



## Darwin Initiative: Final Report

To be completed with reference to the “Writing a Darwin/IWT Report” Information Note:  
(<https://www.darwininitiative.org.uk/resources-for-projects/reporting-forms-change-request-forms-and-terms-and-conditions/>).

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

### Darwin Project Information

Project reference	25-011
Project title	Andean bears and people: coexistence through poverty reduction
Country(ies)	Bolivia
Lead organisation	Chester Zoo
Partner institution(s)	PROMETA
Darwin grant value	£266,625
Start/end dates of project	July 1 <sup>st</sup> 2018 – March 31 <sup>st</sup> 2021; extended to September 31 <sup>st</sup> 2021
Project leader’s name	Alexandra Zimmermann
Project website/blog/social media	<a href="https://www.chesterzoo.org/news/andean-bear-project/">https://www.chesterzoo.org/news/andean-bear-project/</a>
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## 1 Project Summary

The inter-Andean dry forest (IADF) is a Critically Endangered ecosystem: only 6% of its original extension remains, yet it still holds astonishing biodiversity, including the southernmost population of Andean bears. It is also home to some of the poorest and most vulnerable communities in Bolivia. In recent years, droughts caused by changing climate regimes have affected agriculture, resulting in significant crop losses. Consequently, people have been increasingly changing their main economic activity from arable agriculture to livestock, which demands more land and water, affects the natural regeneration of the dry forests, and increases encounters between people, bears and livestock.

Conservation scientists from Chester Zoo, PROMETA and WildCRU have been working in this area since 2016. Over this period, poverty alleviation strategies have been developed and implemented aimed at fostering human-bear coexistence, in order to secure a future for people and wildlife, whilst safeguarding the ecosystem.

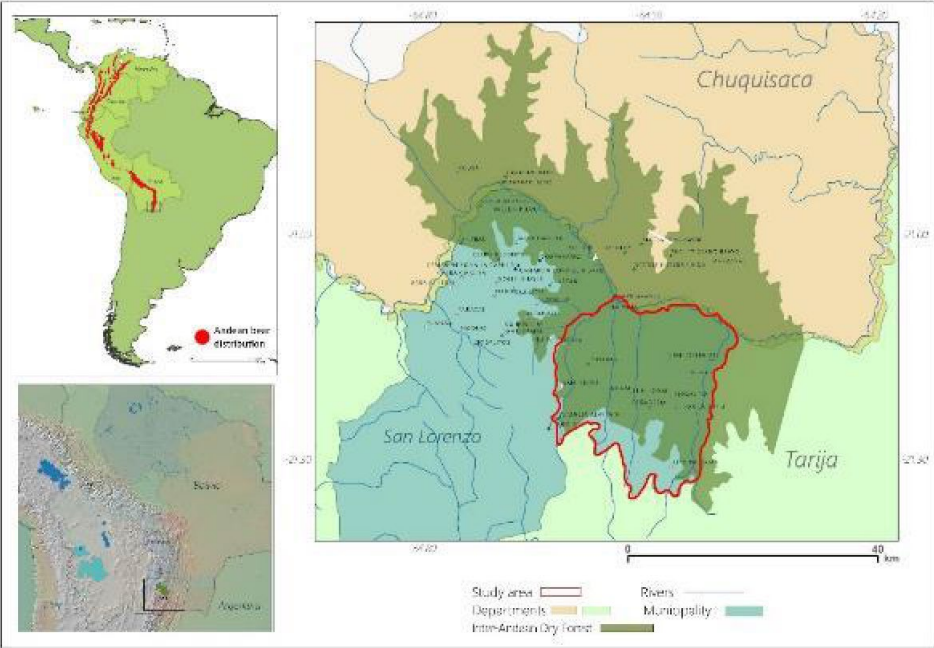
Through this project, the livelihoods of 165 households and local biodiversity have benefited from an integrated approach to improving wellbeing, reducing livestock predation, and fostering greater acceptance of bears. Cattle ranching and overgrazing has been identified as the main factor exacerbating human-carnivore conflict, causing forest loss and soil degradation and releasing carbon that is stored within the soil. Furthermore, the results from this project shows that livestock is not a profitable activity in the highlands, requiring 20 times the amount of land, water, and time than is needed in the lowlands.

This work has revealed that community attitudes towards bears were negative, and that bears and pumas, were frequently blamed and retaliated against for livestock and crop losses. However, losses of livestock resulting from bear attacks were minimal in comparison with those arising from poor cattle management and husbandry. Attacks on livestock by puma, on the other hand, were the second most frequent cause of goat and sheep mortality, and the main cause of negative attitudes towards carnivores.

Life for the communities in this region is truly difficult, and their attitudes and norms towards biodiversity conservation must be considered against this background of poverty, water shortage, limited infrastructure, and few opportunities for income generation. Target communities have benefited from this conservation initiative, and have shown a positive change in their perception towards bears. Beekeeping has been implemented as new economic opportunity, with capacity having been built, and community members replicating this initiative independently.

Monitoring of bears, and biodiversity in general, has yielded astonishing results, with evidence of a healthy and growing bear population, the highest diversity of felid species in the whole country, and new distribution records for 17 mammal species, including 1 Critically Endangered, 3 Vulnerable and 3 Near Threatened species.

**Location:** The project location encompasses 1,100 sq km of Inter-Andean dry forests of San Lorenzo, in Tarija, Bolivia. In general terms, this area is characterized by mid-elevation mountains (1,200 to 3,500 MASL); it is marked by hot, wet summers, and cool dry winters. Although much of the forest composition has changed due to human intervention, these valleys are considered important centres of endemism, and are home to the largest carnivores in South America: the Andean bear, the jaguar and the puma.



Map 1. Study site showing its location in South America and Bolivia.

## 2 Project Partnerships

Project partners include PROMETA (Proteccion del Medio Ambiente, Tarija/Environmental Protection, Tarija), IICA (Farming Research and Training Institute), CERDET (Centre for Regional Studies of Tarija) and the Alcides d'Orbigny Natural History Museum in Bolivia, and WildCRU (Wildlife Conservation Research Unit, University of Oxford) in the UK. PROMETA is Bolivia's second largest non-profit organisation, with a focus on biodiversity conservation and sustainable development. The project concept and its theory of change were developed jointly with Chester Zoo through joint planning and field visits.

PROMETA oversaw the implementation of activities including recruitment and field team coordination. It was responsible for managing local finances, acquisition of materials, assistance with reports, and dissemination of outputs within Bolivia. Communication with government authorities, the acquisition of permits, dissemination of project outputs and liaison with CBD focal point also fell under PROMETA's responsibility. During the final year of the project, PROMETA's role was to continue supervising the competition of the work with communities, coordination with our partners, and to manage the local finances.

IICA's role was to continue promoting and selling the project's honey and other products coming from the communities. WildCRU continued guiding the research and data analysis in carnivore research and monitoring, as well as overall quality control, ensuring that research and M&E are carried out to the highest standard, whilst the Alcides d'Orbigny Natural History Museum continued their support in bear ecology.

The project received ongoing support from the British Embassy in Bolivia, particularly from the Ambassador, Mr. Jeff Glekin. This year, the project has been highlighted by the Embassy on several occasions. In addition, the Whitley Fund for Nature highlight our project at a COP 26 event. Photos included in Annex 7.

## 3 Project Achievements

### 3.1 Outputs

**Output 1 Livelihoods and wellbeing** are improved among the project communities as a result of villagers adopting improved livestock management practices and developing supplementary livelihoods

**Baseline condition:** Baseline qualitative and quantitative data were collected in seven communities. Sixty-four interviews showed that a majority of villagers are illiterate, and there is a significant number of people with disabilities. Livelihoods are strongly dependent on economic resources generated through seasonal migration to Argentina for agricultural and livestock work.

**Change recorded to date:** One hundred and sixty-five households in seven communities (39% of the total number of households in the project area) have developed beekeeping as a supplementary livelihood, and improved cattle management practices. In addition, a total of 494 indirect beneficiaries, usually friends or relatives of participating families, have been exposed to messaging or information from the Project, without having participated directly in livelihood-related activities. During this period, a total of 2,750 kg of honey has been harvested from the community apiaries, increasing the income of participating households by £/month (11.8%) over a monthly average income of Bs (£). In the case of project participants who reinvested their profits in private apiaries, household income rose by as much as £ (29.4%).

**Source of evidence for this change:** Photos of beekeeping activities (Annex 7) and meeting records (Annex 8)

**Output 2 Capacity building and training** helps communities improve resilience to environmental changes, and fosters their ability to develop sustainable livelihoods independently.

**Baseline condition:** Alternatives to keeping livestock, included fruit and vegetable production. However, water for irrigation is limited, as is road access. Therefore, beekeeping was identified as an alternative, due to the demand in local markets, little physical effort involved in production when compared with cattle ranching, and for being a year-round opportunity for income generation. Another alternative, focused primarily on women, is growing lavender; an activity that supports beekeeping, and can provide additional economic support to women in the study area. Training tools and methods for both activities, must take into account limited literacy levels and special learning needs amongst the target audience.

**Change recorded to date:** At least 2 people from each participating family attended the training courses in beekeeping management, health, and swarm capture. On average, members of each participating family attended 25 training events during the 3 years of the project and, at this point, all community members are capable of capturing wild bee colonies, building hives, and establishing their own apiaries. A total of 34 private apiaries were installed by beneficiaries, and managed by the head of each family with support from his wife and his children. In total, 144 domestic honeybee hives have been installed during this three-year grant period. Due to concerns about the additional demands that lavender production would place on top of their everyday work, women have requested support in native beekeeping instead. This is less time and labour intensive, and provides an added medicinal value, which lavender does not. The project installed 13 hives for native *Melipona* bees prior to the project completion date, with a further 27 installed afterwards due to weather constraints.

**Source of evidence for this change:** Photographs (Annex 7)

**Output 3 Safe coexistence** of Andean bears, pumas and people in the project area is attained through a combination of reduced livestock losses, increased benefits from conservation and more wildlife-tolerant social norms

**Baseline condition:** The main economic activity in the area is extensive cattle ranching: animals graze in the mountains, drink water from rivers and springs, and do not have stables. Information on the amount of cattle in each community has been obtained from government agencies. This information will be used as an indicator of success of this intervention.

