



Department
for Environment
Food & Rural Affairs



Darwin Initiative Main: Annual Report

To be completed with reference to the “Project Reporting Information Note”:
(<https://www.darwininitiative.org.uk/resources/information-notes/>)

It is expected that this report will be a **maximum of 20 pages** in length, excluding annexes)

Submission Deadline: 30th April 2024

Submit to: BCF-Reports@niras.com including your project ref in the subject line

Darwin Initiative Project Information

Project reference	29-001
Project title	Embedding Sustainable Pollination Management into Nepalese Agricultural Systems
Country/ies	Nepal
Lead Partner	University of Bristol, UK
Project partner(s)	HERD International, Nepal, Local Initiatives for Biodiversity, Research and Development (LI-BIRD), Nepal Ministry of Land Management, Agriculture and Cooperatives (MoLMAC), Karnali Province Agriculture and Forest University (AFU), Nepal Central Department of Zoology, Tribhuvan University, Nepal UN Food and Agriculture Organisation (FAO) Nepal Nepal Agriculture Research Council (NARC) PACE, Nepal
Darwin Initiative grant value	£374,788
Start/end dates of project	Start date: 1st June 2022; End date: 30th November 2024
Reporting period (e.g. Apr 2023 – Mar 2024) and number (e.g. Annual Report 1, 2, 3)	Apr 2023 – March 2024 – Annual Report 2
Project Leader name	Professor Jane Memmott
Project website/blog/social media	https://libird.org/projects/pollination/ https://www.herdint.com/our-work/darwin/ https://www.facebook.com/groups/601083515388921
Report author(s) and date	Tom Timberlake, Sujan Sapkota, Dipesh Neupane, Kedar Devkota & Jane Memmott – 26/04/2024

1. Project summary

Pollinators enhance the production of 75% of world crops, including many economically and nutritionally important fruits, vegetables, and seeds. Smallholder farmers in the developing world are disproportionately reliant on insect-pollinated crops for their livelihoods and for key dietary micronutrients such as vitamin A and folate. However, agricultural intensification, habitat loss and climate change are driving declines in pollinators worldwide, including in Nepal.

Little is known about the conservation status of individual pollinator species in Nepal, but rapid agricultural intensification and increasing pesticide use, combined with major crop yield losses from insufficient pollination, point towards widespread pollinator declines (Bhusal 2020). In addition to economic impacts, pollinator declines in Nepal are predicted to cause the loss of 26,000 years of healthy life each year as a result of malnutrition-related illnesses (Smith et al. 2015). It is very clear that if pollinator declines continue, levels of poverty and malnutrition in Nepal will worsen, further exacerbating the existing pressures on natural resources and biodiversity. Smallholder farmers in Nepal are often unaware of the importance of pollinators, but if provided with the knowledge needed for pollination management, they could increase their crop yields and simultaneously benefit biodiversity.

Our project is based in Karnali Province which is the largest and poorest province of Nepal, with only 23% of the population classified as food secure (UNDP 2020) and a high economic and nutritional reliance on pollinator-dependent crops (e.g., apples, beans and pumpkins). There is strong political will from the provincial and national-level government to promote biodiversity-friendly farming practices. However, various barriers including a lack of farmer awareness, a lack of capacity and limited evidence to inform policy, prevent this political will from translating into meaningful outputs for farmers on the ground.

Working with partners in Nepal and drawing on an evidence-base from our previous pollination project (2020-2022), this Darwin project will raise awareness of pollination, increase the capacity of individuals and institutions to research and manage pollination services, and facilitate the design of policies to conserve and enhance pollinator biodiversity in Nepal.

2. Project stakeholders/ partners

- The impetus for this project first came from project partner Dr Daya Ram Bhusal (Tribhuvan University, Nepal) who expressed a concern about pollinator declines in Nepal and a lack of any coordinated research and community/policy action to address it.
- In response, an interdisciplinary team of researchers, practitioners and development organisations was established and we collectively planned and wrote this project proposal.
- This process of collaborative planning, implementation and evaluation has continued throughout the project, facilitated by monthly online team meetings and various in-person workshops in Nepal. The team in Nepal meets regularly in-person to discuss local project strategy and logistics.
- A particular strength of our team is its diversity, for example LI-BIRD provides agro-biodiversity expertise and is very well connected with agriculture and environmental policy makers; HERD provides public health, community engagement, and development expertise and has close relationships with health and development ministries; the universities provide technical ecological expertise and academic rigour whilst our partners at the ministry ensure that our project activities are mainstreamed at a provincial level.
- One of the great project achievements is that pollination expertise (and agroecological expertise more generally) has been embedded within multiple partner organisations who previously lacked this specific expertise. For example, HERDi (a public health organisation) now has multiple staff trained in pollination topics and will incorporate these themes into their future projects. LI-BIRD is also developing a new community-based project in our project region (Jumla) which builds upon much of the expertise and local contacts generated by our project: <https://libird.org/projects/reras/>

- Beyond the project team, we have engaged with a wide range of public and private sector stakeholders as part of our Technical Working Group for the development of a Pollinator Action Plan for Karnali Province. These stakeholders are listed in [Appendix 8](#) and are now champions of pollinator conservation and management in Nepal.

3. Project progress

3.1 Progress in carrying out project Activities

All project activities scheduled for Year 2 have been completed and are outlined in detail below.

Output 1 (Pollinator awareness and stewardship program):

Activity 1.5: During Project Year 2, we conducted a further 396 pollinator awareness classes a further 12,054 participants (63% women). This brings the total number of awareness class recipients up to 16,194 (65% women) ([Appendix 1](#)). During these classes, a total of 6,896 awareness leaflets and 52 pollination management handbooks were distributed.

Activity 1.6: We conducted a further 69 Farmer Field School (FFS) sessions in Year 2, covering topics such as sustainable beekeeping, pollinator nesting site preparation, integrated pest management and apple tree pruning ([Appendix 2](#)). This brings the total number of sessions up to 92. The sessions have been attended every fortnight by a group of 90 'lead farmers' who are enrolled in our program. The first round of FFS sessions ended with the harvest season in October 2023 and we subsequently enrolled a new batch of 90 farmers to participate in the next FFS program (which started in November 2023). This brings the total number of recipients up to 180 (80% women).

Activity 1.8 & 1.9: To monitor progress towards our project outcomes, we conducted follow-up surveys of XX% of awareness class participants and 100% of FFS participants to record changes in their ecological awareness, crop yields, household income and diets. The results of these surveys are reported in Section 3.2. Additionally, ecological surveys were conducted to record changes in plant & pollinator biodiversity on control and treatment farms and monitor the impact of our interventions ([Appendix 2](#)).

Activity 1.4: Our three demonstration farms (established in Year 1) were used to host the FFS sessions and demonstrate pollinator-friendly management practices and other ecological farming practices.

Output 2 (Pollinator capacity-building program):

Activity 2.1: Following on from the publication of our pollination management handbook in Year 1, we have now distributed a >300 copies to stakeholders from 98 institutions (49 local governments, 6 technical schools, 14 NGOs, 17 Government agencies, 12 media).

Activity 2.2: In Year 2, we completed the production of a pollinator education/promotion video for mass awareness amongst farmers and frontline extension workers and launched it on Youtube: <https://www.youtube.com/watch?v=Ts3l0Kd7ttc&t=19s>

Activity 2.3 & 2.4: In keeping with our project timeline, we have completed a further 6 capacity-building workshops, bringing the total number of workshops up to 8 and covering the districts of: Jajarkot, West Rukum, Salyan, Mugu, Kalikot, Jumla, Humla. These have been attended by a total of 188 agriculture officers (20% women) from 82 different institutions, including many frontline extension workers ([Appendix 4](#)). Pollination training materials were distributed to all of these course participants.

Activity 2.5: Crop pollination surveys have been conducted on a total of 7 crops (cardamon, coffee, citrus, mango, avocado, soyabean and tomato) in 6 different provinces of Nepal to record the following details about each crop: 1) major pollinators; 2) degree of pollinator dependence; 3) presence of pollination deficits; 4) farmer perceptions about pollinators (See [Appendix 5](#)). These surveys were

conducted by a total of 14 students from the Agriculture & Forestry University (AFU) who received formal training from pollination expert Dr Kedar Devkota. The data from these surveys is currently being analysed and will feed into the Digital Pollination Library (currently in development).

Activity 2.6: The formatting and website design of the Digital Pollination Library has been agreed by the IT team at AFU (see example design in [Appendix 6](#)) and content production will begin shortly.

New activity: A pollinator awareness soundbite was developed by the project team and played multiple times on 10 different national and local radio stations, with some stations reaching up to 4 million people. A full list of the radio stations and estimated listenership for each is provided in [Appendix 7](#).

Output 3 (Pollinator Action Plan for Karnali province)

Activity 3.1: Our paper on the economic and nutritional value of pollination services in Nepal is under-review at Scientific Reports and available as a pre-print here: <https://doi.org/10.21203/rs.3.rs-3456217/v1> ([Appendix 9](#)).

Activity 3.2: A [pollination policy brief](#) was published in both English and Nepalese outlining the importance of insect pollinators for food production, the economy and human health ([Appendix 9](#)).

Activity 3.2: The Technical Working Group (TWG) for the development of a Pollinator Strategy (chaired by the Ministry of Land Management, Agriculture and Cooperatives – MoLMAC) has met a further three times in project Year 2. The TWG consists of approximately 20 high-level stakeholders from MoLMAC Karnali, the Agriculture Directorate, Integrated Lab, Agriculture and Livestock Business Promotion Training Center, Agriculture Research Directorate, and Darwin Project partners ([Appendix 8](#)).

Activity 3.4: The TWG have agreed upon a framework for the pollinator strategy and have written a first draft ([Appendix 8](#)) which is currently under review by the team. The full strategy will be published in Year 3 (Activity 3.5) and launched at the national-level pollination workshop (Activity 3.6).

