groups (CFUG) and CITES Authorities. The DoF involves district-level forest enforcement and resources management, and is important to both strengthen enforcement with other government agencies to reduce illegal trade (Output 3); recruit orchid "champions" and help ensure our science feeds into future forest management plans.

Greenhood Nepal - The Federation of Community Forestry Users Nepal (FECOFUN): This was a demand-based partnership and improved after the project implementation, particularly in obtaining information about the local resource person. They will be more involved in local-level monitoring and resource management plan development to facilitate harvester monitoring and enforcement (Output 2) and training/awareness programs to support the integration of science into decision-making (Output 4).

Greenhood Nepal - Municipal Governments: Greenhood Nepal has signed MoUs with three municipal governments of the project area; Annapurna Rural Municipality (Kaski), Dharce Rural Municipality (Gorkha) and Thaha Municipality (Makawanpur). They are providing access to local reports/management plans, contacts with local ward heads and community representatives, facilitate meetings/events with local enforcement agencies.

3. Project progress

3.1 Progress in carrying out project Activities

Output 1:

- *Activity 1.5: Develop research instrument (trade dynamics & livelihoods)*

This activity was the core focus of Q1/Y2. Based on scoping from Y1 we drafted and tested these in Nov-Dec 2021 in Makwanpur District (**Annex 4.3, 4.4**). The finalized versions are available in English and Nepali (**Annex 4.4**) and were used during the fieldwork.

- *Activity 1.6: Conduct field observations and interviews in 3 districts and Kathmandu on trade dynamics, and also establish contacts with harvesters*

We conducted preliminary observations in project sites and established relationships/contacts with 79 harvesters, traders, government officials, plant enthusiasts (**Annex 4.1, 4.4**). Besides the stakeholders we met in AR1 and HYR, we met and interviewed Tibetan medicine practitioners (n=2) and herbal traders (n=2), and government stakeholders in several instances (**Annex 4.6**).

- *Activity 1.7: Analyse and integrate secondary data (seizure, CITES, legal review) into a report*

We compiled all available secondary data from official seizure records and CITES Trade Database). We also reviewed 113 legal documents (by **HYR 1**, we had reviewed >50) and, because of the need for clarification, organised one-to-one discussions about the legal provisions with government stakeholders and lawyers (**Annex 4.1**). This led to three baseline reports. Of these, we have published two reports online (**Annex 4.7; Annex 5**), we did not publish legal review because it had been through several revisions and we plan to publish this as an important component of our manuscript.

- *Activity 1.8: Analyse primary data (field observations, interviews, etc.) into a report*

We have completed the field observations and interviews needed for this and prepared 7 mini reports (1 overview report for all three sites, 3 reports for Makwanpur, 1 report for Kaski, and 2 reports for Gorkha) (summaries of the reports in **Annex 4.4**). These are not yet in final report format due to COVID-19 delays.

- *Activity 1.9: Prepare journal publication*

A final draft is nearly ready for submission to *Biological Conservation*, highlighting findings from the legal and trade analyses (see **Activity 1.7**). Entitled “Making sense of domestic wildlife legislation: The example of CITES and Nepal’s orchids” it contributes to our understanding of orchid trade in Nepal and advances an approach that will be helpful to others studying wildlife legislation globally (**Annex 4.8**). We plan to submit this report in **Q1/Y3** when the Nepal team visits the UK (delayed due to COVID).

Output 2:

- *Activity 2.2: Host workshops with local harvesters (n=>100) across 5 CHAL communities to discuss trade dynamics, livelihoods, and conduct discussions about the viability of different types of data collection (see Activity 2.4). Also identify target community for trial harvester monitoring*

This was heavily delayed due to COVID restrictions, but we hosted several group discussions with the harvesters as well as with trader’s associations, and government officials (involving >20 people in group of 3 or more due to COVID 19 second wave restrictions) (see **HYR1; Annex 4.1, 4.4**). Besides those discussions, we also conducted 4 interaction programs across 5 CHAL communities including medicinal plant harvesters, ward/district level government representatives, community forest user groups, community forest officials, and other orchid enthusiasts from the project site (involving 76 participants involving generous participation of women) and one stakeholder’s interaction event with the district level stakeholders with 21 participants including the district level stakeholders (Chief District Officer, forest officials from Division Forest Office (including Divisional Forest Officer, Assistant Forest Officer, and other officials), Nepal Police, Armed Police Force, Nepal Army, National Investigation Department, , District Attorney, FECOFUN and Press) (**Annex 4.9**). We identified a trial harvester monitoring site in Makwanpur, which was later changed to Gorkha (**Annex 4.4**).

Although the COVID-19 restrictions did not allow larger group meetings, we reached out to a significant number of local people during these series of local level interactions and workshops. Also, we have reached out to all the targeted stakeholders and the events were very effective to identify harvesters for harvest monitoring and tested the survey tools covering orchid harvest rules, identification, and methods for self-reporting data (**Annex 4.9**).

- *Activity 2.3: Formally recruit participants, including ethics procedures*

We conducted networking during scoping to enable recruitment, and drafted the contract documents including ethics procedure documentation for university approval (**Annex 4.2, 4.4, 4.10**). We appointed an independent local, trained eco-monitor in the target community to have regular interaction and provide required supervision to the harvesters recruited for harvesters’ self-monitoring. Although the activity was carried out as planned, we had to go through a series of scoping trips and change the eco-monitor from one site to another (detailed explained in **Annex 4.4, 4.11**, also see **Activity 2.6**). We recruited 30 participants (**Annex 4.13**) and an independent eco-monitor (**Annex 4.11**) in Gorkha District. We have a new database of harvester-collected data (species list, volume, etc.), tracking documents of number of successful data submissions from harvesters (in form of google doc and regular viber communication between Eco-monitor and Nepal project team (**Annex 4.11**). The details on the

rate of concurrence in data between independent eco-monitor and harvester data was not collected because the harvesters were illiterate and eco-monitor had to fill the forms based on what harvesters reported

- *Activity 2.4: Develop a draft protocol for orchid harvester monitoring.*

We cooperated with researchers and IUCN experts to identify/determine what data variables are required and feasibility within the local context. We have thus identified a simple, but informative instrument (**Annex 4.5**). We then tested and refined the instrument in the field with harvesters (**4.13**).

- *Activity 2.5: Develop and test draft training materials and resources for harvesters participating in the monitoring, accounting for local taxonomy and challenges of identification*

We tested the draft materials and resources for the harvesters in Makwanpur and Gorkha districts (**Annex 4.5**). We now have a new dataset of harvester-reported information (**Annex 4.13**). We have also developed a “Traders’ species concept” dataset matching local names for various orchid species with their Linnean/Latin names, the first time this has been done for Nepal (**Annex 4.13**).