**Change recorded to date:** In 2021, an increase in human-bear conflict incidents have been recorded compared with previous years. A total of 21 cases of bear attacks were documented, compared with 12 during the previous year, and for the first time during these years, a corn field was raided by a bear. The team is analysing whether this unusual number of cases responds to (a) people being more open to reporting cases, (b) an increase in the bear population, resulting in greater competition for food, (c) effects of fires and low food availability in the forest.

The community of Hoyadas-Cercado recorded 9 incidents, San Isidro 7, and 5 calves were killed in Hoyadas-Mendez. We are analysing the data to ascertain whether the high number of incidents over the past year could be the result of an increase in reporting, as people begin to approach the team more freely and with greater trust, rather than a change in the actual frequency of livestock predation. Fireworks have been used to scare off bears by several cattle owners, usually with good results; however, on one occasion, the bear did not react to the fireworks, probably because the bear did not perceive them to be a threat. During the final months of the project, a bear was killed by a community member. The killing of the bear was not in response to

a conflict, but a case of hunting for bear parts (skin), which was commissioned and paid for by someone from outside of the community. Due to the protection level of the Andean bear, the case has been taken to court, and a verdict is currently awaited. Nevertheless, this incident was unexpected and a disappointment for the team; it served as a reminder of the complexities of human-wildlife coexistence: that progress as well as setbacks are part of the system, and that conservation and development require continual effort and dedication by all parties.

Results from our social research have shown that the project beneficiaries – the producers under the “Valle de Osos” brand, and the parabiologists - have been a key factor for increasing tolerance toward bears (particularly after so many bear attacks during the last year) within the communities. Although these attitudes have become more positive compared with baseline data, pumas are still considered a “pest” and people perceptions are still very negative in this regard.

**Source of evidence for this change:** Personal communications from community members to the principal researcher and field technician (Annex 7), photographs and data from calendars and social surveys.

**Output 4 Evidence base for bear and puma presence**, movement and habitat is generated through participatory monitoring, and the physical and spatiotemporal aspects of human-bear conflict dynamic are better understood.

**Baseline condition:** The presence of a bear population in the area was previously only supported through anecdotal information, without any scientific evidence to back up this claim. Prior to the project starting, the last verified record of a bear in the area was from 2010, when a bear was killed and the skin was photographed and sampled by PROMETA. However, communities had been speaking about the presence of bears, and blaming bears for losses.

**Change recorded to date:** We have 85 camera trap stations installed across the project area, with Andean bears have been photographed at 20 of them. To date, 25 individuals have been identified based on their facial marks, including at least five males, as well as juveniles and several cubs. Seasonal movements have been identified, with a peak of activity during the rainy season (October-April). Other important findings from our camera trapping efforts include: eight species of felids (the highest density of cat species anywhere in Bolivia), capybara, neotropical otter, Central American agouti, and confirmation of the Critically Endangered *Abrocoma boliviensis* (Bolivian chinchilla rat). We have recorded a total of 17 new distribution records of medium-large mammals.

**Source of evidence for this change:** Camera trap evidence (Annex 7), species list (Annex 9) and biodiversity survey report (Annex 10)

**Output 5 Policy and governance** the project catalyses effective collaboration among its partners, facilitating a co-owned effort between all stakeholders to implement Bolivia’s Andean bear action plan

**Baseline condition:** Initial meetings with government officials identified two main activities for the first year of the project: 1. Monitoring cattle-bear attacks through calendars distributed throughout the Andean bear’s range, and; 2. Assessment of capacities in the Boliviano-Tucumano ecoregion. Meetings were scheduled to take place approximately every three months.

**Change recorded to date:** During the first year of the project, meetings with government authorities were carried out, leading to the approval of the National Action Plan for the Andean bear, and to it being declared a natural heritage species at the regional level in Tarija. Meetings with government authorities led to the implementation of actions to monitor bear and puma-related related cattle mortalities, and a capacity assessment for the Boliviano-Tucumano ecoregion.

**Source of evidence for this change:** Spanish version of National Action Plan (Annex 11) and English summary (Annex 12)

### 3.2 Outcome

<b>Outcome</b>	The livelihoods of local communities and the conservation of Andean bears co-benefit from an integrated approach linking and improving livelihoods and coexistence with bears and pumas in the dry forests of the Pilaya watershed, Bolivia			
<b>Indicator</b>	<b>Baseline</b>	<b>Progress to date</b>	<b>Source of evidence</b>	<b>Comments (if necessary)</b>
0.1 Eight communities (up to 200 households) develop supplementary livelihoods to reduce poverty levels and increase wellbeing by end of yr 3	According to the municipality's indicator of unsatisfied basic needs, communities in the study area are considered poor.	One hundred and sixty-five households from seven communities have developed supplementary livelihood activities (beekeeping): San Isidro, Hoyadas-Mendez, Pajonalcito, San Lorencito, Romerillo (included with San Lorencito for logistical reasons), Hoyadas - Cercado and Quebrada de Cajas. Another economic alternative initially identified in the baseline study was lavender production, but the target group (women) have decided to develop native beekeeping instead. From the 42 women trained	Interviews, baseline assessment and theory of change maps.	Although the number of direct beneficiaries falls slightly below the project indicator, this total is increased substantially by our indirect beneficiaries: 224 relatives (from other households), or friends of direct beneficiaries from beekeeping, 165 indirect beneficiaries from cattle ranching activities, and 105 school children. These indirect beneficiaries have shown interest in participating in project activities in future, or have established apiaries under their own initiative, requesting our guideline only.

		in honeybee beekeeping, 10 are developing native beekeeping as well.		
0.2 Capacity, agency and confidence of at least 100 community members in Pilaya communities to adapt to socio-environmental change in their areas is improved by end of yr 3	Limited opportunities and training to improve their resilience to environmental change and little confidence to pursue ideas with minimal dependence on outside agencies	165 community members have attended the training courses and are capable of continuing beekeeping with minimal assistance. In addition, 34 private apiaries for domestic honeybees have been installed in all communities along with 13 hives for native <i>Melipona</i> bees.	Photos and records of workshops attendance. Photographs of new apiaries.	
0.3 Key beneficiary communities show positive changes in acceptance of bears, demonstrated by a 50% increase in tolerance by comparing baseline and final surveys by end of yr 3	Community members show low tolerance to presence of pumas	Only one incident of a bear having been killed has been recorded. This event was the result of the illegal trade in body parts, and not related to human-bear conflict. The use of deterrents (fireworks) has worked with bears in San Isidro, Hoyadas-Mendez and San Lorencito. However, the number of livestock killed by bears has increased, compared with than previous years. Results from the final assessment showed that bear tolerance had improved by 72% over baseline	Quantitative and qualitative social research data collected during the pilot study, at baseline, and completion of project.  Personal communications.	Despite the increase in bear tolerance and positive attitudes, surprisingly, the person who killed the bear was one of our beneficiaries, and a person with one of the most “positive” comments about bears.

		data, quantified by the number of positive answers about bears when respondents were asked about their reactions to bear attacks.		
0.4 Understanding of distribution and ecological needs of Andean bears and pumas in inter-Andean dry forest are much improved as a result of the data collected and analysed by the project, including previous years data collected	Only few historical records of bear presence, in the Inter-Andean dry forests have been recorded. Puma on the other hand, are seen as a threat to small livestock. There is very little scientific information on the distribution, and ecology of these species.	Knowledge of Andean bear distribution in the study area is improved. Seasonal movements also have been recorded, showing bear presence all year round, but with a notorious absence of females with cubs during June-July-August. Pumas on the other hand, have a permanent presence in the area, with attacks to livestock occurring all year round 85 stations have been deployed in 1100 km <sup>2</sup> of dry forest. A total of 370G of images have been obtained. 25 bear individuals have been identified, as well as 49 small, medium and large mammal species, 20 reptiles spp, 96 bird spp, and 53 plant species of importance for beekeeping have also been identified.	Photographs, identification of bear individuals, identification of pumas and other carnivores. Monitoring seasonal movements through camera-trap stations, as well as cattle.	The role of parabiologists has been crucial. During the COVID-19 pandemic they managed to keep equipment running, providing vital information about the status of our bear population, as well as new records of mammalian species, including the CR <i>Abrocoma boliviensis</i> . As seen in other areas, during the winter period (June-August) female with cubs move to areas with more food. This could be the reason why bears with cubs are absent in those months.



<p>0.5 Implementation of the national action plan for Andean bears is underway in the project area through a collaborative effort with government and communities, providing a model for other regions of Bolivia, and resulting in recognised legal protection for the bears and their habitat</p>	<p>There is no implementation of a national action plan, neither legal protection recognition of the bear and its habitat locally.</p>	<p>National action plan for the Andean bear approved and published.</p>	<p>Document included.</p>	
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### 3.3 Monitoring of assumptions

Indicators	Assumptions	Comments
<p>0.1 - 0.5</p>	<p>Communities are willing and able to participate in the project</p> <p>Government and communities' support for the project continues</p> <p>Communities are willing to work with project researchers to develop supplementary livelihoods</p> <p>Communities are willing and able to adapt to socio-environmental changes in their areas</p>	<p>All communities have been willing to engage and assist with project activities, except one, Pampa Grande. This community decided not to participate for reasons including not having enough time to attend workshops, and a preference for working on an individual basis, instead of developing a communal beekeeping initiative.</p> <p>Despite the challenges of COVID-19 lockdown and post-lockdown period, the local government has remained supportive. The new municipal government has agreed to support the initiative</p> <p>Yes</p> <p>Adaptation to the COVID-19 pandemic has shown this to be possible: communities have adapted to the situation, making use of communication tools (e.g.</p>