3.2 Progress towards project Outputs

Output 1 (Pollinator awareness and stewardship program):

Output 1.1: A total of 16,194 participants (65% women) attended one of our pollination awareness classes by the end of Year 2, including 2871 school children. This is much higher than the number of participants originally specified in the logframe (2000 was the original target by the end of Year 2) and the reason for this is twofold: 1) during the inception workshops, local municipalities expressed strong interest in the project and requested that we try to reach ALL villages in the district so that no areas are overlooked – we decided to accommodate this request as it was still feasible within our budget; and 2) due to high levels of interest, participation has been greater than expected in each class (average of 28 participants per class).

Feedback from the classes has been very positive, and our follow-up survey of 387 randomly-selected awareness class participants demonstrates the following changes compared to the baseline survey: a) 77% (percentage point) increase in positive perceptions of insects and 32% for biodiversity in general; b) 73% increase in the number of people able to recognise a crop pollinator; c) more than 30% of participants now practice at least one form of pollinator-friendly management compared to a baseline of 7%. Participants also reported a 13% increase in income from farming and 41% income from honey production, equating to an additional US \$62 each year per household (see [Appendix 1](#) for more details). Following on from these classes, all of the local schools offering a diploma in agriculture have pledged to include at least one set of questions on pollination management and apple orchard management in their regular final exams.

We have held a total of 92 Farmer Field School (FFS) sessions, reaching a total of 180 lead farmers (80% women) who attend regular sessions. Compared to the baseline survey, our follow-up survey of all Year 1 FFS attendees reveals a 55% increase in average farming income, 141% increase in income from honey sales and up to 88% rates of uptake in pollinator-friendly management practices. The mean dietary diversity scores of these participants increased from 8.3 to 8.6 (4% increase). See [Appendix 2](#) for

more detailed results. Interviews with some of the participants from these courses reveal the life-changing impacts of what they have learned. These personal human stories are available [here](#) and extracts are provided in [Appendix 3](#).

Output 1.2: Our biodiversity monitoring surveys reveal a 62% increase in insect pollinator abundance on demonstration farms compared to control sites, and a 10% increase in abundance on the farms of FFS participants, compared to control sites. The abundance and richness of flowering plants increased by 14.8% and 8.2%, respectively, on farms of FFS participants, and 34.5% and 20.2%, respectively, on demonstration farms ([Appendix 2](#)).

Output 1.3: Measured yields of apples were 13% higher on the farms of FFS participants and 6% higher on demonstration farms, compared with control sites. For beans, yields were no higher on the farms of FFS participants but 37% higher on demonstration farms ([Appendix 2](#)).

Output 1.4: During our monitoring and evaluation process, we decided that the Facebook page was not the most effective platform for spreading awareness as it was strongly biased towards direct contacts of our project team rather than entirely new people. As such, we altered our approach and launched a national and local radio campaign to spread awareness of pollinators. We produced a pollinator awareness soundbite which was played intermittently over a course of 5 days through national radio and for 25 days through 10 different local radio stations from the Karnali province, reaching an estimated 4 million listeners ([Appendix 7](#)).

Output 2 (Pollinator capacity-building program):

Output 2.1: We have conducted a total of 6 pollination capacity-building workshops reaching a total of 188 agriculture officers and extension workers (20% women) in the following 7 districts: Jajarkot, West Rukum, Salyan, Mugu, Kalikot, Jumla, Humla ([Appendix 4](#)). From a baseline of zero pollination management material in extension worker training programs, we have provided comprehensive training in pollination ecology and management accompanied by a pollination management handbook. Follow-up surveys of these participants revealed the subsequent use of pollination training materials in schools, training centres and extension programs, reaching an estimated 130 people ranging from students to agriculture extension workers.

Output 2.2: The pollination management training materials produced through this project ([Training of Trainer handbook](#)) has been distributed to a >300 participants from 98 institutions including MoLMAC, Agriculture Development Directorate, Agriculture Knowledge Centre, Integrated Lab, Training Centre, Agriculture Service Centre and Rural Municipalities, Technical schools, Agriculture development offices, Development agencies, Media, etc. Follow-up surveys of these stakeholders show the manual has been used in a wide range of settings including teaching in technical schools. These knowledge products will serve as the guiding document to learn and disseminate pollination related activities at a field level and we plan to continue their dissemination across every district and municipality of Karnali Province. Most notably, we have produced these materials in collaboration with project partners MoLMAC which ensures local suitability and co-ownership.

Output 2.3: A pollinator awareness video was produced in 2023 and launched on Youtube where it has received 588 views so far: <https://www.youtube.com/watch?v=Ts3l0Kd7ttc&t=19s> . It has also been shown in all Year 2 pollination awareness classes, reaching approximately 12,000 participants.

Output 2.4: The Digital Pollination Library is in-development and due to be launched in mid-2024. Taxonomic and ecological descriptions and photography of key pollinators is underway and the website design has been completed ([Appendix 6](#)).

Output 2.5: MoLMAC and the Agriculture and Livestock Business Promotion Training Center (ALBPTC) have committed to incorporating our pollination training materials into their regular ongoing training programs.

Output 3 (Pollinator Action Plan for Karnali province)

Output 3.1: Our paper on the economic and nutritional value of pollination services in Nepal is under-review at the journal *Scientific Reports* and available as a pre-print here: <https://doi.org/10.21203/rs.3.rs-3456217/v1> where it has received >80 reads.

Output 3.2: We hosted a second provincial pollination workshop in March 2024 attended by the ministers for agriculture and environment who both gave speeches about the importance of pollination in this region ([Appendix 8](#)). The purpose of the workshop was to build upon the success of the first one (held in 2023 which focused on raising pollination awareness) and present our framework for a Provincial Pollinator Strategy to a wide range of provincial stakeholders. This was very well-received and the ideas were endorsed by the ministry officials. The final Pollinator Strategy is due for publication and endorsement in August 2024.

Output 3.3: A first draft of the Karnali Pollinator Strategy has been completed and reviewed by the Technical Working Group. Revisions are now being made and publication is due for August 2024.

An additional success is that a formal agreement was reached amongst MoLMAC Karnali, Center for Industrial Entomology Development (CIED), Mid-west University, and AFU to establish a Resource Center for Beekeeping promotion in Karnali province. The agreement was signed in the presence of the Hon. Minister for Agriculture during the Karnali provincial workshop. This is a very novel initiative that has taken place with policy advocacy efforts from the Darwin team. It aims to promote sustainable beekeeping in the province with equal attention to pollination services offered by them. (See [Appendix 8](#) for pictures of the MoU signing).

Output 3.4: Planning and stakeholder mapping for the National Pollination Workshop is underway; this is due to be held in September 2024.

Output 3.5: A team-authored policy brief on the value of insect pollinators to Nepalese food security and economy was published in late 2023. This was distributed to 650 relevant stakeholders including senior policy-makers, and is available to download [here](#) where it has received 85 downloads so far.

3.3 Progress towards the project Outcome

Outcome 0.1: By the end of Year 2, a total of 16,194 participants (65% women) attended one of our pollination awareness classes, substantially increasing their ecological awareness, improving their apple orchard management, and leading to the widespread uptake of pollinator-friendly management practices including beekeeping and the promotion of wild flowers ([Appendix 1](#)). Comparing our baseline and follow-up farmer surveys (random participant selection), and extrapolating these results to all participants, we estimate these classes have resulted in an additional 8,875 farmers who understand the value of pollination, 11,907 farmers who can recognise at least one species of insect pollinator and an additional 4,023 farmers practicing pollinator-friendly management, including 1,056 who have reduced their pesticide use. Participants report a 13% increase in income from farming and 41% income from honey production, equating to an additional US \$62 each year per household ([Appendix 1](#)).

Outcome 0.2: On the farms belonging to FFS participants enrolled in our study, we record a 10% increase in insect pollinator abundance (compared with paired control sites). On the demonstration farms, pollinator abundance is 62% higher than control sites. The abundance and richness of flowering plants increased by 14.8% and 8.2%, respectively, on farms of FFS participants, and 34.5% and 20.2%, respectively, on demonstration farms ([Appendix 2](#)).

Outcome 0.3: On the farms belonging to FFS participants enrolled in our study, we record a 13% increase in apple yields per-tree, but no increase in bean or mustard yields as-yet. On the demonstration farms, we record a 6% increase in apple yields per-tree, a 38% increase in bean yields, but no increase in mustard yield. Farmers participating in the FFS program report a 55% increase in farming income compared to their income before the course; this includes a 141% increase in income from honey sales. On average, participants earned US \$201 per household per year more than they did before the course ([Appendix 2](#)). These correlative patterns do not equate to causation, but nevertheless suggest a strong positive benefit of the course, especially when combined with the farmer interviews where FFS participants report the transformative effect of the course ([Appendix 3](#)).

Outcome 0.4: The dietary diversity score of Farmer Field School participants (number of different food groups consumed in a 7 day period) increased from a baseline level of 8.3 (mean across all 90 participants) to a level of 8.6 (mean across all 90 participants, recorded after the course). This represents a 4% increase in dietary diversity.

Outcome 0.5: A signed MOU between LI-BIRD and MoLMAC and two high-profile pollination workshops attended by senior officials including the Honourable Minister of MoLMAC ([Appendix 8](#)) highlight the commitment by the ministry to endorse the Pollinator Action Plan at a policy level once it is drafted and approved by the TWG. These pollination policy workshops have been reported in the national media ([Appendix 7](#)), reflecting their significance to the country. Additionally, Karnali government training centres have begun the integration of pollination content into their regular basic in-service training syllabus targeting the government agriculture extension workers.

3.4 Monitoring of assumptions

OUTCOME-LEVEL ASSUMPTIONS:

Assumption: Farmers (especially women) have the authority, motivation, resources and information required to implement management changes.

Comments: Our experience has shown that farmers are very keen to attend our awareness classes and Farmer Field School sessions (evidenced by higher than expected participation, especially amongst women) and our follow-up surveys demonstrate that a high proportion of participants replicate many of the activities on their own farms. We have increased farmer engagement by tailoring the classes to farmer feedback, for example including apple orchard management training in our sessions.