- *Activity 2.6: Taxonomic training for the eco-monitor in the target community to help supervise harvester monitoring*

Eco-monitor is an important part of our project. Initially, as we had identified Makwanpur as our harvest monitoring site, we called for applications for the post of eco-monitor—through head hunting and word of mouth but we ended up appointing an independent local eco-monitor in Makwanpur. We worked with him to both identify species and collect data/report to the team. We appointed harvesters for trial monitoring informally. We had to do an informal appointment because harvesters did not feel comfortable to share their identification details although they voluntarily agreed to participate in harvest monitoring. Later, we had to move the harvest monitoring site to Gorkha and appoint another Eco-monitor who can work in Gorkha and also communicate in local Gurung language. In this process, we held a series of scoping trips (**Annex 4.3, 4.4**) and training including in-house training to identify orchids (**Annex 4.11**).

Training materials used were available books on medicinal orchids of Nepal and Assam (India), a guidebook in Nepali language for local harvesters and eco-monitor prepared by the project team, chart papers (**Annex 4.10**).

- *Activity 2.7: Training workshop in the target community participating in the harvester self-monitoring, including knowledge pre-tests, about orchid harvest rules, identification, and methods for self-reporting data*

We conducted workshops (each ~3hours) in the target community Laprak, Gorkha District for 38 people (30 F, 8 M) involved in orchid harvest and our self-monitoring including orchid harvest rules, identification of species, and methods for self-reporting data (**Annex 4.9**). The workshops had very enthusiastic participation of women harvesters especially in Gorkha where we conducted two women targeted workshops (that also included male harvesters) (**Annex 4.9, 4.10**). We used similar training materials as in **Activity 2.6**.

- *Activity 2.8: Establish Task Forces in the target village, including appointment of an independent eco-monitor to oversee the harvester data collection*

We discussed the Task Forces with local level government officials and village level Community-based Anti-poaching Units during our meetings (**Annex 4.6**). We activated the already existing district level WCCB’s medicinal plant focal team and also conducted a kicked-off meeting (**4.9, 4.15**). We appointed an independent eco monitor based in Laprak, Gorkha who is coordinating in regular harvest data collection in harvest monitoring site (**Annex 4.11**, see **Activity 2.6**) We formally recruited participants for harvest monitoring in Makwanpur because of its proximity to Kathmandu and COVID travel restrictions. However, there was clear discomfort among harvesters and travel restrictions eased, so we redirected efforts to Gorkha District We identified an eco-monitor, identified harvester communities and selected 30 (19F, 11 M) for harvest monitoring activities. Monitoring ran for three months from 1 Jan- 31 March, with checks every 2 weeks based on what we learned about harvest frequency (**Annex 4.13**).

- *Activity 2.9: Harvesters self-collect data through their normal peak-season for harvest, with regular (e.g., weekly) check-ins and engagement with the independent eco-monitor to submit their data.*

We initiated self-reported harvester monitoring in Gorkha District with 30 harvesters (19 F, 11 M) from 1st Jan 2022-18 March 2022, with data collected every 15 days (**Annex 4.13**). We didn't collect a list of participants but we have all socio-economic data from each of them. This was monitored by the Eco-monitor based in Laprak. He has the list to identify the harvesters and he reports the Kathmandu team using code- as he himself is a local he asked us to keep a list of participants within himself and not to share with the project team for security issues. He is in regular contact with harvesters with checked-ins every 2 weeks, reporting to the Greenhood team regularly via Viber and regular phone conversations (**Annex 4.13**). Prior to this, eco-monitor was trained by the Nepal project team and is regularly guided by project manager especially on scaling, taking photographs (**Annex 4.11**). This resulted in a novel dataset of orchids harvested in Gorkha (**Annex 4.13**). The activity is going really well. We had our field trip to monitor the progress and we are excited to see what comes up by the end of this activity (**Q1/Y3**).

- *Activity 2.10: Ongoing support/coordinating with the new district Task Force on monitoring and data collection from harvesters*

As we did not form a separate Task Force rather supporting district level WCCB in one district to consider orchids as a priority (**Annex 4.15**), the team in Kathmandu is in regular touch with WCCB officials and (via Viber and telephone) with the eco-monitor who coordinates with the harvesters participating in harvest monitoring (See **Activity 2.9**). The eco-monitor also visited Kathmandu field office to work with the Nepal project team (**Annex 4.13**). The eco-monitor also visited Kathmandu field office to work with the Nepal project team (**Annex 4.11**). The activity is to be done through the Q2/Y3.

- *Activity 2.11: Conduct harvester monitoring data entry and analysis*

So far we have compiled the datasets, we are entering the data in excel sheet. The analysis and report preparation is to be done Q1/Y3.

- *Activity 2.12: Prepare report based on harvester data*

As of now we are collecting data and compiling them on excel documents (**Annex 4.13**). So far we have collected harvest monitoring data for the 5th slot. Although we planned to collect until the 6th slot, we stopped at the 5th because there was no orchid harvest. We will resume this again in July (Y3/Q2) considering next harvest season. This activity is to be done by Q2/Y3 and we will finish as proposed. By now, we have also prepared the compiled list of most traded species including how traders identify the species in trade which we call :Trader's concept of species identification" (**Annex 4.13**).

- *Activity 2.13: Develop protocol for eliciting expert data for PVA analysis*

International group of orchid ecology experts identified a series of variables that, based on the literature and our expertise, are important to determining whether and how wild orchids can be sustainably harvested. They then populated this with data from the literature and experts' own experience and research (**Annex 4.12**). Ultimately the analysis does not involve traditional PVA methods because this was not viable with the data available, but is a framework of conditions that need to be met for harvest to be more sustainable.

- *Activity 2.14: Gather data for PVA from orchid experts internationally*

Group as recruited in Y1, and has continued to meet regularly and populated the data (**Annex 4.12**)

- *Activity 2.15: Conduct PVA analysis and writing results of PVA*

Advanced draft of the analysis is ready for submission to an academic journal, likely in May 2022 (**Annex 4.12**).

Output 3

- *Activity 3.1: Prepare and publish policy brief, "Combating illegal orchid trade in Nepal"*

Activity incomplete due to the COVID-19 delays to our fieldwork. We are working on draft ideas, discussing with government stakeholders and experts to understand how best to frame it. We planned to prepare it based on findings from the harvest monitoring results Activity 3.2 and disseminate on our final workshops as well as make available online at Greenhood and OSG websites.

Activity 3.2: Prepare and publish policy brief, "Trialling monitoring and exploring sustainable legal orchid harvest to reduce IWT"

To be done by **Q2/Y3** along with Activity 3.1

- *Activity 3.5: Recruit "champions" in CHAL and nationally during various meetings/workshops, keeping records of likely supportive candidates and keeping in touch with them via meetings and email updates.*

This activity will be done by **Q2/Y3**. We have compiled a list of people (so far, 30 candidates) who will be designated as orchid champions. We have designed the required instruments- criteria to select Champions, general agreement and commitment of the Champions, and appreciation letter from the project to the Champions (**Annex 4.14**). We also prepared a list of all the available designations in different environmental scenarios where the designations used champions – this helped us to identify the criteria and understand how best to recruit the champions and who could best represent the list. We also found the term "Orchid Champion" being used in Indonesia for an independent orchid conservationist. We listed out the formal process to recruit and are drafting letters to formally recruit the champions by Q2/Y3 (**Annex 4.14**).