	<p>No unforeseen extreme events cause further decrease in perceptions about bears and pumas</p> <p>Enough data on bears and pumas will have been collected to be analysed in Y2</p> <p>Effective protection against hunting Andean bears in the project region (Dry forests) is enforced</p>	<p>WhatsApp) to maintain engagement and support. Therefore, we consider that communities are willing and able to adapt to changes, so long as they have the means to do so.</p> <p>Despite the increased number of cattle losses by bear, these attacks have not provoked any retaliatory persecution.</p> <p>Yes</p> <p>A bear was killed in year three as a result of an illegal bear part trade, and not as a human-bear conflict.</p>
1.1 - 1.5	<p>Communities are willing and able to engage in participatory theory of change planning</p> <p>Communities are willing and able to adopt alternative livelihoods</p> <p>Various means of verification (surveys, reports, observation, focus groups) allow for triangulation of information to provide robust M&amp;E</p> <p>No major social, economic, political or environmental disaster to significantly impede project progress</p> <p>Through the adoption of new livelihoods, human and economic wellbeing increases (measured via social surveys).</p>	<p>Seven communities have stayed with our initiative. Our target was eight, but we consider that with the time we have left we will not be able to commit to others who are interested in joining the initiative.</p> <p>All participating communities have installed their apiaries, including private apiaries. Diversification i.e. pollen collection, has started with a few members.</p> <p>Yes.</p> <p>Project activities have been delayed due to a number of challenges, with COVID-19 being the biggest impediment to progress.</p> <p>Baseline information regarding income has been collected and compared with the final evaluation.</p>
2.1 - 2.4	<p>Community members are interested in joining the project and the training offered, and</p>	<p>Interest has been shown, but fewer women have joined the group due to lack of confidence and economic dependency to</p>

	<p>work cooperatively with the project team</p> <p>Community members attend consultations and share openly their desires and aspirations</p> <p>Community members see value and interest in attending training workshops</p>	<p>their husbands. However, the team along with several women of our communities have found a strong interest in carrying out native beekeeping, which is easier in terms of equipment, and commands a higher market value. We have implemented thirteen native beehives in three communities. With 27 native beehives implemented in the following year.</p> <p>Yes</p> <p>Yes</p>
3.1 - 3.5	<p>Communities are willing and able to engage in project activities</p> <p>Government partner agencies remain supportive of project activities</p> <p>Community members are willing to attend and participate in human behaviour change activities</p> <p>Social marketing strategy brings about human behaviour change and raises public awareness that bears are not a threat to their livelihoods</p> <p>Valuing of and tolerance towards bears and pumas increases due to social marketing strategies and doesn't decrease</p>	<p>Yes</p> <p>Priorities still focus on COVID-19, concentrating less on biodiversity programs.</p> <p>Yes</p> <p>Due to COVID-19 restrictions (including 5 months of lockdown) we have not be able to accomplish our strategy. School children (our target) were taught remotely and vaccinations started in during the last month of this project. However, we have supported all six schools with materials and information about biodiversity.</p> <p>Yes, but mostly the provision of economic alternatives and the support of the project's veterinary.</p>
4.1 - 4.4	<p>No more than 10% camera failure during the project</p>	<p>21% of our cameras have failures. Failure was primarily caused by old cameras (second hand) and brand-related. We found out that Cuddeback did not perform well and were the</p>

	<p>Camera trap image quality generates sufficient database of individuals for recognition of facial markings</p> <p>Camera traps do not incur theft and vandalism.</p> <p>Communities, and community members allow camera traps to be set up on their land and support the project.</p> <p>Interest in, and uptake of the parabiologist initiative and training opportunities (as has been done elsewhere in Bolivia) by community members</p>	<p>first ones to suffer mechanical problems. Bushnell cameras, on the other hand, had some problems, but these could be fixed by our local technicians.</p> <p>Yes. A total of 370G of biodiversity data has been collected.</p> <p>Four cameras were stolen during the project.</p> <p>Yes, and in more than one situation, our field assistants request permission on behalf of the project.</p> <p>Yes, all field assistants were interested in training and exchange of experiences.</p>
5.1 - 5.3	<p>No changes in government authorities or delays in meetings to confirm the actions this project will take in order to implement the Action Plan</p> <p>All multi-stakeholders contribute in the process, have buy-in and commitment to the Action Plan</p> <p>Government authorities continue to support the project and the Andean bear action plan</p> <p>Bolivian protected areas maintain protected status and have government support and enforcement</p>	<p>Environment authorities at the national level have changed twice, which has affected our meetings plans.</p> <p>So far the Biodiversity Unit (ministry of environment), local and international organisations (e.g. WCS, IUCN SCC) and private conservation initiatives have shown commitment to the action plan.</p> <p>Yes, local authorities.</p> <p>Yes</p>

### 3.4 Impact: achievement of positive impact on biodiversity and poverty alleviation

Our intended impact was defined as: “Linking poverty reduction and biodiversity conservation improves the wellbeing of communities and the population of threatened Andean bears in a key region of its global range.”

The communities involved in this project are some of the poorest and most vulnerable communities in Bolivia. In addition, the region is an area of strong migration of young people to Argentina, leaving elders and women behind. Thus, besides addressing multidimensional

poverty and biodiversity conservation, this project has had to face communities a high proportion of senior citizens and women.

In agreement with the communities, the project established beekeeping as an economic alternative to livestock. Although beekeeping was a new venture for these communities, the group of “pioneers” found that honey production can provide a year-round opportunity for income generation, a high-quality food source (honey, propolis, royal jelly, etc.), can support healthy families, and requires little physical effort when compared with cattle ranching.

Over the project as a whole, 2,750 kg of honey has been produced, totalling £ in revenue. The revenues received have allowed further investment in apiaries, and for the purchase of basic needs, such as food and clothes. This economic contribution has been especially valuable after enduring the COVID-19 lockdown, along with increased honey consumption within the communities and beyond.

Regarding the conservation of the Andean bear and its habitat, the training provided to community parabiologists was an asset. Not only has this helped to improve local peoples’ understanding of the ecological value of the surrounding landscape, but it has also provided a direct link between the communities and the process of generating and disseminating new information. This has further reinforced how the parabiologists value the knowledge and skills that they have received throughout the project. Videos from camera traps have provided a direct insight into the presence of the species in their territory, as well as the opportunity to learn about other species, many of which they were unaware of. When community members are consulted regarding Andean bears, they comment that it must be cared for and protected, which was something they did not previously consider, as they perceived the species to be a threat. We have found that there is indeed a commitment from the communities to care for the species, which is evidenced by the positive comments and attitudes recorded during the latest evaluation, and reports including in the M&E.

During the last months of this project, the parabiologists recorded the first footprint of a jaguar in the area. With the presence of jaguar confirmed, this community’s land, despite not having any kind of formal protected area status, has the highest density of felid species in Bolivia, and is home to South America’s top three carnivores. Whether these are early signs of a natural rewilding in the region is too early to determine, but it flags the need to prevent future human-wildlife conflicts, and to enable appreciation and benefit sharing in carnivore conservation in Bolivia.

It is crucial to address the change in people’s attitudes capacity and willingness to coexist with bears and biodiversity in general. Community members understand the relationship between conservation and the benefits that they have received: more forest to protect bears means more flowers and trees for bees, and therefore, more honey. Finally, it is important to mention the change in the beneficiaries’ attitudes towards new challenges, increased self-esteem and confidence, and hope for a better future recorded during the final assessment of the project.

## **4 Contribution to Darwin Initiative Programme Objectives**

### **4.1 Contribution to Global Goals for Sustainable Development (SDGs)**

This project has directly contributed to Bolivia’s commitment to the Global Goals for Sustainable Development (SDG) by undertaking high quality scientific research for the conservation of large carnivores (including the Andean bear), Critically Endangered species such as the Bolivian chinchilla rat and the inter-Andean dry forest, a Critically Endangered ecosystem (SDG 15). Pressure on dry forest ecosystems has been reduced through the improvement of livestock management, and conservation agreements with communities involved in beekeeping (SDG1,

SDG2). Four out of the six in-country project team members have been women, creating opportunities for capacity and leadership opportunities for women (SDG5) through postgraduate opportunities (PhD) and their leadership of different parts of the project, including capacity building and improving practical skills (beekeeping) amongst 42 female project beneficiaries. Finally, this project has strengthened capacity for climate change adaptation and impact reduction through the protection of biodiversity, restoring the forest and its ecosystem services, whilst producing nature-positive economic alternatives (SDG 6 SDG 13).

#### **4.2 Project support to the Conventions or Treaties (e.g. CBD, Nagoya Protocol, ITPGRFA, CITES, Ramsar, CMS, UNFCCC)**

This project directly contributes to Bolivia's commitment to the Convention on Biological Diversity (CBD) and to the Aichi targets. To date, the project has been addressing Articles 7 and 12, by carrying out high quality scientific research for the conservation of the Andean bear through camera-trap monitoring. The implementation of the National Conservation Action Plan is currently focused on carrying out research in the Boliviano-Tucumano ecoregion, and on monitoring cattle kills caused by bears through calendars distributed to national parks and communities in the area (Strategic goal C, Target 12). The implementation of beekeeping initiatives in four communities has contributed to reducing pressures on dry forest ecosystems by improving management, and establishing conservation agreements with communities (Strategic goal B, Target 7).

Research is carried out by experienced Bolivian and British scientists, who have also maintained a training program for community members, and promoted and encouraged research for the conservation of the Andean bear and its ecosystem (Article 12). Training programs for community members and park rangers have been carried out as part of this project and the National Conservation Action Plan. This initiative has raised awareness of the value of the bear and its ecosystem amongst people from the communities and beyond through social marketing, social media, and outreach activities (Strategic goal A, Target 1).

#### **4.3 Project support to poverty alleviation**

The project targets communities with poverty levels above 90% (measured by a lack of necessities) within the San Lorenzo Municipality. Like most human-wildlife conflicts, human-bear conflict is only partly about bears or pumas damaging resources; it is the noticeable tip of an iceberg of many-layered underlying issues of social justice, vulnerability to a changing and challenging world, and making a living in multidimensional poverty.

Through our project, we were able to identify livestock as an unprofitable activity, requiring twenty times the amount of land, water, and time than is needed in the lowlands. It is also the main cause of intra-family disputes, and a driver of habitat loss and fragmentation. We have directly supported 165 households, through an integrated approach that addresses poverty, wellbeing, livestock predation, land-use, and acceptance of bears in the study area, and indirectly benefitted 494 people who have received either training, guidance, or additional information regarding project activities. During this project, 2,750 kgs of honey has been produced, totalling £ in revenue. The revenues received have allowed for further investment in apiaries, and for the purchase of basic needs, such as food and clothes. This economic contribution has been especially valuable after enduring the COVID-19 lockdown, along with an increased honey consumption within the communities and beyond.