Assumption: Habitat management practices are effective at increasing pollinator abundance and diversity and farmer management actions have sufficient time to translate into a population-level effect on pollinators.

Comments: Our biodiversity monitoring surveys show a 10% increase in pollinator abundance on farms where FFS participants have practiced habitat management and as much as 62% on the demonstration farms which are carefully managed to support pollinators. These changes have occurred after just one year of management which has been demonstrated in other settings too (e.g. Carvell *et al.* 2017) and is evidence of how rapidly pollination management practices can pay off.

Assumption: Plant species which we are using as indicators of enhanced wild pollination services are present in/around all participating farms and benefit from cross pollination.

Comments: Two out of the three indicator plants are present in sufficient numbers to enable comparisons, and both appear to benefit from cross-pollination.

Assumption: Pollination deficits in crops and wild plants already exist in the region

Comments: Previous studies in Nepal and preliminary data from our study region strongly suggest this will be the case (Partap *et al.* 2012). Moreover, the increased yields reported from farms where pollination management is being practiced suggests that pollination deficits are present.

Assumption: Increased pollinator abundance leads to increased pollination services and resulting crop yields.

Comments: Correlative evidence from our biodiversity monitoring data and crop yield data suggests this is the case. This has been shown in other parts of the world too (e.g., Blaauw & Isaacs 2014).

Assumption: Additional produce from pollinator dependent crops is consumed or sold rather than given away.

Comments: Farmer questionnaires from our study region show that farmers intend to consume or sell any extra produce they get, rather than giving it away. Moreover, the increase in household farming income that we report suggests that extra produce is being sold, not given away.

Assumption: Market price and consumer demand for pollinator-dependent crops remains stable throughout project lifespan.

Comments: Although impossible to predict future market activity, prices and demand have so far remained stable, with no indication that they are likely to change soon.

Assumption: Karnali Ministry of Land Management, Agriculture and Cooperatives remains committed to the promotion of biodiversity friendly farming practices.

Comments: Despite a change in minister since the project began, MoLMAC remains just as committed as ever to this cause, as evidenced by their enthusiastic participation in all project activities and their contributions to the Pollinator Action Plan.

OUTPUT-LEVEL ASSUMPTIONS:

Assumption: Farmers and other stakeholders have the time and motivation to engage in outreach and training sessions (non-monetary incentives provided)

Comments: Our experience has shown that farmers are very keen to attend our awareness classes and Farmer Field School sessions (evidenced by higher than expected participation, especially amongst women) and our follow-up surveys demonstrate that a high proportion of participants replicate many of the activities on their own farms.

Assumption: District officials continue to support the project and grant permission to conduct outreach classes.

Comments: So far, district officials have been highly positive about the project and even requested that we extend the awareness classes to all municipalities of the district to ensure everyone has the opportunity to attend.

Assumption: Participants are engaged in the classes & understand course content (level will be tailored to group ability).

Comments: The very high course retention rates combined with positive feedback from participants and uptake of the recommended practices suggests participants have remained engaged. This is thanks to the ongoing efforts of field staff to keep their courses relevant and engaging.

Assumption: Habitat management practices are effective at increasing pollinator abundance and diversity – demonstrated in many other parts of the world (Blaauw & Isaacs 2014; Carvell et al. 2017)

Comments: This is borne out by the survey data.

Assumption: Crop pollination deficits already exist in this region - suggested by available data (Partap et al. 2012)

Comments: The increases we see in crop yields following pollination management suggest pollination deficits are definitely present.

Assumption: Nutritional quality of crop produce is increased by cross pollination – previously shown by Brittain et al. (2014)

Comments: We are no longer measuring this output (a change request was submitted and accepted)

Assumption: Substantial numbers of people in Karnali Province have Facebook accounts and access to internet (project partners have confirmed this).

Comments: Although this is mostly true, we have not found Facebook to be an effective method of spreading awareness (see section 8), so have started using traditional media instead

Assumption: At least 80% of all agricultural extension workers in Karnali Province are given permission to attend training courses.

Comments: This has been true to date.

Assumption: Course attendees are engaged in the classes, understand their content and can access/use the internet on a phone or computer

Comments: Course feedback suggests this is the case

Assumption: Individuals/institutions have the time, resources, and motivation to implement the training package and deliver it to their target communities

Comments: Follow-up questionnaires suggest this is the case.

Assumption: Researchers, practitioners and policy-makers are aware of the digital pollination library and have the incentive to use it; promotional activities will be used to increase its visibility.

Comments: Digital Library is still in-development

Assumption: The Karnali Ministry of Land Management, Agriculture and Cooperatives (MoLMAC) remains committed to the promotion of biodiversity friendly farming practices

Comments: MoLMAC have been very proactive project partners and are enthusiastically committed organic farming as it is one of the province's flagship policies.

Assumption: Collaborators from Nepal remain willing to participate as co-authors and share data

Comments: This has remained true and our collaborations are stronger than ever

Assumption: Stakeholders reach agreement on most important pollinator conservation actions.

Comments: There has been a remarkable level of consensus in the Technical Working Group for the most important pollinator conservation actions; this is reflected in the draft strategy.

Assumption: Pollinator Action Plan is widely distributed and publicised by project partners and MoLMAC

Comments: The plan / strategy is not yet published

Assumption: National government upholds its CBD commitment to promoting sustainable farming practices.

Comments: This has not yet been tested but will become evident during the national workshop

Assumption: Key stakeholders are motivated to attend the national workshop

Comments: Workshop not yet held

3.5 Impact: achievement of positive impact on biodiversity and poverty reduction

Intended project impact: Pollinator conservation and management embedded into mainstream agricultural policy and practice in Nepal, with long term benefits for people and pollinators.

Our economic survey data indicates that smallholder farmers can increase their household income by up to 55% through the management of pollination services and other agroecological farming practices such as soil nutrient management, integrated pest management and better pruning practices ([Appendix 2](#)). This has positive implications for biodiversity as well, with farmers retaining more areas of native habitat and wild flowers resulting in a 15% increase in flowering plant cover, 8% increase in flowering plant richness and 10% increase in insect pollinator abundance ([Appendix 2](#)). If our project activities and recommendations are integrated into provincial, and perhaps even national policy, they could have overwhelmingly positive long-term benefits for both people and biodiversity in Nepal.

Our project has generated substantial dialogue on the importance of biodiversity and sustainable agriculture amongst numerous high-level policymakers, researchers and practitioners ([Appendix 8](#)). New connections have been formed and new collaborations and project ideas are in-development, all of which are likely to contribute to long-term positive outcomes for biodiversity at a national-level. To quote the minister of Agriculture from Karnali Province, following our stakeholder workshop: *‘Now I understand how insect diversity contributes to agricultural production and human livelihoods’*. By raising pesticide regulations and promoting agroecological management practices at a provincial (and hopefully also a national-level, down the line) a wide range of biodiversity stands to benefit.

4. Project support to the Conventions, Treaties or Agreements

Our project has not directly contributed to any new national policy in the last 12 months, though we are in the process of developing a provincial-level policy strategy for pollinator conservation, in partnership with the provincial government (Nepal has a highly devolved system of government). We will present this strategy in a national-level policy workshop during the final year of the project. One of the aims of this workshop will be to encourage the federal government to incorporate pollinator-related topics into their next revision of the NBSAP and Agriculture Development Strategy, which currently don't mention the word pollination. This will help Nepal in meeting its commitment to the Convention on Biological Diversity (CBD), in particular Article 14/6 on: "The conservation and sustainable use of pollinators".

In the last year, we have met with Hien Ngo from the FAO who is the Pollination Coordinator of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Through her work with the FAO and IPBES, Hien has overseen the establishment on multiple national-level pollinator strategies and she has agreed to support us (on behalf of the FAO) in laying the groundwork for a National Pollinator Strategy in Nepal.

5. Project support for multidimensional poverty reduction

Our monitoring surveys indicate that project activities are reducing rates of poverty amongst smallholder farming households in Jumla District, Nepal. Household farming incomes have increased by a mean of 13% amongst a random sample of the 16,194 participants who attended an awareness class, equating to an additional US \$62 each year per household ([Appendix 1](#)). For the 180 farmers who attended our intensive Farmer Field School program, these improvements are even greater; they report a 55% increase in farming income compared to their income before the course (an additional US \$201 per household per year; [Appendix 2](#)).

Moreover, rates of ecological awareness have dramatically increased in the region. Our monitoring surveys show that an additional 8,875 farmers consider insect pollinators important to their farms, 11,907 farmers can now recognise at least one species of insect pollinator and more than 5000 additional farmers now recognise biodiversity as essential to their farming success ([Appendix 1](#)). This

has translated into improved farming practices, with >4,000 farmers now practicing biodiversity-friendly management on their farms.

Our team of 11 local field staff (all previously smallholder farmers from the local area) have benefitted from greatly enhanced professional networks and skills, and one staff member (previously a smallholder farmer) has now secured a much more senior job in an agroecological organisation.

6. Gender Equality and Social Inclusion (GESI)

Please quantify the proportion of women on the Project Board ¹ .	30%
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women ² .	20%

GESI Scale	Description	Put X where you think your project is on the scale
Not yet sensitive	The GESI context may have been considered but the project isn't quite meeting the requirements of a 'sensitive' approach	
Sensitive	The GESI context has been considered and project activities take this into account in their design and implementation. The project addresses basic needs and vulnerabilities of women and marginalised groups and the project will not contribute to or create further inequalities.	
Empowering	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	X
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

Jumla district has high rates of seasonal out-migration of many men in search of jobs, and thus women have an important role in agricultural activities. Moreover, they stand to lose the most income if pollinators decline. Women in this region also face substantial challenges in obtaining, articulating, and acting upon agricultural knowledge, which both disadvantages them and their families and threatens the success of sustainable development initiatives. For this reason, we have targeted women farmers throughout all of our awareness programs (65% women), Farmer Field Schools sessions (80% women) and Capacity-Building Classes (20% women which is higher than their current representation), to ensure they are the main recipients of our work. Five out of 11 of our field staff are women which is substantially higher than the proportion of women who applied for the role. The results of our monitoring surveys show that the participants of our awareness classes and Farmer Field Schools

¹ A Project Board has overall authority for the project, is accountable for its success or failure, and supports the senior project manager to successfully deliver the project.