- *Activity 3.6: Monitor government enforcement data/seizure records throughout the project the project duration*

We are regularly updating the seizure records, and have identified 32 since 2010 (original baseline was 13, but we have expanded the dataset by accessing local records; (**Annex 4.7**). Besides compiling the records, we also met with CIB Head at Kathmandu (**Annex 4.1, 4.6**), direct and indirect communications with the enforcement officials regarding orchid trade, including the WCCB event in Gorkha which will continue throughout (**Annex 4.15**).

Output 4

- *Activity 4.3: Meetings with district Task Force and Department of Forests to disseminate baseline data*

We held a stakeholder workshop at Gorkha with very active participation of enforcement members (**Annex 4.9, 4.15; Activity 2.7**)

Output 5

- *Activity 5.1: Maintain active Facebook and Twitter presence, highlighting project progress including sharing knowledge products*

Using Greenhood Nepal, the project host in Nepal, we have shared a total of (including 37 posts related to the project (n= 11 Tweets, n= 7 Instagram posts, n=9 LinkedIn posts, n= 10 Facebook status) in April 2021-March 2022; so far, over the project period, we have shared 54 posts. This includes posts with information on orchid conservation, alert message, awareness on conservation of wild orchids, raising consensus on the scale of trade, etc. The social media posts are widely disseminated and they receive nice interaction. One of our recent twitter posts had around 4k interactions All can be tracked via the #NepalOrchids hashtag. (see examples and other details in **Annex 4.16**). We use the same hashtag for all posts and tag IWT Challenge Fund only in those posts which we feel deemed necessary. We will continue this activity throughout the project period and beyond.

- *Activity 5.2: Publish 4 blogs (e.g., on PVA, harvest, enforcement data analysis, trade data analysis)*

In AR2, we have published 2 blogs; one of them was by project lead published at the IUCN SSC OSG website, another one was published on Global Voices (**Annex 4.16**). These are also uploaded and widely disseminated in Greenhood Nepal's and OSG website.

We will continue this activity throughout the project period and beyond.

- *Activity 5.3: Publish 4 editorials in Nepal (e.g., on PVA, harvest, enforcement data analysis, trade data analysis)*

In AR2, we have published 4 editorials (both in Nepali and English in different topics) (**Annex 4.16**). Two of these posts were written by the project team and those pieces were highly acclaimed. Other two posts were editorials and media reports quoting our project and what it aims to do. All these editorials are also uploaded and widely disseminated in Greenhood Nepal's and OSG website. We will continue this activity throughout the project period and beyond.

- *Activity 5.4: Participate in international conferences to highlight outcomes (target conferences: SCB, ICCB, National sharing platforms)*

We have shared about the project on different occasions n=2 (**Annex 4.16**). The activity is to be done throughout the project period.

- *Activity 5.5: Dissemination of results (reports, publications) via IUCN*

We produced one blog to share the results from the mini-reports (see Activity 4.16, **Annex 4.16**). We have reached out to the American Orchid Society- we are preparing a blog for AOS which we plan to finalise and submit when team Nepal visits the UK. The activity is to be done throughout the project period.

- *Activity 5.6: Conduct courtesy calls to Nepal NGOs to share results*

The activity is to be completed by the end of the project period. We have reached out to the NGOs informally. We plan to conduct courtesy calls in mid- Q2/Y3.

- *Activity 5.7: Side-event at CITES Meeting (Plants or Standing Committee, dates not yet set)*

The activity is to be completed by the end of the project period.

3.2 Progress towards project Outputs

Output 1: Nepal and CHAL governments and communities have the baseline trade, legal and livelihood dynamics data needed to improve enforcement against orchid IWT, and guide environmental and social policy on legal orchid trade

Prior to the project there were no baseline resources related to orchid trade in Nepal, whether documenting trade dynamics, identifying key species affected by trade, documenting seizures, evaluating legal trade, addressing the profiles of people involved in trade, or guiding enforcement priorities; there were only limited, anecdotal references to illegal trade across various publications.

We have since published two baseline reports on the status of orchid trade in Nepal, including related to CITES trade and seizures of illegally traded orchids (that we continue to update), and a third baseline report, a legal review on the legalities of orchid harvest/trade in Nepal, is about to be published (Indicator 1.1, 1.2; **Annex 4.7**). This report on legislation is notable because recent changes to legislation has caused widespread confusion about the legality of orchid harvest/trade with significant on-the-ground implications for enforcement and sustainable trade. It was a greater time investment than expected (113 pieces of legislation, and clarificatory meetings with government and lawyers). The results are a main highlight of a manuscript on governing orchid resources in Nepal (**Annex 4.8**). Importantly, this also provides a novel framework for analysing IWT-related legislation in other countries/across contexts, and is currently being used by International Animal Rescue in Indonesia.

We have also prepared the first comprehensive list of medicinal orchid species traded in Nepal, and which matches the local names harvesters/traders are using to scientific names, and identifies morphological attributes, prices and uses (**Annex 4.18**). We have also drafted a trade chain dynamics map that is the first synthesis of trade dynamics in the country (**Annex 4.17**). We have also collected all data for a baseline report to characterise orchid harvesters and their livelihood reliance on orchids (Indicator 1.3), which draws on our site visits (**Annex 4.4**) and interviews with harvesters (**Annex 4.4**). The latter three have not yet been published, and will be important to informing enforcement.

We have shared the key highlights of the reports with the District Wildlife Crime Control Bureaus and Division Forest Offices of the project area. We also had a meeting with Nepal Police (CIB Wildlife Crime Cell in Kathmandu) to talk about the orchid trade and explore how they are responding to plant trade and how we can support them (**Annex 4.1, 4.6**).

Output 2: Improved understanding of how trade impacts wild orchid populations, including implementation of a pioneer harvester reporting scheme, to improve the management of legal harvest

There has been no monitoring of harvest of wild orchid populations. In Y1 we developed a protocol for implementing the first such effort. Although much delayed by COVID-19, we refined this instrument through trialling with harvesters at Makwanpur District (Indicator 2.1; **Annex 4.5**). We used this to also develop training resources to explain to harvesters how to undertake basic reporting of their harvest (**Annex 4.10**).

We then organized workshops with 97 harvesters, via 4 community interaction programs and 1 district-level interaction program in our project sites (Indicator 2.2; **Annex 4.9**). The events had very active participation of women harvesters where we explored how they harvest orchids and their willingness to engage in harvester self-monitoring.