In terms of capacity building, all beneficiaries, in particular 42 women, are more confident, and capable of establishing their own apiaries independently, as well as supporting others in setting up theirs. All parabiologists have received a complete training in monitoring bears and other species, and their knowledge about the different species and their role in the ecosystem has increased.

#### 4.4 Gender equality

The direct impact of this project to the small group of women involved is through the training in beekeeping. All 42 female beneficiaries have received basic training in beekeeping, and either have their own apiaries, or are working alongside their families in beekeeping. Some are also using the honey, propolis and beeswax to cure their cattle. The aging population, social background, and economic dependency on their husbands, has resulted in this low number of women taking part in this project, compared with 123 male participants

#### 4.5 Programme indicators

- **Did the project lead to greater representation of local poor people in management structures of biodiversity?**

Not in the short term. However, the next phase of our work will be focussed on the creation of Productive, Protected Landscapes – a participatory territorial management framework, which will facilitate community land use planning, placing the creation and management of community conservation areas within local peoples' hands. The work undertaken over the last three years have been crucial in establishing the foundations to make this possible. In terms of relevant outcomes within the Darwin-funded period, the project has provided training to community members as parabiologists, equipping them with the skills to play an active role in wildlife monitoring through the use of camera traps.

- **Were any management plans for biodiversity developed and were these formally accepted?**
- Yes, the Andean bear Conservation Action Plan was formally accepted by the Bolivian government during this project. Our project has implemented the following action plan priorities: Research in the southern part of the bear's distribution, human-bear conflict mitigation, and conservation initiatives in the least known and protected ecosystems (inter-andean dry forests and boliviano-tucumano forest).
- **Were they participatory in nature or were they 'top-down'? How well represented are the local poor including women, in any proposed management structures?**

A two-day workshop was held with participation of approximately 40 people. From scientists, government agencies DGB-AP, local representatives, departmental governments, protected areas and regional authorities. The discussion and execution of the Action Plan was carried out by experts, authorities and technical personnel from the Ministry of Environment and Water (MMAYA), along with technicians and professionals who work with the species, as well as park rangers and directors of protected areas. The representation of local people and women in the management structures of the Action Plan was not included.

- **How did the project positively influence household (HH) income and how many HHs saw an increase?**

All 165 households involved in this project have benefitted from increased income from honey revenues, or by reducing their dependency on sugar. By year two, household income had increased by approximately £/year. In year three the average was £ over baseline per beneficiary; despite being lower than in year two, individual gains from private honey production was much higher. For instance, Mrs. Alcira Rios, from Hoyadas-Mendez harvested 16kg of honey, with a value of £, another example is Mr. Pedro Heredia and his family from Romerillo harvested 50 kg of honey, worth £.

- **How much did their HH income increase (e.g. x% above baseline, x% above national average)? How was this measured?**

The baseline data showed an average monthly household income of Bs (£), compared with the national average of £ per month. With the income from honey revenue, all participating households saw an increase of £/month from the community apiaries. In the case of families that have invested in private beehives, monthly revenue increased by £/month, 29.4% over baseline. Baselines figures are informed by data from the National Statistics Institute and information gathered during our meetings with the communities.

#### **4.6 Transfer of knowledge**

The project supported a Bolivian female PhD candidate at the Norwegian University, with her thesis focused on Andean bear occupancy modelling, and a Bolivian female Diploma student at the University of San Andres, La Paz, Bolivia. Her thesis was an assessment of the impact of varroa mite on bees. In addition, two undergraduate students, both Bolivians and females, were trained in identifying wildlife species from camera traps, and one undergraduate Bolivian female student was trained in modelling with her thesis focused on occupancy of *Leopardus geoffroyi* in the inter-Andean dry forest of Tarija. Finally, ten Bolivian parabiologists, 9 men and 1 woman, received long-term training not leading to a formal qualification.

#### **4.7 Capacity building**

Project manager, Dr Ximena Velez-Liendo has been appointed Co-Chair of the Andean Bear Expert Team, within the IUCN's SSC Bear Specialist Group as well as being invited to participate in Andean bear and carnivore expert panels.

### **5 Sustainability and Legacy**

Our strategy for achieving a stable and sustainable end point was to create positive changes in habits and behaviour through our capacity building activities. We have achieved these goals, with the outcome evidenced by only one bear having been killed in these three years, and five communal and 34 private apiaries having been established. The high number of private apiaries ensures that community members will no longer rely entirely on external financial support. A viable market for their products is crucial for long-term success, for which the project partners IICA have been supporting the marketing and commercialisation of the honey. The "Valle de Osos" brand was created to provide a quality assurance and conservation guarantee that adds value for consumers. Further to this, an alliance with a local NGO, RENNAC (focused on agrobiodiversity), is securing the market for honey produced by the communities. In November 2021 we won a Whitley Continuation Fund, worth £ over two years, enabling us to continue with the certification of honey and other nature-positive products from our communities, in alliance with local, national and international NGO's. The Darwin support, and our learning from its project management processes, was instrumental in helping us to develop a high-quality application, this securing this new funding to build on the work we have done so far.

### **6 Lessons learned**

Our M&E evaluation discussed the following positive aspects of the project:

- The following have been decisive for the success of this project: establishing an economic alternative with good financial prospects, and with reduced physical and time demands, and; setting an affordable economic counterpart for the establishment of the apiaries.



- Fulfilling our commitments with the communities in terms of workshops, equipment, and training; supporting the establishment of private apiaries, and; the provision of support during the COVID-19 lockdown and post-lockdown period. These actions have built trust with project beneficiaries, and have been important for transparency within the project's management.
- Working closely with teachers (pre-COVID) to integrate the Andean bear and other species into the school syllabus, with the goal of generating changes in attitude amongst learners and potential secondary impacts amongst their families.
- Working with PROMETA has been an asset: their status as Bolivia's second most important national NGO was key to achieving influence within departmental and national authorities for the establishment of the Andean bear Conservation Action Plan.
- Training community members in wildlife monitoring was vital for the success of the bear study, in particular during the COVID lockdown. Furthermore, the parabiologists have become a reference point for information about the project in the area, strengthening trust and changing attitudes amongst community members.

The M&E evaluation highlighted the following as areas for improvement:

- Not having appreciated sooner that lavender production was incompatible with the women's workload. Improving existing livelihood activities would have been a more constructive approach, as we have seen with native beekeeping.
- PROMETA's bureaucracy and slow administrative procedures. As recommended in the M&E report, moving forward we will be requesting a monthly financial update, which will allow us to forecast budget expenditures, anticipate potential delays and take action to avoid these, where possible.
- Implementation of more comprehensive monthly meetings, and more rigorous monitoring of project progress must be included in the next stages of this initiative.

## 6.1 Monitoring and evaluation

The project uses the log frame to monitor progress. In addition, monthly reports and virtual meetings between Chester Zoo and the project leader are carried out. The team has collected baseline information, interview surveys, stakeholder mapping and situation analyses. All social data will be gender-disaggregated to assess, consider and adapt how we may achieve gender equality. Although some activities have started earlier than expected (i.e. beekeeping), data have been collected at the start of these activities by our socio-economist consultant in order to assess the impact of these activities.

No change to the M&E plan was needed. An M&E consultant was hired, as proposed during the Y2 annual report. M&E for the final stage and overall assessment of the project was carried out as planned. The M&E consultant has provided the following feedback, which will be included in the next staged of this project:

- a. To improve administrative management, periodic meetings based on progress reports are recommended.
- b. A system for monitoring and evaluation is required with easy-to-use instruments that allow for ongoing planning, adaptive management, and annual evaluation.
- c. The beekeeping and livestock studies that have been undertaken provide information that will support improvements to productive practices, e.g. for increasing yields, comparing production costs, and identifying potential markets
- d. The study on beekeeping allows to plan for the next stage, with steps to add value and improve income from other products: pollen, royal jelly, virgin beeswax, among others.

- e. For the benefit of the project's final evaluation, the following recommendations from the M&E are given as steps that should be taken when moving the project forward to its next phase:

SCOPE	ACTIONS
Project team	<ul style="list-style-type: none"> <li>• Strengthen administrative capacity.</li> <li>• Recruit a professional in honey marketing and trade. The current team is too small and lacks specialised skills.</li> </ul>
Beneficiaries	<ul style="list-style-type: none"> <li>• Continue supporting parabiologists with training and capacity building.</li> <li>• Strengthen the community by supporting leaders who can engage with local authorities.</li> <li>• Provide training and technical assistance for ongoing agricultural activities.</li> <li>• Strengthen community governance: although the focus of the project is the stakeholder/ beneficiary group, it is important that the message reaches all community members.</li> <li>• Generate strategies to reduce livestock herds without causing economic losses. Current approaches to cattle management in all communities are economically, socially and environmentally inefficient.</li> <li>• Promote community response strategies for bear encounters, in order to avoid future attacks.</li> <li>• Encourage the cultivation of floral species to guarantee a constant supply of food for bees.</li> </ul>
Biodiversity monitoring study	<ul style="list-style-type: none"> <li>• There is an important database of species recorded from in the project area. It is important to continue with the monitoring, in order to identify changes in behaviour patterns or presence of new species.</li> <li>• Generate information on the carrying capacity of carnivores in the project area, and determine if this could increase attacks on livestock in the future.</li> </ul>
Conservation strategies	<ul style="list-style-type: none"> <li>• Develop a strategy to support habitat conservation through the establishment of a municipal protected area.</li> <li>• The declaration of the Andean bear as a natural heritage species for the Department of Tarija is an opportunity to incorporate actions relating to bear conservation in regional development plans, as well as for strengthening economic activities linked to communities in the project area.</li> <li>• Dissemination of project results and the management and conservation of forests.</li> </ul>
Systematization	<ul style="list-style-type: none"> <li>• Promote knowledge of the project's ongoing management and implementation, through a publication about the coexistence experience.</li> </ul>
Logical framework	<ul style="list-style-type: none"> <li>• Requires a periodic monitoring process with the participation of the entire team.</li> <li>• Incorporate indicators to measure how the project contributes to community governance.</li> <li>• Incorporate assumptions related to climate change, considering the vulnerability of the inter-Andean dry forest, and the impacts that climate change may have on livestock activities in the area.</li> <li>• Incorporate gender-related targets in the indicators in order to highlight the role of women in conservation and sustainable development.</li> </ul>

Project sustainability	<ul style="list-style-type: none"> <li>• Inclusion of local, national and sub-national entities, to guarantee support for the communities, and develop conservation agreements to support a holistic community development.</li> </ul>
Monitoring and follow-up	<ul style="list-style-type: none"> <li>• Establish clear indicators and monthly/quarterly team meetings. Identifying milestones will also be key for ongoing project management.</li> <li>• This same procedure should be applied for reporting purposes of each member of the team.</li> </ul>

## 6.2 Actions taken in response to annual report reviews

Feedback from annual report reviews have been discussed with the project partners and addressed accordingly, including all evidence requested. Photographic evidence is provided with this report as evidence of progress toward project outputs, where relevant.