² Partners that have formal governance role in the project, and a formal relationship with the project that may involve staff costs and/or budget management responsibilities.

(mostly women) have felt empowered to implement many of the new practices they have learned. This appears to have translated into substantial increases in their farming income, with obvious implications for their social standing and decision-making power. We conducted in-depth interviews with many of these women ([see here](#)) who emphasise the transformative nature of our courses ([Appendix 3](#)).

7. Monitoring and evaluation

The project's M&E system is designed to provide the necessary data and information to measure progress against achieving the project outputs and outcomes and to make informed decisions about ongoing project activities. We are using both qualitative methods (e.g., focused group discussion, participant feedback, email communication and case studies) and quantitative methods (e.g., farmer questionnaires, biodiversity surveys, crop yield measurements) to collect this information. A gender disaggregated database of project activities, beneficiaries, outputs and outcomes is maintained and updated on a regular basis which provides important information to analyse and report against progress indicators.

Monthly whole-team meetings provide us with an opportunity to monitor the progress and success of each project activity and assess their contribution towards each output and outcome. Additionally, Nepal-based project members have met regularly in-person to discuss activity>outcome pathways for specific project Outputs.

Although the project leader, Jane Memmott is ultimately responsible for the M&E process, each implementation partner is responsible for feeding in quantitative and qualitative data from their respective project Output and this is monitored and evaluated as a whole-team.

We have made two changes to our M&E plan since the last reporting period:

- 1) We have introduced a full-day farmer feedback session at the end of each Farmer Field School (FFS) program to seek feedback on every single session within the syllabus, as well as more general feedback from participants of the course. This helped us to identify sessions which were less useful to farmers, or too confusing (these were subsequently dropped) and it also highlighted a couple of topics which weren't previously covered but which farmers were very keen to learn about (one of these was food preservation methods which we have now introduced as a stand-alone session). The final FFS syllabus (which we aim to publish in Year 3) will reflect these changes and suggestions and is much more useful to farmers as a result.
- 2) We have introduced a qualitative reporting form which is completed by every staff member after each activity they complete (e.g. awareness class or FFS session). These forms are submitted to the project manager and reviewed during monthly team meetings so that any issues are flagged up and addressed as soon as possible. Likewise, it facilitates the sharing of good ideas or successful approaches which other staff members can then adopt.

8. Lessons learnt

Some important lessons we have learnt during Year 2 of the project are:

- It is not a good idea to rely on passive methods of feedback, especially with rural (and often illiterate) farmers who may perceive a power imbalance and be very hesitant to express their views. As such, we have introduced a whole-day feedback session at the end of the FFS program where farmers are directly asked about each session of the FFS program and encouraged to suggest alternative ideas for sessions. This has substantially improved the quantity and quality of feedback, enabling us to tailor our courses much more directly to farmers' needs. Likewise, staff members are asked to complete a qualitative feedback form after every session they lead to capture new ideas and suggestions for improvement.
- To influence policy and get our recommendations integrated into provincial strategy, it is essential to build close relationships with ministry officials and understand their needs and agendas. For this reason, two of our key staff members have shifted their operating station to

Surkhet – the Provincial capital. By basing themselves permanently in this location, they are in a much better position to interact regularly and informally with ministry officials and other key stakeholders.

- For achieving widespread public awareness, social media platforms are not always the most effective tool. There is a great deal of confirmation bias in social media, whereby people only take notice (or get recommended) content when they are already interested in it. Facebook in particular is very biased towards the social circles that project members are already part of. We have therefore changed our public awareness campaign to focus more strongly on traditional media including radio and news outlets. We have broadcast pollinator awareness content on 10 different national and local-level radio stations ([Appendix 7](#)) and our pollinator strategy workshop was reported in the Annapurna Post (a prominent national newspaper).

Overall, our advice to future projects would be: 1) to be proactive in seeking honest feedback and ideas from the recipients of project activities; 2) to think carefully about the best channels of communication for reaching your target audience (and consider the biases in each form of communication); 3) to invest time and energy in building close relationships with key policy stakeholders.

9. Actions taken in response to previous reviews (if applicable)

We received very useful feedback from our Year 1 annual report and have addressed the reviewers' four main comments in the following ways:

- 1) Reviewers encouraged us to address output-level assumptions (not just outcome-level) in our next annual report, so we have now added comments on each of the Output-level assumptions in Section 3.4.
- 2) Reviewers asked us clarify how wider impact (beyond Karnali Province) is/will be sought. We discussed this point in one of our team meetings and the team was in strong agreement that this is an important priority for the final 7 months of the project. One of the actions we have taken is to broaden our public awareness campaign out beyond Karnali Province by playing pollinator awareness soundbites on multiple national radio channels (with listenership of c.4 million). We have also aimed to get project publicity featured in national newspapers ([Appendix 7](#)). Most importantly, during the final year of the project we will focus a great deal of effort on engaging with national-level stakeholders including federal ministries. Project partners LI-BIRD and HERD are well connected to federal policymakers and these individuals will be our key stakeholders in the national-level workshop.
- 3) Reviewers asked us to provide milestones/targets for each project year for activities that cut across project years – where relevant, we have now added this information to the updated logframe.
- 4) Reviewers noted that we should carefully consider how we can attribute/evidence the impact of project activities to measured outcomes (e.g. on yields, livelihoods). It is true that although we are collecting quantitative data on these metrics, it is very difficult to apply causation. Therefore, as recommended by the reviewers, we have integrated much more qualitative reporting into our M&E process. For example, we conducted in-depth qualitative interviews with a number of farmers to find out how the project has influenced their farming practices, and their lives more generally ([Appendix 3](#)). These human stories – in combination with systematic data collection - provide a much more powerful account of the positive impacts of our project.

10. Risk Management

No new risks have arisen since the last revision of the risk register 6 months ago. We have attached an up-to-date version of the risk register with this report.

10. Sustainability and legacy

Our project has been designed to ensure long-term sustainability through three main strategies:

- 1) PARTNERSHIP –project partners are developing strong institutional capacity in pollinator conservation and management and have already begun to integrate these approaches into their ongoing work and future project planning.
- 2) MAINSTREAMING – comprehensive pollination training, information and awareness materials have been produced in the Nepalese language and distributed widely. These are the first such materials produced in the Nepalese language, so they are likely to leave a long-term legacy in Nepal. Already, we have received requests from government institutions including the Agriculture Knowledge Centre (AKC), Agriculture Development Directorate and Ministry Training Centre to include this material into their regular programs. Additionally, we have received commitment from our ministry partners that they will endorse the recommendations of our Pollinator Action Plan at a policy level, ensuring long-term impact. We have also aimed to embed pollination into public dialogue through a widespread pollinator awareness campaign on national radio reaching an estimated 4 million listeners ([Appendix 7](#)).
- 3) SCALABILITY – all project materials and recommendations are designed with scaling in mind and our project partners are already considering a follow-on project proposal which would scale our activities and outcomes to a national or even regional level, ideally resulting in a National Pollinator Strategy for Nepal.

Overall, the feedback we have received multiple times from ministry officials, researchers and community stakeholder is that *'there is no other project like this – this is the first time we have thought about the importance of pollination and realised how much it can benefit agricultural productivity.'* This kind of feedback demonstrates the legacy we are creating in Nepal and convinces us that our project impact will continue after the project end.

11. Darwin Initiative identity

All of our project awareness and information materials have clearly acknowledged the UK Darwin Initiative – these include radio jingles, national newspaper articles, workshop banners, training manuals, awareness leaflets, results posters, an awareness video and project t-shirts.

Additionally, our project [Facebook page](#) and websites clearly link to the Darwin Initiative and all project tweets have used the @UKBCFs handle as well as the Darwin Initiative hashtag, where relevant.

Although this Darwin Initiative (DI) project builds upon the findings of a previous 3-year research project in Nepal, it is a separate project with a distinct identity – a fact which is reflected in all materials and events. The project websites are solely dedicated to the DI project and the project is referred to by partners and stakeholders as *'The Darwin Initiative Pollination Project'*.

The Darwin Initiative is already relatively well recognised within Nepal and indeed project partners LI-BIRD have previously led a DI project. Many of our other stakeholders however have learned about the DI program for the first time through our project.

12. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	Yes
Have any concerns been reported in the past 12 months	No
Does your project have a Safeguarding focal point?	Yes – Ramesh Pathak [REDACTED]
Has the focal point attended any formal training in the last 12 months?	No
What proportion (and number) of project staff have received formal training on Safeguarding?	100% [18 people]
<p>Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses.</p> <p>Whilst working with communities and local field staff at our remote project site, we have had to be very mindful of the power-imbalance between local and national-level staff. Initially this can lead to a reluctance by local staff to speak up and speak out and make their opinions heard. We have overcome this by creating an open and safe forum for staff to voice their views and ensuring that these are taken seriously so that trust and confidence is established.</p> <p>To ensure that staff and community members feel comfortable reporting any safeguarding issues, we have allocated a safeguarding contact person who is external to the immediate project team and can anonymously report any safeguarding issues, should they occur.</p> <p>Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so please specify.</p> <p>There are no specific activities on safeguarding in the project. However, every year we have a brief session/orientation on safeguarding for the staff members working on the project.</p> <p>Please describe any community sensitisation that has taken place over the past 12 months; include topics covered and number of participants.</p> <p>There are no specific community sensitisation activities regarding safeguarding that have taken place over the past 12 months.</p> <p>Have there been any concerns around Health, Safety and Security of your project over the past year? If yes, please outline how this was resolved.</p> <p>Yes, during the fieldwork and travel to Sinja RM, Jumla for the FFS session, one agriculture technician had a motorcycle accident. The staff was treated in Nepalgunj Hospital, the organization gave proper recovery time (9 days), and the organisational medical insurance covered the medical expenses.</p>	

13. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2023 – 31 March 2024)

Project spend (indicative) since last Annual Report	2023/24 Grant	2023/24	Variance %	Comments (please explain significant variances)
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	(£)	Total Darwin Costs (£)		
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				Community stakeholders requested us to deliver some additional awareness classes (see Section 3.2)
Capital items (see below)				**Note the very small amount** We expected that some technical equipment would need replacing but all equipment remained in good working order, so we allocated these funds to operating costs instead.
Others (see below)				
TOTAL	£161,703.6	£160,963.2		

Table 2: Project mobilised or matched funding during the reporting period (1 April 2023 – 31 March 2024)

	Secured to date	Expected by end of project	Sources
Matched funding leveraged by the partners to deliver the project (£)			BCAI co-funding and University of Bristol in-kind
Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project (£)			University of Bristol Policy Support Fund to support policy engagement activities of Darwin Project

14. Other comments on progress not covered elsewhere

As outlined in a previous change request (approved by BCF 17 November 2023), we have removed an activity (and associated indicator) related to measuring the nutritional value of pollinated crops. The laboratory costs for this work had become prohibitively high and our project partners suggested the money would be better spent on a national radio campaign, the publication of a policy brief, and an additional capacity-building course, all of which have been completed.