These workshops served as the basis for then recruiting harvesters to participate in self monitoring. We worked initially to recruit people in Makwanpur District, largely due to its proximity to Kathmandu during the COVID-19 pandemic. However, harvesters were not adequately receptive, and we ultimately recruited 30 harvesters (11 M and 19 F) in Gorkha District (Indicator 2.3; **Annex 4.13**), where our scoping had shown significant trade and receptive respondents. Delayed by COVID-19, we completed one cycle of harvest monitoring starting from January to March (**Annex 4.14**). We plan to resume this in July-August 2022, to coincide with the next harvest season. This is the very first study of this kind and it is documenting some important findings, such as species that are not previously reported as being in commercial trade (e.g., *Pleione praecox*, **Annex 4.4**), incidents of large-scale harvest and information about harvest methods (e.g., of *Dendrobium* **Annex 4.13**). We plan to do post-monitoring interviews with the harvesters to gain their feedback on the monitoring experience (Indicator 2.4). We are now integrating the harvest monitoring data to prepare a baseline report (Indicator 2.5).

The lack of data about orchid harvest in Nepal parallels data gaps globally. To date, we know very little about the viability of sustainable orchid harvest for any species or populations of orchids around the world, which is shocking for the largest family of flowering plants. In response, we convened a group of orchid ecology experts from around the world to prepare a unique analysis that would help us to understand how different orchids might respond to harvest (Indicator 2.6). We originally planned to use a traditional Population Viability Analysis (PVA) model, but based on data availability and expert advice, developed instead a framework that identifies conditions under which harvest can be made more sustainable. We have prepared an advanced draft of a manuscript, “Wild orchids: A framework for identifying sustainable harvest” (**Annex 4.12**). The work reflects the current state of knowledge on what we know about orchids’ responses to harvest from the wild, and is the first time this type of exercise has been attempted.

Development of a Task Force to help integrate our findings into local planning and enforcement (Indicator 2.7) was not viable in the way we originally envisioned. This was because during our scoping we came across several existing but dormant task forces, including one coordinated by the Wildlife Crime Control Bureau (WCCB) in Gorkha District, where our harvest monitoring is based and there have been recent large seizures. Due to the budget constraints, the group had not met in 2021-2022 so we helped them convene this and highlighted orchids (**Annex 4.15, 4.9**). It included the Division Forest Office, District Administrative Office, Nepal Police, Nepal Army, Armed Police Force and Protected Area Officials and included discussion on enforcement and improved orchid resource management.

Output 3: Key central and local government agencies empowered, and demonstrate strengthened enforcement against illegal commercial trade of medicinal orchids

The sustainability and enforcement of wild orchid harvest and trade are explicitly not policy priorities in Nepal, and there are no related publications focused on trade. We prepared baseline reports (**Annex 4.7**) and have done all of the data collection (**Annex 4.5, 4.17, 4.18**) to prepare synthetic Policy Brief on “combating illegal orchid trade in Nepal” (Indicator 3.1), which will be done this year.

We have also collected, albeit delayed by COVID-19, the harvester self-monitoring data (**Annex 4.13**) and scientific information (**Annex 4.12**) needed to prepare a Policy Brief on “Trailing the monitoring and exploring sustainable legal orchid harvest to reduce IWT” and Indicator 3.2), which will be done this year. These are required in order to help guide government responses, which currently lack relevant technical capacity and information.

Throughout this work, we have been recruiting and engaging government officials, who have been most receptive to our project, to become “orchid champions”, which has not been done before with orchids but has been used for other taxa (e.g., pangolin) (Indicator 3.4). We have identified 30 people (25 M, 5 F), and drafted all the criteria for selection (**Annex 4.14**). We plan to design commitment of champions and appreciation letters from the project and formally designate the champions. Also, we plan to include more females.

Limited prioritisation of orchids has meant that enforcement has historically been lax, and we collected baseline seizure records of orchids visiting Division Forest Offices and other enforcement agencies, and reviewing newspapers. So far we have recorded 32 (it was 13 at the end of Y1) seizures of illegal orchids in Nepal between 2010 to now (**Annex 4.7**). Linked to project activities, there is increased interest from media, enforcement, conservation and academic communities in orchid trade in particular to Nepal (**Annex 4.6**). We plan to continue monitoring this to evaluate whether it increases during the project period (our target is to increase enforcement by 30%). We note, however, that due to COVID, our results and engagement with government has been delayed, and government priorities have been explicitly different than usual.

Output 4: Wild orchid harvesters and traders understand sustainability issues affecting orchids, rules governing orchid harvest and trade, and potential for improved legal resource management and reduced IWT

Workshops with orchid harvesters have not been previously conducted in Nepal, and we plan in Y3 to organise a series of these in different communities (Indicator 4.1), highlighting key findings, including from our harvester monitoring (**Annex 4.13**) and legal analysis (**Annex 4.7**). We will soon propose a change to Indicator 4.2, as pre-post tests have proved not viable (see Section 3.3)

Output 5: Increased awareness of the threats IWT poses to plants/ orchids among conservationists globally

Although there is some limited public media about orchid trade, there was very little about Nepal (1 editorial). We have shared results via social media, making 37 posts ((Indicator 5.1; **Annex 4.16**). We plan to continue disseminating throughout the project period and beyond, which will become easier now that we have more results incoming following COVID-delayed fieldwork.

The project has been mentioned in 6 newspapers; including 2 editorials by the project team (Indicator 5.2, **Annex 4.16**). We have received an invitation from the newspaper, Himal Khabar to contribute a further editorial. Project results have also been shared via one blog published in the IUCN OSG website (Indicator 5.3, **Annex 4.16**). The American Orchid Society has invited an article highlighting the project.

The global dissemination of results via international conferences (Indicator 5.4) and CITES Plant Committee (Indicator 5.6) was delayed due to COVID-19 and, combined with our delays in data collection, this is no longer viable. However, there was no budget for this allocated in this budget. That said, dissemination of results to CITES Secretariat and relevant working groups (Indicator 5.5) will happen this year. Courtesy calls to NGOs in Nepal, to highlight the importance of our results, have been undertaken with 13 organisations (Indicator 5.7; **Annex 4.6**).

3.3 Progress towards the project Outcome

Outcome 0.1: Nepal government and CHAL communities enforce against illegal orchid trade, and initiate a science-base legal alternative, raising global awareness about orchid IWT

Indicator 0.1: We have had positive engagements with sub-national government to incorporate orchids into the management of local forest sites in 5 areas and to address illegal commercial-scale trade: the local government authorities in Annapurna Rural Municipality (Gorkha District) and Thaha Municipality, and the Community Forest Chairs in Laprak, Makwanpur, and Kaski. These still remain verbal commitments, but are reported in our meeting and field notes (**Annex 4.4, 4.6, 4.9**) The commitments are to act against illegal orchid trade and include actionable steps relevant to sustainable orchid harvest and trade in their long-term plan of actions. The management plan of Gorkha district enlists some species of orchids (e.g., *Satyrium nepalense*, *Brachycorythis* spp.) including the harvest stocks – they said considering the results from harvest monitoring and PVA analysis, if the Central Department prepares Management Plans, they are happy to conduct a detailed inventory and experiment with sustainable and controlled harvest (**Annex 4.9**). We are also assisting the community forests in Makwanpur and Gorkha in preparing their operational plans where we will incorporate orchid conservation actions (explained in **Annex 4.19**).