The following comments from the Y3 report review are addressed below:

- (a) “It would be helpful to clarify Indicator 0.1: the indicator refers to 100 households but the progress report states 100 participants. These are different units and should be clarified in the next report.”  
Our indicator referred to households, not participants. This was a mistake in our previous report, which we have rectified in this final report.
- (b) “It is not clear how the team is measuring Indicators 1.4 (30% of households have taken up alternative sustainable livelihood by end of Y2) and Indicator 1.5 (alternative livelihoods has increased by 15% compared to baseline by end of Year 3).”  
In the previous report, results for these indicators were provided in real figures (number of participating households and income from honey harvests, respectively). In this report we have provided the same measures, and also their percentage values in Section 3.
- (c) “The report states that the lavender project initiated in 2020 has not been successful, and that the participant women have decided to focus on beekeeping with native species. But the report gives no additional details about the exact reasons of the change. It would be great to give some more details in the next report as “lessons learnt”  
Reasons for shifting from lavender production to native bees are discussed in Sections 3 and 6, above.
- (d) “The Conservation action plan has been finalised and published and added to the report as evidence. It is not clear for the reviewer what will now be the next step for the action plan implementation as the plan gives a time frame from 2020 to 2025, but the conservation plan does not include a detailed annual planning or timeline.”  
The action plan document follows the format approved by the Bolivian government, which does not include annual planning – any changes in this format depend on a decision from the relevant authority (Ministry of the Environment), and we have made them aware that this is a shortcoming of the format. Regarding the targets of the plan in which we play an active role, we do undertake our own annual planning to guide our delivery of the expected outcomes.
- (e) “The reviewer could not find in the annex the mentioned lists of species, which probably are also included in the biodiversity study. It would be great to add the full biodiversity study to the next report.”  
We have included the list in this report in the annex.

## 7 Darwin identity

The project has included Darwin branding on staff uniforms (shirts and hats) and banners displayed at all training events, PowerPoint presentations, camera trap photographs, and

presentations, include those delivered to the British Embassy in Bolivia. The Darwin Initiative logo has been displayed in all presentations and printed documents provided during our training events. Tweets were broadcast by Ximena Velez-Liendo, Alexandra Zimmermann and Chester Zoo using the Darwin Initiative hash tag. Field updates (primarily to highlight bear presence) were broadcast via Facebook and Instagram. The project is recognized as a “Darwin” project with clear identity both in the field and among conservation organizations.

## **8 Impact of COVID-19 on project delivery**

On March 17<sup>th</sup> 2020 following Bolivia’s first two confirmed cases of COVID-19, the Bolivian government declared a public health emergency with a series of quarantine measures including: closure of all borders, suspension of international flights, and suspension of all interdepartmental and interprovincial land transport. In addition, all public events were cancelled, and schools were closed indefinitely.

For almost five months, a nationwide nightly curfew was declared, with additional measures at the local level (municipalities), depending on their particular situations. In our region, travel was prohibited to communities where the majority of the population are in the >50 year age range, and our local NGO implemented additional measures to protect their personnel and the communities. This kept the cases very low, with no casualties. After restrictions were lifted, and vaccination started for adults, a large number of community members rejected the vaccination because of misinformation they were receiving via social media. Thus, our COVID-19 safety measures were still high, particularly when attending workshops or training events, and we maintained the use of WhatsApp as our main communication tool. All of the above caused considerable delays to our planned activities, particularly those relating to outputs 1, 2 and 3.

Our response to COVID–19 was to use technologies, such as WhatsApp to support community members in the ongoing management of the apiaries, and to coordinate the monitoring and maintenance of camera traps. Our efforts to maintain contact with our communities strengthened their trust in the project. It was a difficult period for everyone and by maintaining regular contact, we were able to demonstrate our desire to support the communities.

Evidence suggests that the threat of ongoing and escalating anthropogenic disturbance of wild areas and exploitation of nature is likely to increase the risk of potential future pandemics being caused by novel zoonotic diseases being transmitted from wild animals to humans. Our hope is that this realisation will provide further relevance to the protection the inter-Andean dry forest at a landscape scale, for the promotion of coexistence with Andean bears, as a flagship species for this ecosystem, and for supporting rural communities in developing livelihoods that are nature-positive and truly sustainable.

## 9 Finance and administration

### 9.1 Project expenditure\*

Project spend (indicative) since last annual report	2020/21 Grant (£)	2020/21 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
<b>TOTAL</b>				

\*NB Expenditure recorded here is for Y3 (April 2020 - March 2021) plus the 6-month extension (April – September 2021) that was granted due to delays caused by COVID 19 and the ensuing lockdown in Bolivia.

Staff employed (Name and position)	Cost (£)
X. Velez-Liendo – Project Manager	
C.Oller – Protected Areas expert and	
Tania Urzagaste - administration	
C.J.Quiroga/Kenny Ure – biodiversity monitor	
Marudshka Barriento – IICA Marketing study	
P.Sanchez – Socio-economist	
Felipe Areco – Beekeeper	
10 parabiologists	
Veterinary (Diogo Verisimo)	
<b>TOTAL</b>	

Capital items – description	Capital items – cost (£)
40 wooden boxes for meliponas 4 honey extractors. 5 stainless steel decanters (100 kg) 5 stainless steel pails 5 honeybee colonies, 12 buckets Bee food boxes, 1000 large glass jars, 500 medium, 300 droppers, 5000 labes 10 beehives (boxes included) 5 complete sets to honey harvesting sets	
Batteries for camera traps	
<b>TOTAL</b>	

Other items – description	Other items – cost (£)
Translations	
Publications	
M&E	
<b>TOTAL</b>	

## 9.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
Chester Zoo matched funds	
<b>TOTAL</b>	

Source of funding for additional work after project lifetime	Total (£)
Whitley Fund For Nature	
Geoffroyi Cat Working Group	
<b>TOTAL</b>	

## 9.3 Value for Money

All capital items regarded to beekeeping have been selected based on their quality. It was important for the long-term use and benefit for the beneficiaries. Camera traps were selected based on their price and performance in the dry forest. We tested cheap and expensive camera traps: the cheap one performed poorly, whereas the most expensive camera trap was stolen from one of our sites. Therefore, we decided that the best balance between value for money and performance (considering the extreme hot and cold temperatures) was from Bushnell camera traps.

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

I agree for the Darwin Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here)

This project's most significant impact has been the change in beneficiaries' attitudes towards new challenges, and their capacity to adapt to unforeseen situations (including C-19). We have noted an increase in self-esteem, confidence, and hope for a better future amongst project participants, along with the incorporation of the Andean bear as part of the community, and not as an outsider. In addition, the project's contribution to our knowledge of the inter-Andean dry forest has no precedent: we have confirmed that this biome is home to a recovering Andean bear population, the presence of the Andean region's top three predators (bears, pumas and jaguars), and the highest diversity of felid species in Bolivia. We have discovered what may be the southernmost population of the CR *Abrocoma boliviensis*, and recorded new global distribution records for 17 medium-large mammal species.

Please see images attached with this report:

- Section 10 Image 1: Andean Bear *Tremarctos ornatus*  
Caption: San Lorencito. From 2018 to 2021, this individual has been one of our male residents. SL1M.
- Section 10 Image 2: San Lorencito community  
Caption: Beneficiaries from San Lorencito during our last meeting of the project

## Annex 1 Project’s original (or most recently approved) logframe, including indicators, means of verification and assumptions.

Note: Insert your full logframe. If your logframe was changed since your Stage 2 application and was approved by a Change Request the newest approved version should be inserted here, otherwise insert the Stage 2 logframe.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p><b>Impact:</b></p> <p>Linking poverty reduction and biodiversity conservation improves the wellbeing of communities and the population of threatened Andean bears in a key region of its global range.</p>			
<p><b>Outcome:</b></p> <p>The livelihoods of local communities and the conservation of Andean bears co-benefit from an integrated approach linking and improving livelihoods and co-existence with bears and pumas in the dry forests of the Pilaya watershed, Bolivia.</p>	<p>0.1 Eight communities (up to 200 households) develop supplementary livelihoods to reduce levels of poverty and increase wellbeing by end of yr 3</p> <p>0.2 Capacity, agency and confidence of at least 100 community members in Pilaya communities to adapt to socio-environmental change in their areas is improved by end of yr 3</p> <p>0.3 Key beneficiary communities show positive changes in acceptance of bears, demonstrated by a 50% increase in tolerance by comparing baseline and final surveys by end of yr 3</p> <p>0.4 Understanding of distribution and ecological needs of Andean bears and pumas in inter-Andean dry forest are much improved as a result of the data</p>	<p>0.1, 0.2, 0.3 Quantitative and qualitative social research data collected during the pilot study and at baseline and completion of project demonstrate changes as a result of the project’s work, indicating progress towards project aim and impact</p> <p>0.4 Ecological and biological data collected and analysed from 2016-2021 provide information for understanding and monitoring the distribution, movements, and ecological needs of Andean bears and pumas in inter-Andean dry forest</p> <p>0.5 Multi-stakeholder consultations and progress reports, documentation and press coverage, show collaboration in implementation of the Andean bear action plan</p>	<p>Communities are willing and able to participate in the project</p> <p>Government and communities support for the project continues</p> <p>Communities are willing to work with project researchers to develop supplementary livelihoods</p> <p>Communities are willing and able to adapt to socio environmental changes in their areas</p> <p>No unforeseen extreme events cause further decrease in perceptions about bears and pumas</p> <p>Enough data on bears and pumas have been collected to be analysed yr 1</p> <p>Effective protection against hunting Andean bears in the project region (Dry forests) is enforced</p>