15. OPTIONAL: Outstanding achievements or progress of your project so far (300-400 words maximum). This section may be used for publicity purposes.

I agree for the Biodiversity Challenge Funds to edit and use the following for various promotional purposes (please leave this line in to indicate your agreement to use any material you provide here).

Our project has delivered pollination awareness classes to more than 16,000 smallholder farmers in Jumla District Nepal. These classes have substantially increased the understanding and appreciation of biodiversity (especially pollinators) by farmers, and have led to the uptake of pollinator-friendly management practices including beekeeping and the promotion of wild flowers by more than 4000 farmers. Our one-year long Farmer Field School (FFS) program has been attended by 180 regular participants who have adopted many of the ecological farming practices taught during the course. These farmers now retain more areas of native habitat and wild flowers resulting in a 15% increase in flowering plant cover, 8% increase in flowering plant richness and 10% increase in insect pollinator abundance on their farms. Yields of apple (the major cash crop in the region) have increased by 13% on their farms and the average household income of these farmers is now 55% higher than before the course. Scaling up from the district to the provincial level, our partners in the provincial ministry (MoLMAC) have led the development of a Pollinator Strategy for Karnali Province which provides a policy roadmap to conserving and enhancing pollinators in the region. In partnership with other stakeholders, MoLMAC have also committed funds to establishing a Resource Centre for Sustainable Beekeeping Promotion in Karnali province, emphasising their commitment to this cause. As we move into the final 7 months of the project, we aim to extend our reach more broadly across the country. Through a pollinator awareness campaign on national radio, we have reached an estimated 4 million listeners across the country, bringing pollination into the public dialogue for the first time. Overall, we have substantially raised the profile of pollination in Nepal and created a network of researchers, organisations and policymakers who are eager to take forward our ideas and incorporate them into mainstream policy, research and development work in Nepal.

Image, Video or Graphic Information:

File Type (Image / Video / Graphic)	File Name or File Location	Caption including description, country and credit	Social media accounts and websites to be tagged (leave blank if none)	Consent of subjects received (delete as necessary)
Image	Awareness class_01	Participants of a pollination awareness class in Jumla District, Nepal. Credit: Devial Budha		Yes
Image	FFS participant	Mrs. Bishnukanya Upadhyay has started managing her farm to support more pollinators and her pumpkins now receive better pollination, giving her better yields		Yes

Annex 1: Report of progress and achievements against logframe for Financial Year 2023-2024

Project summary	SMART Indicators	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
<p>Impact</p> <p>Pollinator conservation and management embedded into mainstream agricultural policy and practice in Nepal, with long term benefits for people and pollinators</p>		<p>We have achieved measurable positive impacts on pollinator biodiversity, crop yields, biodiversity awareness and household income in Jumla, Nepal. Pollination has also entered the policy dialogue in Nepal meaning actions are likely to become embedded into long-term strategy.</p>	
<p>Outcome: Widespread uptake of an evidence-based strategy for enhancing pollination services in Karnali Province Nepal, leading to increased pollinator biodiversity, increased yields of pollinator dependent crops and improved livelihoods and nutrition</p>	<p>0.1 Increased ecological awareness and resulting uptake of the Pollinator Stewardship Scheme (reduced pesticide use, wildflower margin plantings, nesting resource provision, habitat preservation & increased crop diversity) by 1000 farmers (at least 40% women) in Jumla District by project end.</p> <p>0.2 Abundance and species richness of pollinating insects (solitary bees, social bees, flies, butterflies, wasps, beetles, and moths) on participating stewardship farms increases 15% by project end relative to baseline, whilst reproductive success of Himalayan alpine shrub and meadow flora increases 10% on participating farms</p> <p>0.3 Yield of pollinator-dependent crops on participating stewardship farms increases 10% by project end relative to baseline, translating into 10% increase in household income from sale of pollinator dependent cash crops (sample = 50 participating and</p>	<p>0.1 An estimated 4,023 farmers (65% women) are now practicing pollinator-friendly management including planting of wildflowers, reduction in pesticide use & construction of bee hotels. 8,875 more farmers now understand the value of pollination after project activities.</p> <p>0.2 Pollinator abundance has increased 10% on participating farms & 62% on demonstration farms, relative to controls. Reproductive success of Himalayan plants will be tested next year when sufficient time has passed for seed development.</p> <p>0.3 Apple yields (the main cash crop) have increased 13% on stewardship farms but no change so far for beans or mustard. Household income of FFS participants has increased by 55% compared to their baseline income.</p>	<p>0.1 Record longer-term knowledge retention through another round of follow-up surveys in Y3.</p> <p>0.2 Conduct another round of biodiversity surveys in Y3 to measure further changes in plant & pollinator biodiversity after another year of project activities</p> <p>0.3 Conduct another round of crop yield surveys and farmer questionnaires in Y3 to measure further changes in crop yields and household income.</p>

	<p>50 control farms). Data from similar work in this region suggests this increase is realistic (Devkota et al. 2021).</p> <p>0.4 Dietary diversity index and vitamin A & folate intake of women (who are the most vulnerable adults) on participating farms increases 5% relative to baseline (sample = 50 participating and 50 control farms). Data from ongoing project shows current diet diversity is extremely low thus scale of change is realistic.</p> <p>0.5 Strategies to promote pollinator conservation and management (e.g., pesticide regulation, pollination training and research capacity) integrated into provincial policy by project end.</p>	<p>0.4 Dietary diversity of FFS participants has increased by 4% (by end of Y2) from a baseline of 8.3.</p> <p>0.5 Commitment by project partners in the provincial ministry to endorse the recommendations of the Pollinator Action Plan at a policy level and incorporate training materials into agricultural programs.</p>	<p>0.4 Conduct another round of farmer questionnaires in Y3 to measure further changes in dietary diversity.</p> <p>0.5 Final publication of the Pollinator Action Plan. Monitor the uptake of new policies and training materials in provincial programs.</p>
<p>Output 1. Pollinator awareness and stewardship program in Jumla district to increase public understanding of pollination services and demonstrate evidence-based pollination-management practices</p>	<p>1.1 By project end, 3000 participants (50% women) attend a pollinator awareness class (800 in Y1, 1200 in Y2 & 1000 in Y3) and 500 farmers (>30% women) attend a Farmer Field School session on the demonstration farms. Following classes, 80% of attendees can explain value of pollination services to livelihoods & nutrition, list key pollinator-dependent crops, identify major pollinator groups and specify ways to support pollinators and improve their nutrition.</p> <p>1.2 By project end, abundance and species richness of pollinating insects (solitary bees, social bees, flies, butterflies, wasps, beetles, and moths) and wild plant species on demonstration farms increases 20% (c.8% each year), relative to baseline,</p>	<p>1.1 16,194 participants (65% women and mostly farmers) have attended a pollinator awareness class and 180 farmers (80% women) are engaged in our regular FFS sessions. 78% of awareness class attendees now have a very clear understanding of pollination & can recognise the main pollinator groups. 4,023 additional farmers are now practicing pollinator-friendly management including planting of wildflowers, reduction in pesticide use & construction of bee hotels.</p> <p>1.2 Pollinator abundance has increased by 62% on demonstration farms (end of Y2). Flowering plant abundance has increased by 35% on demonstration farms, and flowering plant richness by 20%.</p>	

	<p>demonstrating biodiversity value of stewardship scheme to stakeholders.</p> <p>1.3. By project end, yields of pollinator-dependent crops on demonstration farms increase by 15% (5% each year) relative to baseline.</p> <p>1.4 2000 pollinator-related images and artworks submitted to the project Facebook group by at least 500 different people in Karnali by project end.</p>	<p>1.3 Crop yields on demonstration farms have increased by 6% for apples and 37% for beans, relative to controls (end of Y2). We will repeat the measurements in Y3 to assess further changes.</p> <p>As explained in the report (Section 8), we have shifted our public awareness campaign to more traditional media outlets including national radio (where we have reached an estimated 4 million listeners) and national newspaper.</p>	
<p><u>Activities:</u></p> <p>1.1 Recruit field staff and conduct a five-day Training of Trainer (ToT) course for all project staff on agroecosystem services, pollinator biodiversity and management, ecological data collection, teaching methods etc.</p> <p>1.2 Devise an evidence-based Pollinator Stewardship Scheme for Jumla District, based on data from ongoing pollination project in Jumla. Produce and distribute 3000 booklets outlining the Stewardship Scheme.</p> <p>1.3 Stakeholder engagement workshops to get buy-in and strategic feedback at start and end of project.</p> <p>1.4 Establish three demonstration farms showcasing the evidence-based Pollinator Stewardship Scheme through cultivation of high-value pollinator-dependent crops. Establish pollinator friendly habitat and management practices on the farms.</p> <p>1.5 Run pollinator education/awareness/training classes for a total of 3000 participants from across Jumla District. Promote the Pollinator Stewardship Scheme in these classes and advertise Farmer Field School sessions (see next activity).</p>	<p><u>Progress so far:</u></p> <p>1.1 Completed</p> <p>1.2 Stewardship Scheme completed and a total of 6896 information leaflets so far distributed (end of Y2).</p> <p>1.3 Stakeholder inception workshops held at provincial, district and municipality level.</p> <p>1.4 All 3 demonstration farms established and pollinator management practices initiated.</p> <p>1.5 A total of 545 awareness classes completed by end of Year 2 & attended by 16,194 people (65% women).</p>	<p><u>Plans for next project period:</u></p> <p>1.2 Continue distributing leaflets (up to 4000 more) and monitor uptake of stewardship scheme</p> <p>1.3 Keep stakeholders updated and engaged in our project activities.</p> <p>1.4 Continue expanding the pollinator-friendly management and monitor the outcomes.</p> <p>1.5. Aim to reach another 2000 participants by end of Y3. Monitor the ongoing uptake and impacts of our classes</p>	