Indicator 0.2: We are successfully involving the priority boundary organisations including local forest office representatives, community-based conservation organisations (Machhapuchhre Development Organization in Kaski, Hiuchauli Youth Club in Laprak, Laliguras Samuha in Laprak), representatives of community forest user groups, trader's association (Herbal Entrepreneurs Association of Nepal, and Nepal Herbs and Herbal Products Association, WCCB Gorkha). This has included face-to-face meetings, field visits as well as strong participation stakeholder's workshop (**Annex 4.1, 4.6, 4.9, 4.15**).

Indicator 0.3: We have met with officials from key enforcement agencies at Central and local levels (**Annex 4.6**), which establishes the basis for engaging them with our resources to prompt greater enforcement action. This includes meetings/interactions with enforcement authorities in different incidents and meetings with CITES and government authorities (**Annex 4.6**). We are regularly monitoring the seizures and evaluating the change and reviewed legal documentations and drafted illustrations to help government authorities in constructive actions against IWT orchid trade in Nepal . This year added 17 additional historical orchid seizure records that were not previously publicly reported (Y1 baseline: 13 records) (**Annex 4.7**).

Indicator 0.4: To date, orchids have not featured heavily in Nepal's CITES agenda, as indicated by few legal expert permits or related events but this seems due to lack of evidence of trade because they seem very receptive. We have also come across some instances (through our sources) of orchids being traded legally (although not mentioned in CITES reportings)-- we plan to chase and get that evidence before we act (explained in meeting minutes **Annex 4.1, 4.6, 4.7**). However, legal trade permits are not currently being issued for orchids due to changes in legislation, and until new management plans are put into place. As such, increases in permits is not currently a viable means of verification for this indicator (but will be in future).

Indicator 0.5: We have met 97 participants involved in the harvest and trade of orchids and enforcements of Gorkha (45% women) across 4 events in 3 sites (**Annex 4.9**, for list and photos). We had proposed to undertake a before-after test to evaluate knowledge and perceptions, but these were not operationalised due to significant COVID delays (they would have further delayed fieldwork) and because most participants were illiterate so this was infeasible without doing additional time-consuming interviews. We will update this in a change request.

3.4 Monitoring of assumptions

Outcome 01.

- Assumption 01.1: Local government agencies are receptive to our resources and are willing to make this a priority.

Comment 01.1: We have had successful engagement with district forest offices in all three Districts (**Annex 4.6, 4.15**)

- Assumption 01.2: Enforcement agencies prioritise large-scale commercial traders (i.e. “big fish”), over small-scale harvesters/traders that are often most subject to IWT enforcement.

Comment 02.2: We had a series of meetings with enforcement agencies explaining why they should also prioritise orchids in their actions (**Annex 4.6**).

- Assumption 01.3: We assume 30% increase is modest because few enforcement actions/seizures are reported in the media or in our scoping interviews.

Comment 01.3: We established baselines of 32 seizures since 2010 collecting records of Division Forest Office and other enforcement records (**Annex 4.7**), we are continuing to monitor enforcement actions.

- Assumption 01.4: Government agencies (e.g., CITES Authority) are resourced and competent to implement their national legislation and international commitments. For example, most international trade in CITES-listed orchids is not currently accompanied by CITES permits.

Comment 01.4: Permits for legal trade are not currently being issued. However, we have detected discrepancies in CITES reporting (**Annex 4.7**).

- Assumption 01.5: Harvesters are willing to participate in our activities, including self-reporting and workshops.

Comment 01.5: We have conducted monitoring with 30 harvesters in Gorkha District (**Annex 4.13**), despite delays due to COVID-19 and issues with low participation rates in our original site at Makwanpur District.

Output 1

- Assumption 1.1 We will be able to identify species in trade, which is often challenging when they are out of bloom.

Comment 1.1: We have hired a taxonomist to assist, and developed a resource to match local names with Latin/Linnean nomenclature (**Annex 4.13, 4.18**). Species diversity is also often comparatively low, although we often have to rely on genus-level identifications, which is not unusual for orchids.

- Assumption 1.2: We will be able to access receptive participants across the trade chain, including where it is cryptic and illegal.

Comment 1.2: Although we have faced some challenges with low participation and due to COVID-19 (ie. harvest monitoring in Makwanpur District), we have successfully engaged with many harvesters and traders, including 30 involved in self-monitoring (**Annex 4.13**), 97 involved in workshops (**Annex 4.9**) and x traders/middlemen around the country (**Annex 4.6, 4.13**).

Output 2

- Assumption 2.1: There is no known monitoring programme implemented for wild orchid harvest anywhere in the world. As such, there will be technical challenges associated with its set-up, including with harvesters’ ability to reliably identify the species

Comment 2.1: We have relied on a taxonomist to support identification, have been using photographs and developed a resource to match local names with Latin/Linnean nomenclature (**Annex 4.13, 4.18**). Species diversity is also often comparatively low, although we often have to rely on genus-level identifications, which is not unusual for orchids.

- Assumption 2.2: Nepal recently implemented a new CITES law that unintentionally banned harvest of all CITES-listed species. On paper, this technically ended all legal harvest of

orchids. However, we know that it is ongoing as usual. In addition, there are active efforts to revise the law to re-allow harvest of Appendix II species, which we fully expect will have happened by project start.

Comment 2.2: Trade is now again legal, but requires issuing of a national Management Plan for CITES-listed species. Thai has not been done yet, in part, because of a lack of understanding and access to relevant science—which makes our project findings very timely and important.

- Assumption 2.3: Requires local willingness to participate in monitoring, including support from local conservation authorities, concession holders and harvesters.

Comment 2.3: 30 harvesters in Ghorka district have been involved in self-monitoring (**Annex 4.13**), which will continue in July 2022.

- Assumption 2.4 In the absence of published ecological data on most of the harvested species, we are relying on expert-based elicitation to help populate the PVA model, which we assume we will be able to access.

Comment 2.4: We have successfully developed a first-of-its-kind framework to help guide more sustainable harvest of wild orchids. We determined, however, that neither available data nor expert elicitation would allow for good quality PVA, and instead this should be based on ecological principles (**Annex 4.12**).

Output 3

- Assumption 3.1 Representatives from concerned agencies are willing to participate in the workshop and take this agenda seriously.

Comment 3.1: We had good participation in stakeholder workshops in Y1, and also that is continuing in Y2 in various local level workshops and meetings (**Annex 4.6, 4.9**)

Assumption 3.2 CIB and local authorities are happy to support us and share the reports.

Comment 3.2: We have had successful meetings with CIB and local authorities, they have also shared their enforcement actions and conservation plans (**Annex 4.6**)

- Assumption 3.3 There is a need to ensure that enforcement focus is not on small-scale harvesters and traders, but rather on commercial ‘hubs’ and exporters.

Comment 3.3: We have had meetings with Nepal Police (CIB) on this, we hope they will prioritise large scale trade and kingpins in future operations (**Annex 4.6**)

Output 4

- Assumption 4.1: The broader community continues to recognize the importance of illegal orchid trade

Comment 4.1: Priorities have been elsewhere, but this has generally held true.