	<p>collected and analysed by the project, including previous years data collected</p> <p>0.5 Implementation of the national action plan for Andean bears is underway in the project areas through a collaborative effort with government and communities, providing a model for other regions of Bolivia, resulting in recognised legal protection for the bears and their habitat</p>		
<p><b>Outputs:</b></p> <p>1. <u>Livelihoods and wellbeing</u> are improved among the project communities as a result of villagers adopting improved livestock management practices and developing supplementary livelihoods.</p>	<p>1.1 Process of participatory theory of change planning with project community members and project team completed by end yr 1</p> <p>1.2 Alternative livelihoods opportunities explored with 4 communities (approx. 100 households) by end yr 1, with market analysis conducted and report produced by project team/advisors</p> <p>1.3 Wellbeing and livelihoods (current and aspirations) discussed and defined with and by 4 communities by end yr 1 using focus groups and one to one interviews</p> <p>1.4 30% of households in the 4 communities have taken up an alternative sustainable livelihood by end of yr 2</p> <p>1.5 Participating households' ability to generate income from alternative</p>	<p>1.1 Interim report on outcomes from participatory livelihoods exploration, and local/subsistence market analysis with clear theory of change pathways formulated</p> <p>1.2 Baseline and monitoring wellbeing and social data collected via a combination of methods, including focus groups, social surveys, context and social inclusion analyses and national indices</p> <p>1.3 Interview surveys on household economics, knowledge, attitude and behaviour (quantitative) compared to national levels</p> <p>1.4 Participant/staff observation and focus groups (by project staff and at project end by independent evaluator) on alternative sustainable livelihood take up (qualitative) resulting in report in yr 3</p>	<p>Communities are willing and able to engage in participatory theory of change planning</p> <p>Communities are willing and able to adopt alternative livelihoods</p> <p>Various means of verification (surveys, reports, observation, focus groups) allow for triangulation of information to provide robust M&amp;E</p> <p>No major social, economic, political or environmental disaster to significantly impede project progress</p> <p>Through the adoption of new livelihoods human and economic wellbeing increase (measured via social surveys)</p>



	livelihoods has increased by 15% compared to baseline, by end yr 3	1.5 Baseline social survey and final survey comparisons	
2. <u>Capacity building and training</u> helps communities improve resilience to environmental changes and foster their ability to develop sustainable livelihoods independently.	<p>2.1 Community consultations on areas for training, based on initial feedback from above (1.1-1.3) completed in early yr 2.</p> <p>2.2 Training and mentoring events for alternative livelihoods carried out in 4 communities, reaching out to 100 households, by end of year 2</p> <p>2.3 50% of project households have at least one member who has attended the workshop events by end yr 2</p> <p>2.4 Feedback and learning review carried out with communities by yr 3 via stakeholder meetings in project areas</p>	<p>2.1 Interim report on outcomes from consultation on training needs, and schedule of training events</p> <p>2.2 Attendance records, feedback surveys/discussions</p> <p>2.3 Notes on observations about capacity building and training carried out and attendance records taken</p> <p>2.4 Stakeholder meeting notes recorded and reported</p>	<p>Community members are interested in joining the project and the training offered, and work cooperatively with the project team</p> <p>Community members attend consultations and share openly their desires and aspirations</p> <p>Community members see value and interest in attending training workshops</p>
3. <u>Safe coexistence</u> of Andean bears, pumas and people in the project area is attained through a combination of reduced livestock losses, increased benefits from conservation and more wildlife-tolerant social norms.	<p>3.1 Baseline study using social surveys and focus group discussions on perceptions, values and social norms carried out in the 8 communities by the project's experts by yr 1</p> <p>3.2 Improved livestock protection practices/husbandry identified and implemented among households by yr 2 by providing training and assistance with predator-proof enclosures, water pits and best practice livestock management</p>	<p>3.1 Social data baseline and monitoring data collected via questionnaire surveys, focus groups, and participant observation</p> <p>3.2 Observed and documented modifications in livestock keeping to reduce predation by bears or pumas</p> <p>3.3 Record-keeping of livestock attacks by bears, and any other causes of mortality</p> <p>3.4 &amp; 3.5 Qualitative data show changes in perceptions, values and social norms vis-a-vis bears and pumas</p>	<p>Communities are willing and able to engage in project activities</p> <p>Government partner agencies remain supportive of project activities</p> <p>Community members are willing to attend and participate in human behaviour changing activities</p> <p>Social marketing strategy brings about human behaviour change and raises public awareness that bears are not a threat to their livelihoods</p>

	<p>3.3 80% of households in 4 communities report reduced predation on their livestock by yr 3</p> <p>3.4 Design of social marketing and/or behaviour change strategy to increase valuing and tolerance of bears in the project communities, end of yr 1</p> <p>3.5 Implementation of social marketing strategy in yr 2 and measurable changes in behaviour changes observed, by yr 3</p>	among community members, as initial indicators of acceptance and co-existence	Valuing of and tolerance towards bears and pumas increases due to social marketing strategies and doesn't decrease
4. <u>Evidence base</u> for bear and puma presence, movements, and habitat is generated, through participatory monitoring, and the physical and spatiotemporal aspects of human-bear conflict dynamic are better understood.	<p>4.1 Bear and puma monitoring via camera trapping and observation by team conducted through out project life cycle</p> <p>4.2 At least eight community members, one in each community, recruited and trained as parabiologists to assist with bear research, in yr 1</p> <p>4.3 Community parabiologists and project team share research findings together, facilitating positive interest and engagement also with peers, children and authorities, yr 2-3</p> <p>4.4 Camera data allow identification of individuals based on facial marks and other wildlife; analysis completed by yr 3</p>	<p>4.1 Camera trapping study protocol, methods documented and data collected</p> <p>4.2 &amp; 4.3 Documentation of parabiologist training and activities, plus certification of achievement awards given to parabiologists</p> <p>4.4 Camera trap data collected and catalogued into shareable dataset/base</p> <p>4.4 Preliminary findings written into project yearly report, in addition to a report for government authorities</p>	<p>No more than 10% camera failure during the project</p> <p>Camera trap image quality generates sufficient database of individuals for recognition of facial markings</p> <p>Camera traps do not incur theft and vandalism</p> <p>Communities, and community members allow camera traps to be set up on their land and support the project</p> <p>Interest in and uptake of parabiologist initiative and training opportunities (as has been done elsewhere in Bolivia) by community members</p>
5. <u>Policy and governance</u> : the project catalyses effective collaboration among its partners, facilitating a co-owned effort between all stakeholders to	5.1 Joint workshop with government, project partners, and community representatives to plan out	5.1 Workshop reports created with next step action points identified and appropriate level of local and national press publications	No changes in government authorities or delays in meetings to confirm the actions this project will take in order to implement the Action Plan

<p>implement Bolivia's Andean bear action plan.</p>	<p>implementation of the Andean bear action plan in the project region, yr 1</p> <p>5.2 Working group to collaborate on oversight of the above established, and regularly meet to review progress yr 2 and 3</p> <p>5.3 Project senior staff have regular bi-annual meetings with CBD focal point and government authorities to review Andean bear protection and human wildlife conflict and work towards ensuring the protection of protected areas</p>	<p>5.2 Documentation/notes from follow-up meetings and activities of working group and government focal points.</p> <p>5.3 Meeting minutes and progress reports produced</p>	<p>All multi-stakeholders contribute in the process, have buy-in and commitment to the Action Plan</p> <p>Government authorities continue to support the project and the Andean bear action plan</p> <p>Bolivian protected areas maintain protected status and have government support and enforcement</p>
<p><b>Activities</b> (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)</p> <p>1.1. Participatory theory of change plans report completed with input from community members;</p> <p>1.2. Baseline qualitative data collection completed (focus groups, semi-structured interviews) in project communities;</p> <p>1.3 Baseline quantitative survey developed, piloted and administered in project communities;</p> <p>1.4. Viable alternative livelihoods identified, and market assessment and other finance opportunities completed;</p> <p>1.5. Alternative livelihoods initiatives established in project communities with supported where necessary by SM campaign and continuing guidance for start-up households/groups provided in yr 2.</p> <p>2.1 Interim report on areas for training completed;</p> <p>2.2 Training schemes for alternatives/more efficient use practices developed and workshops held in project communities by end of yr 2;</p> <p>2.3. Training workshop attendance records collated and produced documenting participation numbers;</p> <p>2.4 Schemes and practices monitored, reviewed (with communities) and adapted as necessary, training and information-sharing events, to which neighbouring communities are invited, held to encourage replication of ideas.</p> <p>3.1 Baseline qualitative data collection completed (focus groups, semi-structured interviews) in project communities;</p> <p>3.2 Improved livestock protection practices/husbandry rolled out, monitored, reviewed (with communities) and adapted as necessary;</p> <p>3.3 Depredation rates monitored and recorded monthly leading to identification and viability assessed of livestock protection/husbandry with project communities;</p> <p>3.4 Social marketing strategy developed, piloted and administered in project communities;</p> <p>3.5 Social marketing strategy delivered with target communities and behavioural changes observed and recorded.</p> <p>4.1 Camera traps located following protocol developed by the research team and revision/change memory/batteries plan implemented;</p>			

**4.2** Training of new community parabiologists completed;

**4.3** Preliminary findings shared with stakeholders;

**4.4** Bear and other wildlife identified via camera trap images and observational sightings.

**5.1.** Workshop with government authorities and community representatives to implement the Andean bear Action Plan held;