<p>1.6 Run weekly Farmer Field School (FFS) style sessions on demonstration farms to showcase and experiment with pollination management practices and traditional beekeeping.</p> <p>1.7 Establish a Pollinator Facebook group for Karnali Province to boost understanding and appreciation for pollinators and other biodiversity. Members encouraged to share pollinator pictures, pollinator-themed art and we will share conservation/management tips.</p> <p>1.8 Conduct baseline and follow-up surveys of farms participating in the Pollinator Stewardship Scheme and matched control farms, recording biodiversity and livelihood outcomes. Data used for M&E purposes and published as open-access paper.</p> <p>1.9 Conduct follow-up surveys of 10% of farmers attending the awareness courses/Farmer Field School sessions (c.200 total) to record rates of Pollinator Stewardship Scheme uptake.</p> <p>1.10 Pollinator awareness campaign on national and local radio to raise public awareness of pollinators and their importance to agriculture.</p>	<p>1.6 A total of 92 FFS sessions completed and attended by a consistent group of 180 farmers (80% women)</p> <p>1.7 Facebook group established but public awareness campaign strategy shifted (see Section 8)</p> <p>1.8 Baseline and Y2 follow-up surveys completed and data analysed.</p> <p>1.9 1583 baseline surveys completed and 475 follow-up surveys completed.</p> <p>1.10 Pollinator awareness soundbite played on 10 radio stations reaching an estimated 4 million listeners.</p>	<p>through another round of follow-up questionnaires.</p> <p>1.6 Complete another 92 sessions in Y3 and monitor uptake and outcomes of the methods.</p> <p>1.7 Target pollinator awareness content at other media outlets including newspaper, YouTube etc.</p> <p>1.8 Conduct final round of monitoring surveys in Y3</p> <p>1.9 Conduct another round of follow-up surveys of these same farmers in Y3 to record information retention and longer-term changes in management practices, household income etc.</p> <p>1.10 Target pollinator awareness content at other media outlets including newspaper, YouTube etc.</p>
<p>Output 2. Pollinator capacity-building program to equip individuals and institutions with the knowledge, resources and tools to identify, research and manage crop pollinators, enabling them to train and advise others.</p>	<p>2.1 By project end, 175 extension workers, researchers and trainers (50 in Y1, 100 in Y2 & 25 in Y3; >30% women) from across 10 districts of Karnali Province have the expertise & resources to identify & monitor key crop pollinators and advise on crop pollination management.</p> <p>2.2 Course content from pollinator training package incorporated into training programme & course syllabus of 20</p>	<p>Progress towards each indicator:</p> <p>2.1 A total of 188 extension workers (20% women) have attended a capacity building course and now have the expertise and information resources to implement pollination management training.</p>

	<p>schools, colleges & NGOs working on agriculture & biodiversity in Karnali, reaching 3,000 farmers/ students by end of project.</p> <p>2.3 Pollinator awareness video uploaded to YouTube by end of 2023 and viewed 3000 times by project end.</p> <p>2.4 Online digital crop pollination library (with taxonomic guide) established by end of 2023 and accessed by at least 500 individuals by end of project.</p> <p>2.5 Pollination management practices incorporated into standard issue training manual for new extension workers in Karnali province by project end.</p>	<p>2.2 Pollination training materials distributed to >300 people from 98 institutions. We will monitor the use and uptake of these materials over the coming year, as well as continuing to distribute them widely.</p> <p>2.3 Awareness video produced and watched by 593 people on Youtube, and a further c.12,000 pollination awareness class participants (those who attended after the video was produced and integrated into the classes).</p> <p>2.4 Content for the Digital Library is in development, but publication has been delayed due to ongoing discussions with the technical web design team. The library will be launched before the project end.</p> <p>2.5 Provincial Agriculture Training Centre and head of Agriculture Knowledge Centre (AKC) have requested to integrate our pollination training materials into their course content which trains extension workers. We will continue to monitor this uptake.</p>
<p><u>Activities:</u></p> <p>2.1 Produce handbook for managing crop pollination services in Nepal, including information on pollinator dependent crops, key pollinators and pollination management guidance. Distribute to researchers and extension workers across Karnali Province.</p> <p>2.2 Produce a pollinator education/promotion video for mass awareness amongst farmers and frontline extension workers and for use in the pollinator awareness classes.</p> <p>2.3 Deliver seven capacity-building workshops across Karnali Province, enabling participants (extension workers, researchers etc.) to identify, research & monitor key crop pollinators and advise on their management.</p>	<p><u>Progress so far:</u></p> <p>2.1 Handbook completed and available here. Already distributed to 300 stakeholders.</p> <p>2.2 Video completed and launched</p> <p>2.3 Six capacity building workshops so far delivered</p>	<p><u>Plans for next project period:</u></p> <p>2.1 Continue distributing this resource to a further 200 people by end of Y3 and monitor its use and uptake.</p> <p>2.2 Continue promoting the video & monitoring its metrics</p> <p>2.3 Deliver 1 more workshop in Year 3</p>

<p>2.4 Produce and distribute a generic pollinator training package (including lesson plans, pollinator management handbook, outreach materials and video) to 200 institutions in Karnali Province.</p> <p>2.5 Train and employ masters' students from Agriculture and Forestry University (AFU) to photograph and database pollinator specimens and conduct short periods of fieldwork to fill in gaps crop pollination knowledge, for the Digital Pollination Library (see Activity 2.6)</p> <p>2.6 Establish a Digital Pollination Library for Nepal, with details of each crop's pollinator-dependence, its nutritional and economic value, its key pollinators (along with a taxonomic identification resource for each one), and guidance for enhancing its pollination.</p> <p>2.7 Organize a travelling seminar for provincial and district level stakeholders to achieve wider dissemination of project activities & visit the pollinator-friendly demonstration farms to showcase the Pollinator Stewardship Scheme.</p>	<p>2.4 Training resources so far distributed to 98 institutions</p> <p>2.5 Fourteen students recruited and trained and data collection & analysis completed on 7 crops.</p> <p>2.6 Still in development</p> <p>2.7 In planning phase</p>	<p>2.4 Continue distributing resources and monitor their use and uptake</p> <p>2.5 Continue the work in Year 3 and complete surveys of 1 more crop.</p> <p>2.6 Will complete publication by project end</p> <p>2.7 Scheduled for Y3</p>
<p>Output 3. Pollinator Action Plan for Karnali province to embed pollinator conservation & management into provincial policy, advocating this as a blueprint for a National Pollinator Strategy for Nepal</p>	<p>3.1 Open access paper on economic & nutritional value of pollination in Nepal published by end of 2023 & accessed by 500 people by project end.</p> <p>3.2 Workshop in 2023 co-hosted by partners from Ministry of Land Management, Agriculture and Cooperatives (MoLMAC), Karnali and attended by 25 high-level provincial-level stakeholders. Key pollinator conservation strategies identified & agreed upon.</p> <p>3.3 Publication of policy-prescriptive Pollinator Action Plan for Karnali Province by end of 2023. Document viewed by 300 key provincial and federal-level stakeholders including policymakers,</p>	<p>3.1 Paper published as an online pre-print (https://doi.org/10.21203/rs.3.rs-3456217/v1) and is under-review at <i>Scientific Reports</i> . More than 80 reads by end of Y2.</p> <p>3.2 Workshop completed and attended by 27 high-level stakeholders. Technical Working Group established and key priorities for the Pollinator Action Plan agreed upon.</p> <p>3.3 The TWG have produced a comprehensive draft of the Pollinator Action Plan and final revisions are underway. Publication is expected for August 2024.</p>

	<p>researchers and practitioners by project end.</p> <p>3.4 National-level workshop in 2024 attended by 50 high-level stakeholders. Attendees are receptive to the concept of a National Pollinator Strategy and take actions to promote it.</p> <p>3.5 Publication of policy brief for raising awareness of pollinator importance amongst policy-makers and practitioners. Published by end of 2023 and accessed by at least 100 stakeholders.</p>	<p>3.4 Planning underway - yet to be completed</p> <p>3.5 Policy brief published in Oct 2023 and sent to 550 individuals as well as being downloaded by a further 42</p>	
<p><u>Activities:</u></p> <p>3.1 Publish a team-authored, open-access paper quantifying the economic and nutritional value of pollination services in Nepal, providing an evidence base for the value of pollinators to human health and livelihoods.</p> <p>3.2 Form a project steering committee chaired by Secretary of Karnali Ministry of Land Management, Agriculture and Cooperative (MoLMAC) Establish a technical working group to bring policy level officers on-board for drafting the Pollinator Action Plan.</p> <p>3.3 Hold a 2-day provincial-level workshop of experts and stakeholders led by the technical working group to identify policy solutions for conserving and enhancing pollination services.</p> <p>3.4 Publish a team-authored policy brief aimed to raise awareness of pollinator importance amongst policy-makers. Brief will be published in English & Nepali.</p> <p>3.5 Draft Pollinator Action Plan and circulate amongst participants for comment.</p>	<p><u>Progress so far:</u></p> <p>3.1. Completed – paper under review.</p> <p>3.2 Technical Working Group established with 20 members. Five meetings already held</p> <p>3.3 Completed</p> <p>3.4 Completed</p> <p>3.5 Completed – comments have been provided</p>	<p><u>Plans for next project period:</u></p> <p>3.1 Finalise publication & monitor engagement.</p> <p>3.2 TWG will finalise the draft of the Pollinator Action Plan in Y3</p> <p>3.5 NA</p> <p>3.4 Monitor downloads</p> <p>3.5 NA</p>	