- Assumption 4.2: Orchid harvesters may sense new risks as a result of recent changes to Nepal’s CITES law.

Comment 4.2: We have indeed detected greater reluctance to engage, and thus have approached harvesters to discuss general NTFP harvest rather than specifically orchids. We have also made many repeat visits to sites to build trust.

Output 5

- Assumption 5.1: Provided one of the Greenhood project team members can receive a • • scholarship to attend such an event during the project period. Mitigation: Previous experience suggests this is likely. We have external funding to attend CITES meetings to share outputs, which is nearly confirmed

Comment 5.1: COVID delays disrupted conference scheduled as well as out data-collection schedules, which is making this impractical within the project timelines.

- Assumption 5.2: We have external funding to attend CITES meetings to share outputs, which is nearly confirmed

Comment 5.2: COVID delays disrupted conference scheduled as well as out data-collection schedules, which is making this impractical within the project timelines.

3.5 Impact: achievement of positive impact on illegal wildlife trade and poverty reduction

Project impact: Reduction in illegal orchid trade in Nepal, replaced by science-based sustainable alternatives, serving as an innovating model for global action to end orchid IWT.

Prior to the project, the commercial-scale, illegal harvest and trade of wild medicinal orchids in Nepal was known only through isolated anecdotes. We have collected evidence of (usually illegal) orchid harvest in several regions of the country, documented in our field reports and meeting records (**Annex 4.13**), baseline reports (**Annex 4.7**), harvester monitoring (**Annex 4.13**) and interviews with harvesters and traders (**Annex 4.4**). We have also created the first matching between traders' concept of species identification and their scientific names (**Annex 4.13**). These form the first ever baseline on the topic for Nepal, and one of the first on medicinal orchid trade globally. They are prerequisite to addressing the twin issues of reducing illegal trade and promoting more sustainable legal trade.

On reducing illegal trade, we have collected baselines of historical legal trade and seizures of illegal shipments (**Annex 4.7**). We have engaged with government stakeholders nationally and specifically in Gorkha district to promote monitoring, enforcement and seizures of large-scale commercial orchid trade. These efforts include one-to-one meetings with key government and enforcement agents (n = 12), consultation with CITES (n= 1) (**Annex 4.1, 4.6, 4.15**), workshops (**Annex 4.9**). We have also prepared 3 baseline reports (**Annex 4.7**) and disseminated these to key government agencies (**Annex 4.16**). There has been genuine interest and concern about orchid harvest and trade, as reflected by our recruitment of "orchid champions" (**Annex 4.14**), verbal commitments from community forest leaders in 5 CFUGs. (**Annex 4.4, 4.6, 4.9**).

On promoting more sustainable harvest alternatives, that improve conservation outcomes and also meet harvesters' livelihood needs, we have made three key points of progress: At the global scale, we have undertaken the first analysis to understand the conditions under which wild orchid harvest can be made more sustainable (**Annex 4.12**). Within Nepal, we have trailed the first harvester monitoring scheme for wild orchids with 30 harvesters in Gorkha District, which is providing a baseline to understand what species are being targeted and in what volumes, and prices. (**Annex 4.10**). We have also conducted the first interviews with 30 harvesters (**Annex 4.5**). Additionally, we conducted a necessary, detailed legal review on the legality of orchid harvest/trade, a topic that has caused huge confusion (**Annex 4.7, 4.8**).

4. Thematic focus

The project aims to contribute to three key objectives of the IWT Challenge Fund:

- Developing sustainable livelihoods to benefit people directly affected by IWT

It contributes to London 2018 (Point 7 and 13) as we are working to inform local communities on conservation and economic values of orchid species, and also potential benefits that communities can take with sustainably using it. We engaged local harvesters (during scoping trips as resource persons/local guides, self-monitored harvest monitoring and community interaction events), traders, as well as middle-men in data collection and one to one interaction about the species in trade and the dynamics behind the trade (**Annex 4.4, 4.9, 4.13**). The dedicated eco-monitor who is supporting in the monitoring is also one of the locals and we are directly and indirectly capacitating him via training and collaboration (**Annex 4.11**).

- Strengthening law enforcement

It contributes to London 2014 (C. 17) Kasane Statement 2015 (C.6), Hanoi 2016 (Action point C), London 2018 (Point 11 and 12). We have reviewed the legal and illegal trade data to understand orchid trade dynamics for this first time. We also reviewed legal documents for legal clarity (**Annex 5**). This evidence is critical considering the plant blindness and has helped us to highlight the illegal trade issue in our media reports (**Annex 4.16**) as well as in stakeholder's

workshops (**Annex 4.9**). We are also engaging government agencies at multiple levels. We are consulting and sharing results to in-country CITES management authority and other national decision makers. Also, we are actively engaging Nepal Police and CIB to make them understand that orchids are also wildlife and should come under their enforcement priority. At district level, we are closely working with Division Forest Office, Municipal Governments and Community Forest User Groups, to better inform their conservation and enforcement plans including orchids.

- Ensuring effective legal frameworks

It contributes to the actions points of Hanoi 2016 (Point B) and London 2014 (B, 16, X). Although a signatory of CITES Convention for over 40 years, Nepal's legislation on harvest/trade of CITES-listed species, including orchid and NTFP harvest, remains very confusing and ineffective. At present, Nepal legislation allows for legal orchid harvest, contingent on there being appropriate management plans. However, there is not yet the legal clarity or science to enable these and, in their absence, the existing legal frameworks have limited practical meaning which is fostering illegal trade. The data obtained from the harvest monitoring, legal review as well as from interviews are providing the science needed to make the existing frameworks operationalizable and/or demonstrate how they need to be revised (**Annex 4.12, 4.13**).

5. Impact on species in focus

We are focused on wild-collected medicinal, commercially-traded orchids in Nepal. At present, their conservation and sustainable management is reflected in legislation, but virtually unaddressed in practice. Importantly, through this year we have found just how little data there is on this: For example, the harvest monitoring has also helped us to determine which species that are in demand (**Annex 4.13**). Notably, this has recorded species in active trade (e.g., *Pleione* spp.) that have not been previously documented in the literature or our initial proposal (**Annex 4.3, 4.4**). This illustrates the importance of baseline work to understand the species threatened by trade—which cannot be prioritised for conservation until their trade is recognised. In parallel we are matching traders' species concepts with their Latin names, in order to more clearly understand what species are being targeted (**Annex 4.13**). We have also documented cases of illegal trade, and misreporting that need to be addressed (**Annex 4.7**). These are the first baselines required in order to draw domestic and international awareness to this conservation challenge.

Drawing on these baselines, we are highlighting the issue of orchid conservation to a range of audiences in Nepal: in our public communications and social media (**Annex 4.16**), and in-person meetings with government, traders, harvesters, enforcement (**Annex 4.6**). This is needed because medicinal orchid trade has not, to date, been taken as a serious conservation issue in Nepal (or indeed globally).