**5.2** Activities and regular meetings with the working group held;

**5.3** Meetings with CBD to assess progress held.

## Annex 2 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements
<p><b>Impact:</b> Linking poverty reduction and biodiversity conservation improves the wellbeing of communities and the population of threatened Andean bears in a key region of its global range.</p>		<p>We have reached seven communities out of our target of eight.</p> <p>Beekeeping has been developed in six of them as an economic alternative, and one additional community has started native beekeeping. In our six communities, communal and privately-owned apiaries have been established demonstrating interest and replication of the initiative; all six communities have harvested honey, and over the project as a whole, 2,750 kgs of honey has been produced, totalling of £ of revenue. A total of 34 new private apiaries (144 beehives) have been established, which is a great result from our initiative. This demonstrates ability and interest to develop sustainable livelihoods independently. This was a great opportunity to see tangible results of beekeeping.</p> <p>Monitoring seasonal movements of bears and other carnivores, has continued. A significant number of new species' distributions have been recorded for the first time in this ecosystem. Confirmation of the CR Bolivian chinchilla rat, and eight wild feline species, including the VU <i>Leopardus tigrinus</i>, which currently has only three records for the country (none of them in this region), put our project as the study with the highest diversity of wild cat species in Bolivia. During the last months of this project, the parabiologists registered the first footprint of a jaguar in the area. With the presence of this species confirmed, this community's land, despite not having any formal protection status, has the highest density of felid species in Bolivia.</p> <p>It is crucial to address the change in people's attitudes towards bears and biodiversity in general. Community members understand the relationship between conservation, and the benefits that they have received: more forest to protect bears, means more flowers and trees for bees, and therefore, more honey.</p> <p>Finally, the most significant impact recorded over this last period, is the change in our beneficiaries' attitudes towards new challenges, and capacity to adapt to unforeseen situations (including C-19). Our M&amp;E has found an increase in self-esteem, confidence, and hope for a better future, along with the incorporation of the Andean bear as part of the community, and not as an outsider.</p>

Project summary	Measurable Indicators	Progress and Achievements
<p><b>Outcome</b> The livelihoods of local communities and the conservation of Andean bears co-benefit from an integrated approach linking and improving livelihoods and co-existence with bears and pumas in the dry forests of the Pilaya watershed, Bolivia.</p>	<p>0.1 Eight communities (up to 200 households) develop supplementary livelihoods to reduce levels of poverty and increase wellbeing by end of yr 3</p> <p>0.2 Capacity, agency and confidence of at least 100 community members in Pilaya communities to adapt to socio-environmental change in their areas is improved by end of yr 3</p> <p>0.3 Key beneficiary communities show positive changes in acceptance of bears, demonstrated by a 50% increase in tolerance by comparing baseline and final surveys by end of yr 3</p> <p>0.4 Understanding of distribution and ecological needs of Andean bears and pumas in inter-Andean dry forest are much improved as a result of the data collected and analysed by the project, including previous years data collected</p> <p>0.5 Implementation of the national action plan for Andean bears is underway in the project areas through a collaborative effort with government and communities, providing a model for other regions of Bolivia, resulting in recognised legal protection for the bears and their habitat</p>	<p>Seven communities, 165 households have developed supplementary livelihoods to reduce levels of poverty and increase wellbeing.</p> <p>One hundred and sixty-five community members have the capacity to carry out beekeeping independently. An additional 224 members, not related to the beneficiaries have received information, including some training and support in beekeeping.</p> <p>Bear tolerance has increased in 72% compared with baseline data.</p> <p>Distribution, seasonal movements, and a complete list of medium-large mammals of the inter-Andean dry forest are known. Individuals have been identified and monitored.</p> <p>The implementation of the National Conservation Action Plan is currently focused on carrying out research in the Boliviano-Tucumano ecoregion, and to monitor human-bear conflict.</p>
<p><b>Output 1</b> Livelihoods and wellbeing are improved among the project communities as a result of villagers adopting improved livestock</p>	<p>1.1 Process of participatory theory of change planning with project community members and project team completed by end yr 1</p>	<p>1.1, 1.2, 1.3 Theory of change with community members have been carried out as planned with theory of change maps built for each community. Interviews and discussions with focus groups have been registered. Evidence provided in Report Year 1</p>

Project summary	Measurable Indicators	Progress and Achievements
management practices and developing supplementary livelihoods.	<p>1.2 Alternative livelihoods opportunities explored with 4 communities (approx. 100 households) by end yr 1, with market analysis conducted and report produced by project team/advisors</p> <p>1.3 Wellbeing and livelihoods (current and aspirations) discussed and defined with and by 4 communities by end yr 1 using focus groups and one to one interviews</p> <p>1.4 30% of households in the 4 communities have taken up an alternative sustainable livelihood by end of yr 2</p> <p>1.5 Participating households' ability to generate income from alternative livelihoods has increased by 15% compared to baseline, by end yr 3</p>	<p>1.4. 39% of households in 5 communities have adopted beekeeping as an alternative sustainable livelihood. Evidence provided in final M&amp;E assessment.</p> <p>1.5 Beekeeping has increased households' ability to generate income by 11.8% with revenues from the community apiary. However, for those families that have invested in private beehives, monthly revenue increased on average 29.4% over baseline.</p>
<b>Activity 1.1</b> Participatory theory of change plans report completed with input from community members.		Completed
<b>Activity 1.2</b> Baseline qualitative data collection completed (focus groups, semi-structured interviews) in project communities.		Completed
<b>Activity 1.3</b> Baseline quantitative survey developed, piloted, and administered in project communities.		Completed
<b>Activity 1.4</b> Viable alternative livelihoods identified, and market assessment and other finance opportunities completed.		Completed
<b>Activity 1.5</b> Alternative livelihoods initiatives established in project communities with supported where necessary by SM campaign and continuing guidance for start-up households/groups provided in yr 2.		Completed

Project summary	Measurable Indicators	Progress and Achievements
<p><b>Output 2.</b> <u>Capacity building and training</u> helps communities improve resilience to environmental changes and foster their ability to develop sustainable livelihoods independently.</p>	<p>2.1 Community consultations on areas for training, based on initial feedback from above (1.1-1.3) completed in early yr 2.</p> <p>2.2 Training and mentoring events for alternative livelihoods carried out in 4 communities, reaching out to 100 households, by end of year 2.</p> <p>2.3 50% of project households have at least one member who has attended the workshop events by end yr 2.</p> <p>2.4 Feedback and learning review carried out with communities by yr 3 via stakeholder meetings in project areas.</p>	<p>2.1. Consultations have been carried in seven communities.</p> <p>2.2 Training and mentoring has been carried out in seven communities, reaching one hundred and sixty-five HH.</p> <p>2.3 At least one member of each household has attended a workshop</p> <p>2.4 Feedback, discussion, and problem resolution was carried out using our whatsapp groups due to COVID-19 restrictions. During the last six months of the project, meetings were allowed, and we visited all communities and carried out our planned meetings and site's evaluations.</p>
<p><b>Activity 2.1</b> Interim report on areas for training completed.</p>		<p>Completed</p>
<p><b>Activity 2.2</b> Training schemes for alternatives/more efficient use practices developed and workshops held in project communities by end of yr 2.</p>		<p>Completed</p>
<p><b>Activity 2.3</b> Training workshop attendance records collated and produced documenting participation numbers.</p>		<p>Included in Year 2&amp;3 Reports</p>
<p><b>Activity 2.4</b> Schemes and practices monitored, reviewed (with communities) and adapted as necessary, training and information-sharing events, to which neighbouring communities are invited, held to encourage replication of ideas.</p>		<p>WhatsApp groups were created to discuss progress during C-19 lockdown and post-lockdown. Request to expand the initiative to other communities have been received but the project has not made any commitment.</p>
<p><b>Output 3.</b> <u>Safe coexistence</u> of Andean bears, pumas and people in the project area is attained through a combination of reduced livestock losses, increased benefits from conservation and more wildlife-tolerant social norms.</p>	<p>3.1 Baseline study using social surveys and focus group discussions on perceptions, values and social norms carried out in the 8 communities by the project's experts by yr 1.</p>	<p>3.1 Baseline data has been collected through interviews and focal groups.</p>



Project summary	Measurable Indicators	Progress and Achievements
	<p>3.2 Improved livestock protection practices/husbandry identified and implemented among households by yr 2 by providing training and assistance with predator-proof enclosures, water pits and best practice livestock management</p> <p>3.3 80% of households in 4 communities report reduced predation on their livestock by yr 3</p> <p>3.4 Design of social marketing and/or behaviour change strategy to increase valuing and tolerance of bears in the project communities, end of yr 1</p> <p>3.5 Implementation of social marketing strategy in yr 2 and measurable changes in behaviour changes observed, by yr 3.</p>	<p>3.2 Complete livestock assessment has been carried out by certified veterinary. Assistance in health assessments were a priority due to the weak health status of cattle.</p> <p>3.3 Predation by bears has increased by nearly 50% during the last year. However, retaliatory killing of bears has not been recorded. Nevertheless, the first case of traffic of bear parts have been registered.</p> <p>3.4 Social marketing strategy was developed. Key messages and target audiences were identified, in order tackle social norms regarding bears and the way people behave in response to their presence near the community.</p> <p>3.5 One of the key audiences that was identified during this process were teachers and schoolchildren, both of which were considered as key influencers to help shape adults' behaviours and change attitudes toward bears. Talks took held in 2019, but education specialists from Chester Zoo visited Tarija in March 2020 (the visit was initially scheduled for October, 2019, but had to be postponed due to the social unrest surrounding the presidential elections) to work with the project team on developing a school outreach programme for target communities. School children have not yet returned to normal classes since the pandemic, and education has been carried out remotely, which has limited our capacity to undertake outreach with this target audience</p>
<p><b>Activity 3.1</b> Baseline qualitative data collection completed (focus groups, semi-structured interviews) in project communities.</p>		<p>Completed</p>
<p><b>Activity 3.2</b> Improved livestock protection practices/husbandry rolled out, monitored, reviewed (with communities) and adapted as necessary.</p>		<p>Completed</p>
<p><b>Activity 3.3</b> Depredation rates monitored and recorded monthly leading to identification and viability assessed of livestock protection/husbandry with project communities.</p>		<p>Depredation incidents has been monitored through calendars and personal communications.</p>

Project summary	Measurable Indicators	Progress and Achievements
<b>Activity 3.4</b> Social marketing strategy developed, piloted and administered in project communities;		Social marketing strategy developed.
<b>Activity 3.5</b> Social marketing strategy delivered with target communities and behavioural changes observed and recorded.		Not implemented due to Covid-19 pandemic.
<b>Output 4.</b> <u>Evidence base</u> for bear and puma presence, movements, and habitat is generated, through participatory monitoring, and the physical and spatiotemporal aspects of human-bear conflict dynamic are better understood.	<p>4.1 Bear and puma monitoring via camera trapping and observation by team conducted throughout project life cycle</p> <p>4.2 At least eight community members, one in each community, recruited and trained as parabiologists to assist with bear research, in yr 1</p> <p>4.3 Community parabiologists and project team share research findings together, facilitating positive interest and engagement also with peers, children and authorities, yr 2-3</p> <p>4.4 Camera data allow identification of individuals based on facial marks and other wildlife; analysis completed by yr 3</p>	<p>4.1 Camera trapping protocol, methods documented and data collected.</p> <p>4.2 &amp; 4.3 Documentation of parabiologist training and activities, plus certification of achievement awards given to nine parabiologists.</p> <p>4.4 Camera trap data collected and catalogued into shareable dataset/base. A total of 25 Andean bear individuals have been identified. Preliminary findings written into project yearly report, in addition to a report for government and presented to communities.</p>
<b>Activity 4.1</b> Camera traps located following protocol developed by the research team and revision/change memory/batteries plan implemented.		Cameras and revision/change of memories and batteries are set according to protocol.
<b>Activity 4.2</b> Training of new community parabiologists completed.		Parabiologists have received training and are capable of monitoring the camera stations without supervision if needed.
<b>Activity 4.3</b> Preliminary findings shared with stakeholders.		Bear photos, as well as other species, have been presented and shared to communities, schools and included in reports and presentations.