<p>3.6 Publish a policy-prescriptive Pollinator Action Plan for Karnali Province drawing on workshop outputs and the evidence base from our ongoing project in Nepal. Promote widespread uptake through advocacy work.</p> <p>3.7 Hold a 2-day national-level pollination workshop in Kathmandu to propose the concept of a National Pollinator Action Plan for Nepal, using the Karnali Pollinator Action Plan as a flagship/blueprint example.</p> <p>3.8 Publish the national level workshop proceedings, highlighting key policy solutions and action-points for ongoing activities, following project end. Circulate proceedings amongst workshop attendees for feedback.</p>	<p>3.6 Soon to be completed</p> <p>3.7 Stakeholder mapping and event planning underway</p> <p>3.8 Yet to be completed</p>	<p>3.6 Will be published in Year 3</p> <p>3.7 Scheduled for Sept 2024</p> <p>3.8 Planned for Year 3</p>
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Annex 2: Project’s full current logframe as presented in the application form (unless changes have been agreed)

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
Impact: Pollinator conservation and management embedded into mainstream agricultural policy and practice in Nepal, with long term benefits for people and pollinators (Max 30 words)			
Outcome: (Max 30 words) Widespread uptake of an evidence-based strategy for enhancing pollination services in Karnali Province Nepal, leading to increased pollinator biodiversity, increased yields of pollinator dependent crops and improved livelihoods and nutrition	0.1 Increased ecological awareness and resulting uptake of the Pollinator Stewardship Scheme (reduced pesticide use, wildflower margin plantings, nesting resource provision, habitat preservation & increased crop diversity) by 1000 farmers (at least 40% women) in Jumla District by project end. 0.2 Abundance and species richness of pollinating insects (solitary bees, social bees, flies, butterflies, wasps, beetles, and moths) on participating stewardship farms increases 15% by project end relative to baseline, whilst reproductive success of Himalayan alpine shrub and meadow flora increases 10% on participating farms (sample = 20 participating & 20 control farms). 0.3 Yield of pollinator-dependent crops on participating stewardship farms increases 10% by project end relative to baseline, translating into 10% increase in household income from sale of pollinator dependent cash crops (sample = 50 participating and 50 control farms). Data from similar work	0.1 Follow-up surveys of 10% of farmer course attendees (c.200 total) to record evidence of Pollinator Stewardship Scheme uptake. 0.2a Annual pollinator surveys carried out in fixed survey plots using tried-and-tested pollinator survey app customised for this region under existing project. 0.2b Solitary bee nest box occupation rate 0.2c Annual census of seed set in three Himalayan alpine wild plant indicator species (<i>Rosa sericea</i> , <i>Berberis aristata</i> , <i>Spiraea canescens</i>) 0.3 Annual farmer questionnaires to record quantity of produce sold and price obtained for each pollinator-dependent crop.	Farmers (especially women) have the authority, motivation, resources and information required to implement management changes. We aim to remove as many of these barriers as possible. Farmer management actions have sufficient time to translate into a population-level effect on pollinators Habitat management practices are effective at increasing pollinator abundance and diversity – demonstrated in other parts of the world (e.g., Blaauw & Isaacs 2014) Plant indicator species are present in/around all participating farms and benefit from cross pollination (highly prevalent species, whose taxonomy predicts they have low self-compatibility were selected) Pollination deficits in crops and wild plants already exist in the region - suggested by available data (Partap <i>et al.</i> 2012)

	<p>in this region suggests this increase is realistic (Devkota <i>et al.</i> 2021).</p> <p>0.4 Dietary diversity index and vitamin A & folate intake of women (who are the most vulnerable adults) on participating farms increases 5% relative to baseline (sample = 50 participating and 50 control farms). Data from ongoing project shows current diet diversity is extremely low thus scale of change is realistic.</p> <p>0.5 Strategies to promote pollinator conservation and management (e.g., pesticide regulation, pollination training and research capacity) integrated into provincial policy by project end.</p>	<p>0.4 Annual dietary recall surveys to record food intake. This information can be used to calculate a dietary diversity index and estimate vitamin A and folate intake.</p> <p>0.5a Presence of new policies in provincial policy document and with associated budget.</p> <p>0.5b Provincial government training course schedule for new extension workers</p>	<p>Increased pollinator abundance leads to increased pollination services and resulting crop yields.</p> <p>Additional produce from pollinator dependent crops is consumed or sold (suggested by high demand for many of these crops e.g., apples & beans) rather than given away or fed to animals.</p> <p>Market price and consumer demand for pollinator-dependent crops remains stable throughout project lifespan.</p> <p>Karnali Ministry of Land Management, Agriculture and Cooperatives remains committed to the promotion of biodiversity friendly farming practices (see letter of support)</p>
<p>Outputs:</p> <p>1. Pollinator awareness and stewardship program in Jumla district to increase public understanding of pollination services and demonstrate evidence-based pollination-management practices</p>	<p>1.1 By project end, 3000 participants (50% women) attend a pollinator awareness class (800 in Y1, 1200 in Y2 & 1000 in Y3) and 500 farmers (>30% women) attend a Farmer Field School session on the demonstration farms. Following classes, 80% of attendees can explain value of pollination services to livelihoods & nutrition, list key pollinator-dependent crops, identify major pollinator groups and specify ways to support pollinators and improve their nutrition.</p> <p>1.2 By project end, abundance and species richness of pollinating insects</p>	<p>1.1a Attendance certificates & annual project reports</p> <p>1.1b Quiz-style survey at end of each outreach session (different versions available to suit range of ages & literacy levels) to test understanding. Baseline data on levels of pollinator awareness has already been collected.</p>	<p>Farmers and other stakeholders have the time and motivation to engage in outreach and training sessions (non-monetary incentives provided)</p> <p>District officials continue to support the project and grant permission to conduct outreach classes.</p> <p>Participants are engaged in the classes & understand course content (level will be tailored to group ability).</p> <p>Habitat management practices are effective at increasing pollinator abundance and diversity –</p>

	<p>(solitary bees, social bees, flies, butterflies, wasps, beetles, and moths) and wild plant species on demonstration farms increases 20% (c.8% each year), relative to baseline, demonstrating biodiversity value of stewardship scheme to stakeholders.</p> <p>1.3. By project end, yields of pollinator-dependent crops on demonstration farms increase by 15% (5% each year) relative to baseline.</p> <p>1.4 2000 pollinator-related images and artworks submitted to the project Facebook group by at least 500 different people in Karnali by project end.</p>	<p>1.2 Quarterly plant and pollinator surveys carried out in fixed survey plots using tried-and-tested pollinator survey app customised for this region under existing project.</p> <p>1.3a Pollinator exclusion experiments (following standardised FAO protocol) to quantify additional crop yield derived from pollination services.</p> <p>1.4 Facebook metrics</p>	<p>demonstrated in many other parts of the world (Blaauw & Isaacs 2014; Carvell <i>et al.</i> 2017)</p> <p>Crop pollination deficits already exist in this region - suggested by available data (Partap <i>et al.</i> 2012)</p> <p>Substantial numbers of people in Karnali Province have Facebook accounts and access to internet (project partners have confirmed this).</p>
<p>2. Pollinator capacity-building program to equip individuals and institutions with the knowledge, resources and tools to identify, research and manage crop pollinators, enabling them to train and advise others.</p>	<p>2.1 By project end, 175 extension workers, researchers and trainers (50 in Y1, 100 in Y2 & 25 in Y3; >30% women) from across 10 districts of Karnali Province have the expertise & resources to identify & monitor key crop pollinators and advise on crop pollination management.</p> <p>2.2 Course content from pollinator training package incorporated into training programme & course syllabus of 20 schools, colleges & NGOs working on agriculture & biodiversity in Karnali, reaching 3,000 farmers/ students by end of project.</p>	<p>2.1a End of course field and desk-based assessment to test levels of understanding and proficiency.</p> <p>2.1b Follow-up surveys to offer further support and record attendees' ongoing use of the course materials.</p> <p>2.2a Course syllabus documents written and published.</p> <p>2.2b Student/farmer attendance records from participating organisations/individuals</p>	<p>At least 80% of all agricultural extension workers in Karnali Province are given permission to attend training courses.</p> <p>Course attendees are engaged in the classes, understand their content and can access/use the internet on a phone or computer</p> <p>Individuals/institutions have the time, resources, and motivation to implement the training package and deliver it to their target communities</p>