Through our expert global panel of orchid ecologists, we have integrated information from across species and geographies to better understand the conditions under which orchid harvest might be more sustainable (**Annex 4.12**). Although many questions remain, this is the first time this question has been meaningfully explored and it provides a baseline that has implications for orchid harvest and trade, including CITES Non-Detriment Findings globally.

6. Project support to poverty reduction

We collected the first dataset on the people who collect wild orchids in Nepal, and confirm that it is undertaken largely by socio-economically disadvantaged communities, often including women (**Annex 4.3, 4.4, 4.13**). This is based on our interactions with 97 harvesters, traders and enforcement officials (44F, 53M; **Annex 4.9; Annex 4.4**) in the 5 target communities across 3 Districts (Indicator 2.2). The harvester self-monitoring and interviews (n=30; female=19, male=11) further show that wild plant harvest is an important part of their household income, and especially for female harvesters is a way of making them feel empowered because they can earn their living and form a friendship group of women with whom they collected (**Annex 4.9, Annex 4.13**). However, it is still too early to share/confirm quantitative impacts of

orchid enforcement (presumed negative) or of promoting sustainable use on households (presumed positive).

However, it is fairly certain that, for most of the species being collected, medium and long-term harvest are not sustainable, and are thus a threat to both biodiversity and livelihoods. The more sustainable, partial harvest techniques that we are exploring in this project are a precursor to ensuring that wild orchid harvest is a reliable, long-term livelihood option for these rural communities, as current techniques are exceedingly unlikely to be sustainable (Indicator 2.1, **Annex 4.13**). By involving harvesters in monitoring and workshops about orchid sustainability, we are also building initial, local capacity and awareness about orchid monitoring, scarcity and population dynamics—so that in future they can better manage their own resources (Indicator 4.2, Indicator 4.3).

This is also more important because several regional/and national government reports have expressed interest in exploring further sustainable commercialization of orchid resources to aid in rural development. This is only possible if we can identify more sustainable techniques, through baseline research, monitoring, and increased awareness of harvester communities (**Annex 4.5, 4.13**). Moreover, it requires an understanding of the orchid value chain in order to ensure that local residents are capturing maximum economic value, and our baseline survey shows that harvesters currently receive small financial benefits from trade (**Indicator 3.4, Indicator 3.5**).

Sustainable trade options only become viable where there is increased enforcement to reduce illegal and unreported trade, including by cracking down on illegal commercial trade and smuggling. We have made progress towards this through engagement with government officials at several scales (**Annex 4.6, 4.15**). Additionally, our review of the legislation governing orchid harvest and trade (**Annex 4.8**) has helped to clarify the status of trade, amidst much confusion about its legality, even among government officials. Indeed, there are government debates about how to regulate, formalize, and exploit orchid resources to better support rural incomes. It is thus important to clarifying roles and processes for legal, sustainable trade that supports local livelihoods. Moreover, the review is important to promoting enforcement against illegal large-scale, commercial trade, and support for legal harvest by local residents

We are also starting to disseminate our findings internationally (Indicator 5.1, 5.2, 5.3; **Annex 4.16**). Although many are Nepal-specific, others have global significant and can support improved management of orchid resources in other countries, including enforcement against illegal trade of threatened species and creating the initial potential for improved management of economically valuable species. This topic has previously, not been meaningfully explored elsewhere (perhaps except for a few species in Mexico). This has livelihood benefits for people who harvest orchids globally for their diverse medicinal, ornamental and culinary uses.

7. Consideration of gender equality issues

The project made good efforts to support gender equality. Learning from our initial scoping that showed women (and children) are often involved in orchid harvesting (**AR1**), we explored more on harvest regimes (**Annex 4.4**). The fieldwork has addressed gender equality issues explicitly. The harvest monitoring includes 19 female harvesters out of 30 harvesters for harvest monitoring and capacity building (**Annex 4.13**). The community interactions (involving 45% women) (although we did not collect logs/names of participants but only calculated the number of male/female participants due to illegal trade issues), have significant participation of women and we have considered their views and concerns into account (see photographs and reports in **Annex 4.9**). The list of identified orchid champions also includes 16% females in the list, which reflects existing gender biases in government roles, although this is yet to be finalized; we plan to recruit more women. We will make a report with a brief introduction of each Champions and their contributions/commitments on orchid conservation. Also, formally handover the appreciation letter to the Champions by **Q2/Y3** (**Annex 4.14**). The Nepal team is led by a woman, as it the orchid ecology experts.

8. Monitoring and evaluation

Monitoring and Evaluation of the project are being managed by Greenhood with LU oversight. We track progress towards outputs in each period, collecting evidence and adapting our strategy and time allocation. This involves a “live” GoogleDrive document on which all of the core team can track progress for each reporting period—tracking progress against an online logframe with indicators listed. Status, changes and delays are identified there and then discussed by the LU-Greenhood team (**Annex 4.1**).

The approach has been working well, although has been challenging at times due to the uncertainties for fieldwork associated with COVID. We have had to adopt a very flexible and responsive approach, at times uncertain if we would be able to meet our targeted outputs, and implementing a number of delays, which required a budget change request and on which we are now starting to catch-up. We have advised LTS of these along the way.

We have regularly updated and shared project progress via quarterly reports to the Social Welfare Council, in compliance with the Nepali regulations (**Annex 4.20**).

9. Lessons learnt

- Challenges of working on taxa that lack baselines. We learned to be (even more) cautious with developing projects involving taxa for which even experts have limited life history and ecological data. Very little is known about orchids, which presents huge challenges for high-order discussions about sustainable harvest. Yet, it is exceedingly difficult to build this baseline information without having applied focus. The reform of the IWT CF, to encourage/allow for scoping projects is very positive, as it will facilitate more exploratory/baseline studies like ours.
- Trying to create new governance structures, even if they are needed, faces many limitations. We originally proposed forming a new task force to help integrate our findings into locally planning, but our scoping trips revealed many groups of this type exist, but quickly become inactive/dormant post-project. Even the Wildlife Crime Control Bureau, which is considered as a very active enforcement group, faces similar challenges in our project site. That is how we came up with reactivating the existing group instead of forming another dormant group (see details in **Annex 4.15**).
- Harvest monitoring timeline. We planned monitoring weekly but because our scoping showed us that it takes longer for them to harvest, transport, and process and hence an ideal day would be ~15days.
- Trader’s concept of species identification— working on this has been an amazing experience because we got to learn a lot. Also, we knew that trader’s are way smarter than the enforcement and that is how the illegal trade is ongoing. We believe the document we have is an important asset for enforcement. This exercise helped us to understand, working with interest makes any impossible task possible.
- Legal review took us way more than expected – including multiple revisions, meetings, working on the format with more than 11 versions. The patience and regular team meetings helped us complete this and by now, we have a very concise version (in form of a flow chart)

10. Actions taken in response to previous reviews

We received four key comments during the previous review.