Project summary	Measurable Indicators	Progress and Achievements
<b>Activity 4.4</b> Bear and other wildlife identified via camera trap images and observational sightings.		Database includes all information on presence of target species.
<b>Output 5. Policy and governance:</b> the project catalyses effective collaboration among its partners, facilitating a co-owned effort between all stakeholders to implement Bolivia's Andean bear action plan.	<p>5.1 Joint workshop with government, project partners, and community representatives to plan out implementation of the Andean bear action plan in the project region, yr 1.</p> <p>5.2 Working group to collaborate on oversight of the above established, and regularly meet to review progress yr 2 and 3</p> <p>5.3 Project senior staff have regular bi-annual meetings with CBD focal point and government authorities to review Andean bear protection and human wildlife conflict and work towards ensuring the protection of protected areas</p>	<p>5.1 Workshop with authorities has been carried out and implementation of the action plan has been agreed.</p> <p>5.2 &amp; 5.3 Activities planned with government and CBD focal point meetings have been delayed. Meetings with CBD focal points have not been carried out due to travel restrictions and change in authorities. Political instability, and C-19 restrictions have stopped us to reach our achievements.</p>
<b>Activity 5.1</b> Workshop with government authorities and community representatives to implement the Andean bear Action Plan held.		Meetings with government authorities have been carried out to establish implementation of the action plan
<b>Activity 5.2</b> Activities and regular meetings with the working group held.		Activities planned with government and CBD focal point meetings have been delayed due to a number of challenges that we have encountered during COVID-19 pandemic.
<b>Activity 5.3</b> Meetings with CBD to assess progress held.		As a result, national and local authorities, conservationists and other stakeholder groups have had to prioritise their activities to focus on these issues, and there have been extended periods of time when any attempts to coordinate meetings have been impossible due to the country as a whole being paralysed.

## Annex 3 Standard Measures

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
<b>Training Measures</b>							
1a	Number of people to submit PhD thesis	1	Bolivian	Female	Andean Carnivores and ecological modelling	English	Currently finishing her second year, and on maternity leave. Norwegian University
1b	Number of PhD qualifications obtained						
2	Number of Masters qualifications obtained						
3	Number of other qualifications obtained	1	Bolivian	Female	Assessment of varroa mite ( <i>Varroa destructor</i> ) impact, on bees ( <i>Apis mellifera</i> ) in four communities of the Inter Andean dry forest of Tarija	Spanish	Diploma degree in Beekeeping
4a	Number of undergraduate students receiving training	2	Bolivian	Female	Identification of wildlife species from camera traps	Spanish	Identification of wildlife species from camera trap data
4b	Number of training weeks provided to undergraduate students	16	Bolivian	Female	Training in species identification	Spanish	Training in identification of wildlife species

4c	Number of postgraduate students receiving training (not 1-3 above)						
4d	Number of training weeks for postgraduate students						
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification (e.g., not categories 1-4 above)	10	Bolivian	9 male, 1 female	Parabiologists	Spanish	
6a	Number of people receiving other forms of short-term education/training (e.g., not categories 1-5 above)						
6b	Number of training weeks not leading to formal qualification						
7	Number of types of training materials produced for use by host country(s) (describe training materials)	15				Spanish	Posters: 3 Leaflets:1 Bears of the community: 4 Our animals: 4 Manual of the beekeeper: 1 Basic accounting for small enterprises:1 Beekeeping accounting book: 1
<b>Research Measures</b>		<b>Total</b>	<b>Nationality</b>	<b>Gender</b>	<b>Title</b>	<b>Language</b>	<b>Comments/ Weblink if available</b>
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (ies)	1	Bolivian	Female	Andean bear Conservation Action Plan	Spanish	Participatory process? Yes.

10	Number of formal documents produced to assist work related to species identification, classification and recording.						
11a	Number of papers published or accepted for publication in peer reviewed journals	2	Bolivian	Female	A new occurrence record for the Vulnerable <i>Rhinella rumbolli</i> (Carrizo, 1992) (Anura, Bufonidae) in Tarija, Bolivia  Contribution of camera trapping to the knowledge of <i>Abrocoma boliviensis</i>	English	
11b	Number of papers published or accepted for publication elsewhere						
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	3	Bolivian	Female	1. General Wildlife database 2. Andean bears and people (this project) database 3. Andean Carnivore Conservation Program Data Base: includes this project, and two other datasets from IADF sites in Chuquisaca and Cochabamba.		

12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	2	Bolivian	Female	1. Andean bears and people (this project) database.  2. Andean Carnivore Conservation Programme database: includes this project, and two other datasets from IADF sites in Chuquisaca and Cochabamba		
13a	Number of species reference collections established and handed over to host country(s)	3	Bolivian		Andean bear skull <i>Abrocoma boliviensis</i> samples (skin and skull) <i>Mazama sarae</i> skull	Spanish	Natural History Museum
13b	Number of species reference collections enhanced and handed over to host country(s)						

Dissemination Measures		Total	Nationality	Gender	Theme	Language	Comments
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	17			Field assistants' workshop:1 Regular meetings and workshops with beekeepers 16		

Dissemination Measures		Total	Nationality	Gender	Theme	Language	Comments
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.						

Physical Measures		Total	Comments
20	Estimated value (£s) of physical assets handed over to host country(s)	£	2 GPS, sleeping bags, stoves; Camera traps, SD cards, viewers (#2) Portable cameras (#2), recorders (#2) laptops #2, Projector #1 and #2 external hard drives  6 apiaries: 46 hives, 5 metallic fences, beekeeping suits, plastic queen excluder, entrance feeder, all-purpose hive tool, bee brush, bee smoker, uncapping fork, extractors, storage tank, containers
21	Number of permanent educational, training, research facilities or organisation established		
22	Number of permanent field plots established		

Financial Measures		Total	Nationality	Gender	Theme	Language	Comments
23	Value of additional resources raised from other sources (e.g., in addition to Darwin funding) for project work ( <i>please note that the figure provided here should align with financial information provided in section 9.2</i> )						



## Annex 4 Aichi Targets

	Aichi Target	Tick if applicable to your project
1	People are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	x
2	Biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	x
3	Incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.	x
4	Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	x
5	The rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	x
6	All fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	
7	Areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	x
8	Pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	
9	Invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	
10	The multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	
11	At least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	
12	The extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	x

13	The genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	x
14	Ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	X
15	Ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	x
16	The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	
17	Each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	
18	The traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.	x
19	Knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	x
20	The mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	

## Annex 5 Publications

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. web link, contact address etc)
Journal	Contribution of camera trapping to the knowledge of <i>Abrocoma boliviensis</i>	Bolivian	Bolivian	Female		<a href="https://www.revistas-conacyt.unam.mx/therya/index.php/THERYA/article/view/1037/html_428">https://www.revistas-conacyt.unam.mx/therya/index.php/THERYA/article/view/1037/html_428</a>
Journal	Distribution, ecology, and conservation of <i>Xenarthra</i> in Bolivia	Bolivian	Bolivian	Male		<a href="https://xenarthrans.org/wp-content/uploads/2021/12/Aliaga-Rossel_et_al_Distribution_ecology_and_conservation_of-Xenarthra_in_Bolivia.pdf">https://xenarthrans.org/wp-content/uploads/2021/12/Aliaga-Rossel_et_al_Distribution_ecology_and_conservation_of-Xenarthra_in_Bolivia.pdf</a>
Journal	A new occurrence record for the Vulnerable <i>Rhinella rumbolli</i> (Carrizo, 1992) (Anura, Bufonidae) in Tarija, Bolivia	Bolivian	Bolivian	Female		<a href="https://checklist.pensoft.net/article/64156/">https://checklist.pensoft.net/article/64156/</a>

## Annex 6 Darwin Contacts

Ref No	25-011
Project Title	Andean bears and people: coexistence through poverty reduction
<b>Project Leader Details</b>	
Name	Alexandra Zimmerman
Role within Darwin Project	Project Leader (Concept, technical direction, strategic oversight, Human-wildlife conflict expertise)
Address	
Phone	
Fax/Skype	
Email	
Name	Ximena Velez-Liendo
Role within Darwin Project	Project Co-Leader
Address	
Phone	
Fax/Skype	
Email	
<b>Partner 1</b>	
Name	Claudia Oller M.
Organisation	PROMETA
Role within Darwin Project	Outreach Officer/community engagement
Address	
Fax/Skype	
Email	
<b>Partner 2 etc.</b>	
Name	Marushka Barrientos
Organisation	IICA
Role within Darwin Project	Market analyst
Address	
Fax/Skype	
Email	

## 11 Checklist for submission

	Check
<b>Is the report less than 10MB?</b> If so, please email to <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> putting the project number in the Subject line.	Y
<b>Is your report more than 10MB?</b> If so, please discuss with <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> about the best way to deliver the report, putting the project number in the Subject line.	N
If you are submitting photos for publicity purposes, <b>do these meet the outlined requirements (see section 10)?</b>	Y
<b>Have you included means of verification?</b> You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Y
<b>Do you have hard copies of material you need to submit with the report?</b> If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	Y
Have you involved your partners in preparation of the report and named the main contributors	Y
Have you completed the Project Expenditure table fully?	Y
Do not include claim forms or other communications with this report.	