	<p>2.3 Pollinator awareness video uploaded to YouTube by end of 2023 and viewed 3000 times by project end.</p> <p>2.4 Online digital crop pollination library (with taxonomic guide) established by end of 2023 and accessed by at least 500 individuals by end of project.</p> <p>2.5 Pollination management practices incorporated into standard issue training manual for new extension workers in Karnali province by project end.</p>	<p>2.3 YouTube metrics</p> <p>2.4 Existence of pollination website and Google analytics to record website views</p> <p>2.5 Published extension worker training manual</p>	<p>Researchers, practitioners and policy-makers are aware of the digital pollination library and have the incentive to use it; promotional activities will be used to increase its visibility.</p> <p>The Karnali Ministry of Land Management, Agriculture and Cooperatives remains committed to the promotion of biodiversity friendly farming practices</p>
<p>3. Pollinator Action Plan for Karnali province to embed pollinator conservation & management into provincial policy, advocating this as a blueprint for a National Pollinator Strategy for Nepal</p>	<p>3.1 Open access paper on economic & nutritional value of pollination in Nepal published by end of 2023 & accessed by 500 people by project end.</p> <p>3.2 Workshop in 2023 co-hosted by partners from Ministry of Land Management, Agriculture and Cooperatives (MoLMAC), Karnali and attended by 25 high-level provincial-level stakeholders. Key pollinator conservation strategies identified & agreed upon.</p> <p>3.3 Publication of policy-prescriptive Pollinator Action Plan for Karnali Province by end of 2023. Document viewed by 300 key provincial and federal-level stakeholders including policymakers, researchers and practitioners by project end.</p>	<p>3.1 ResearchGate and publisher metrics, including AltMetric.</p> <p>3.2a Published workshop proceedings.</p> <p>3.2b Social media posts</p> <p>3.3a Presence of action plan on Ministry of Land Management, Agriculture and Cooperatives website.</p> <p>3.3b Google analytics and results of pop-up survey on website</p>	<p>Collaborators from Nepal remain willing to participate as co-authors and share data (this is currently the case)</p> <p>Ministry of Land Management, Agriculture and Cooperatives (MoLMAC), Karnali Province remains committed to the promotion of biodiversity friendly farming practices.</p> <p>Stakeholders reach agreement on most important pollinator conservation actions.</p> <p>Pollinator Action Plan is widely distributed and publicised by project partners and MoLMAC</p>

	<p>3.4 National-level workshop in 2024 attended by 50 high-level stakeholders. Attendees are receptive to the concept of a National Pollinator Strategy and take actions to promote it.</p> <p>3.5 Publication of policy brief for raising awareness of pollinator importance amongst policy-makers and practitioners. Published by end of 2023 and accessed by at least 100 stakeholders.</p>	<p>3.4a Published workshop proceedings including stakeholder comments</p> <p>3.4b Downloads of workshop proceedings</p> <p>3.5 Downloads of policy brief from website.</p>	<p>National government upholds its CBD commitment to promoting sustainable farming practices.</p> <p>Key stakeholders are motivated to attend</p> <p>Policy brief is widely distributed and publicised by project partners and MoLMAC</p>
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Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1) ***Note that our Activity numbering below does not relate to the numbering of Output Indicators above***

OUTPUT 1:

- 1.1 Recruit field staff and conduct a five-day Training of Trainer (ToT) course for all project staff on agroecosystem services, pollinator biodiversity and management, ecological data collection, teaching methods etc.
- 1.2 Devise an evidence-based Pollinator Stewardship Scheme for Jumla District, based on data from ongoing pollination project in Jumla. Produce and distribute 3000 booklets outlining the Stewardship Scheme.
- 1.3 Stakeholder engagement workshops to get buy-in and strategic feedback at start and end of project.
- 1.4 Establish three demonstration farms showcasing the evidence-based Pollinator Stewardship Scheme through cultivation of high-value pollinator-dependent crops. Establish pollinator friendly habitat and management practices on the farms.
- 1.5 Run pollinator education/awareness/training classes for a total of 3000 participants from across Jumla District. Promote the Pollinator Stewardship Scheme in these classes and advertise Farmer Field School sessions (see next activity).
- 1.6 Run weekly Farmer Field School (FFS) style sessions on demonstration farms to showcase and experiment with pollination management practices and traditional beekeeping.
- 1.7 Establish a Pollinator Facebook group for Karnali Province to boost understanding and appreciation for pollinators and other biodiversity. Members encouraged to share pollinator pictures, pollinator-themed art and we will share conservation/management tips.
- 1.8 Conduct baseline and follow-up surveys of farms participating in the Pollinator Stewardship Scheme and matched control farms, recording biodiversity and livelihood outcomes. Data used for M&E purposes and published as open-access paper.

1.9 Conduct follow-up surveys of 10% of farmers attending the awareness courses/Farmer Field School sessions (c.200 total) to record rates of Pollinator Stewardship Scheme uptake.

OUTPUT 2:

2.1 Produce handbook for managing crop pollination services in Nepal, including information on pollinator dependent crops, key pollinators and pollination management guidance. Distribute to researchers and extension workers across Karnali Province.

2.2 Produce a pollinator education/promotion video for mass awareness amongst farmers and frontline extension workers and for use in the pollinator awareness classes.

2.3 Deliver eight capacity-building workshops across Karnali Province, enabling participants (extension workers, researchers etc.) to identify, research & monitor key crop pollinators and advise on their management.

2.4 Produce and distribute a generic pollinator training package (including lesson plans, pollinator management handbook, outreach materials and video) to 200 institutions in Karnali Province.

2.5 Train and employ masters' students from Agriculture and Forestry University (AFU) to photograph and database pollinator specimens and conduct short periods of fieldwork to fill in gaps crop pollination knowledge, for the Digital Pollination Library (see Activity 2.6)

2.6 Establish a Digital Pollination Library for Nepal, with details of each crop's pollinator-dependence, its nutritional and economic value, its key pollinators (along with a taxonomic identification resource for each one), and guidance for enhancing its pollination.

2.7 Organize a travelling seminar for provincial and district level stakeholders to achieve wider dissemination of project activities & visit the pollinator-friendly demonstration farms to showcase the Pollinator Stewardship Scheme.

OUTPUT 3:

3.1 Publish a team-authored, open-access paper quantifying the economic and nutritional value of pollination services in Nepal, providing an evidence base for the value of pollinators to human health and livelihoods.

3.2 Form a project steering committee chaired by Secretary of Karnali Ministry of Land Management, Agriculture and Cooperative (MoLMAC) Establish a technical working group to bring policy level officers on-board for drafting the Pollinator Action Plan.

3.3 Hold a 2-day provincial-level workshop of experts and stakeholders led by the technical working group to identify policy solutions for conserving and enhancing pollination services.

3.4 Publish a team-authored policy brief aimed to raise awareness of pollinator importance amongst policy-makers. Brief will be published in English & Nepali.

3.5 Draft Pollinator Action Plan and circulate amongst participants for comment.

3.6 Publish a policy-prescriptive Pollinator Action Plan for Karnali Province drawing on workshop outputs and the evidence base from our ongoing project in Nepal. Promote widespread uptake through advocacy work.

3.7 Hold a 2-day national-level pollination workshop in Kathmandu to propose the concept of a National Pollinator Action Plan for Nepal, using the Karnali Pollinator Action Plan as a flagship/blueprint example.

3.8 Publish the national level workshop proceedings, highlighting key policy solutions and action-points for ongoing activities, following project end. Circulate proceedings amongst workshop attendees for feedback.

Annex 3: Standard Indicators

Table 1 Project Standard Indicators

DI Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-A01	Number of people from key national and local stakeholders completing structured and relevant training	individuals	Male: 35% Female: 65% Smallholder farmers: 98% Extension workers: 2% Training typology: biodiversity & sustainable agriculture	4530	12,054		16,194	10,000
DI-A03	Number of local/national organisations with improved capability and capacity as a result of project.	organisations	Organisation type: National NGOs: 9 Universities: 7 Provincial government: 10 Local governments: 13 Industry/business: 12	21	34		55	100
DI-A07	Number of government institutions/departments with enhanced awareness and understanding of biodiversity and associated poverty issues	institutions	Govt. Organisation Type: Provincial government: 10 Local government: 13 Health sector: 7% Environment: 7% Agriculture: 86%	14	17		31	50
DI-C01	Number of best practice guides and knowledge products published and endorsed	number	Knowledge area: Agroecological awareness and management Product typology: x1 Training manual, x1 Farmer Field School syllabus, x1 Awareness leaflet x5 posters x1 policy brief x1 video x1 soundbite	7	4		12	15
DI-C14	Number of decision-makers attending briefing events.	number	Gender: (F:32, M: 60) Types of decision-makers:	61	21		92	175

DI Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
			National NGOs: 18 Universities: 8 Provincial government: 22 Local governments: 25 Industry/business: 14 Number of events: 5					
DI-B04	Number of new/improved sustainable livelihoods/ poverty reduction management plans available and endorsed	number	Languages: English & Nepali Typology of plans: Pollinator Action Plan	0			0	1

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
*Assessing the economic and nutritional value of pollination services in Nepal	Academic paper	Devkota, K., Fernando dos Santos, C., Borges, A., & Timberlake, T. (2023)	Male	Nepalese	Pre-print but under-review in <i>Scientific Reports</i>	https://doi.org/10.21203/rs.3.rs-3456217/v1
* Pollinators are vital and valued agricultural input to boost the Organic Mission of Karnali Province	Policy Brief	D. Neupane, S. Neupane, T. Timberlake, K.Devkota, D.Bhusal, S. Sapkota, D.Joshi, D. Bahadur Kathayat, J.Memmott, S. Shrestha (2023)	Male	Nepalese	LI-BIRD	https://libird.org/policy-brief-pollination/#:~:text=This%20policy%20brief%20is%20an,University%20and%20Tribhuvan%20University%2C%20Nepal.

Annex 4: Supplementary material / appendices

Supplementary material contents:

Appendix number	Name	Description
1	Awareness classes	Pictures from Pollinator Awareness Classes and evidence of impact on household income and farmer perceptions
2	Farmer Field School (FFS) Program	Pictures of FFS sessions and evidence of impact on crop yield, biodiversity, household income and farmer perceptions
3	Human stories	Qualitative interviews with farmers engaged in our project activities
4	Capacity-building classes	A list of attendees of capacity-building workshops, as well as some pictures.
5	Pollination fieldwork	Pictures and data from the crop pollination fieldwork
6	Digital Pollination Library	Examples of planned web design for the Digital Pollination Library
7	Pollination public awareness campaign	List of all radio stations playing the pollinator awareness soundbite, along with approximate listener figures
8	Pollinator Action Plan	Pictures and news articles from pollination policy workshops. Contents of the Pollinator Action Plan agreed by the Technical Working Group
9	Project publications	Snapshots of the publications produced in Project Year 2

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 BCF-Reports@niras.com putting the project number in the Subject line.	X
Is your report more than 10MB? If so, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	
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
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see Section 16)?	X
Have you involved your partners in preparation of the report and named the main contributors	X
Have you completed the Project Expenditure table fully?	X
Do not include claim forms or other communications with this report.	