• *If necessary, update the Project implementation schedule (timeline) and append to AR2*
Response: Considering comments from the reviewers, we updated our Gant chart. There were no major changes in the project plan so we did not make any major timeline change; we however, kept a column “Justification for any changes in indicators” to highlight the delays, minor changes in any proposed plan” (**Annex 4.1**).

• *If sustainable harvesting was expected to be so problematic at the outset (see first assumption under Output 2 in logframe), why did the project have confidence that it could overcome such a major issue? (See Section 11 below)*

Response: This is among the first studies to explore the sustainability of wild orchid harvest (and the first we know of outside of single-species studies in Central America). We knew *a priori* that there would be significant limitations to sustainable orchid harvest, but did not realise it would, based on the existing data, be quite this restrictive. Indeed, this did not become truly apparent until we convened a global group of orchid ecologists to explicitly explore the evidence on this. The current conclusion is that whole-plant harvest of epiphytes is unlikely to be sustainable, but that partial -plant harvest may be. We also identify possible conditions under which whole-plant harvest of tuberous terrestrial orchids may be sustainable. This finding, although inconvenient, is a very significant output from this project, as it affects the governance of the world's largest group of flowering plants.

• *Related to the previous point, is there any prospect (or experience from elsewhere) of domestic (on-farm) cultivation of orchids; or might it be possible to delay harvesting in the wild until post-flowering / seed dispersal?*

Response: We have made this an active part of our scoping work with communities in Makwanpur and Ghorka Districts. Although farming orchids is, currently, unlikely a viable policy option in most of the areas we have visited (costs, legality, markets), shifts in wild harvest techniques might be viable. To determine this, our scoping has been exploring this from both the perspectives of both harvesters (**Annex 4.4, 4.13**) and scientists (**Annex 4.12**).

• *The project does not outline which commitments under the London Declaration or Kasane Statement it is working towards and should do so in AR2*

Response: We have included how this project supports achieving some of the commitments of the London 2014 Declaration, Kasane 2015, Hanoi 2016 and London 2018 Declaration in Thematic focus Chapter of this report. The key points are as follows.

- a) Contributions towards the London 2014 (C. 17) Kasane Statement 2015 (C.6), Hanoi 2016 (Action point C), London 2018 (Point 11 and 12) particularly on strengthening law enforcement in source, transit of IWT. Also, it contributes to the action points of Hanoi 2016 (Point B) and London 2014 (B, 16, X) by supporting effective law enforcement.
- b) Contributions towards the Kasane Statement 2015 (D.11, 12,13) and London 2018 (Point 12) on generating knowledge on illegal wildlife trade on ground with the help of local people and sharing to broader communities to promote actions against IWT at the local level, including with community groups.
- c) Contribute to London 2018 (Point 7 and 13) as we are working to inform local communities on conservation and economic values of orchid species, and also potential benefits that communities can take with sustainably using it.

11. Other comments on progress not covered elsewhere

12. Sustainability and legacy

Project has substantially built the capacity related to orchid trade in country, notably via Greenhood Nepal, where the partners have a vested and demonstrated interest in this topic beyond the project lifecycle. This is significant because, despite some existing taxonomic expertise, trade and wild harvest have not previously been issues addressed in Nepal. Greenhood is now nationally recognised as a competent organisation addressing these issues.

Within government, we have made significant progress with recruiting the orchid “champions” who will be important to engaging our results into future planning, beyond the project timeline. They are also contacts for us to engage in future. Indeed, there has been genuine national and sub-national interest in this work, as government officers across scales attempt to better implement the law, but often without information or guidance. As such, we expect ongoing engagement from these stakeholders.

There is also public interest in the project, as reflected in the series of newspaper articles covering the project this year.

13. IWT Challenge Fund identity

We are featuring the UKAID logo in all the project events and publications as applicable (**Annex 4.16**). Also, we are tagging IWT CF on our social media posts, especially over Twitter. We feel that there is growing awareness of IWT Challenge Fund in Nepal, people often ask the project team informally in Nepal about the Fund and process to apply.

14. Impact of COVID-19 on project delivery

The project has been profoundly impacted by COVID-19 because so much of the work involved primary data collection and scoping in remote locations. Legal travel restrictions, vaccine delays in Nepal, and concerns about exposing respondents in rural (unvaccinated) areas meant that fieldwork was delayed by >8 months. This meant that we missed much of the flowering/harvest periods in 2021 when we planned to due monitoring (and additional monitoring will thus be undertaken in Y3). It also impacted on proposed community interaction programs, as we had to shift schedules and limit the sizes of formal group meetings. (**Annex 4.4, 4.6**). Moreover, because much of the proposed work builds upon scoping, this meant that successive parts of the project were delayed (e.g., public communications, blogs, meetings with NGOs). We have, however, adapted and made significant progress since travel became easier in Nov. 2021.

15. Safeguarding

Please tick this box if any safeguarding or human rights violations have occurred during this financial year.

Lancaster University developed new research safeguarding policies in April 2020 that covers a full range of safeguarding issues within our institution and for fieldwork: <https://www.lancaster.ac.uk/media/lancaster-university/content-assets/documents/strategic-planning--governance/publication-scheme/5-our-policies-and-procedures/Safeguarding-in-Research-Framework.pdf>. This has been shared with Greenhood Nepal, which has also motivated it to start the process of developing internal safeguarding policies, which is under review at the Executive Committee now. The project has further gone through Lancaster University Ethics Review that includes specific considerations of ethics and safety issues in the field (**Annex 4.2**). It also includes a Participant Information Sheet that has been explained to all respondents and harvesters involved, and explains their rights and a complaints mechanism. Because many participants are illiterate, this is usually read to them to ensure comprehension. The project has further undergone review by and quarterly reporting to Nepal's Social Welfare Council to ensure safeguarding of nature and people in Nepal (**Annex 4.20**).

16. Project expenditure

Table 1: Project expenditure during the reporting period (April 2021-March 2022)

Current Year's Costs	2021/22 Grant (£)	2021/22 Total actual Darwin Costs (£)	Variance %	Comments (please explain any variance)
Staff costs (from Section 5)	██████████	██████████	██████████	
Consultancy Costs	██████████	██████████	██████████	
Overhead Costs	██████████	██████████	██████████	
Travel and subsistence	██████████	██████████	██████████	
Operating Costs	██████████	██████████	██████████	
Capital items (from Section 6)	████	████	████	

Others (from Section 7)	█	█	█	
Audit costs	█	█	█	

17. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

NA

- **Checklist for submission**

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the correct template (checking fund, type of report (i.e. Annual or Final), and year) and deleted the blue guidance text before submission?	X
Is the report less than 10MB? If so, please email to IWT-Fund@itsi.co.uk putting the project number in the subject line.	X
Is your report more than 10MB? If so, please discuss with IWT-Fund@itsi.co.uk about the best way to deliver the report, putting the project number in the subject line.	NA
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	X
Do you have hard copies of material you need to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	NA
Have you involved your partners in preparation of the report and named the main contributors	X
Have you completed the Project Expenditure table fully?	No
Do not include claim forms or other communications with this report.	