

Darwin Initiative Main and Post Project Annual Report

To be completed with reference to the “Writing a Darwin Report” guidance: (<http://www.darwininitiative.org.uk/resources-for-projects/reporting-forms>). It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

Submission Deadline: 30th April 2020

Darwin Project Information

Project reference	24-015
Project title	Community conservation of Chitwan National Park's freshwater ecosystems and gharial
Country/ies	Nepal
Lead organisation	Zoological Society of London
Partner institution(s)	Department of National Parks and Wildlife Conservation (DNPWC), National Trust for Nature Conservation (NTNC), Himalayan Nature (HN)
Darwin grant value	£ 397,692
Start/end dates of project	15 June 2017 - 31 March 2021
Reporting period (e.g. Apr 2019 – Mar 2020) and number (e.g. Annual Report 1, 2, 3)	April 2019- March 2020
Project Leader name	Hem Baral
Project website/blog/social media	https://www.zsl.org/community-conservation-of-chitwan-national-park%E2%80%99s-freshwater-ecosystems-and-gharials https://www.zsl.org/blogs/asia-conservation-programme/community-crocodilian-coexistence https://www.himalayannature.org/project/freshwater-ecosystems-and-gharials https://ntnc.org.np/node/187 https://ntnc.org.np/newsletter/crocodile-monitoring-chitwan-and-bardia
Report author(s) and date	Hem Sagar Baral, Bhagawan Raj Dahal, Bhogendra Rayamajhi, Sailendra Raj Giri, Monica Wrobel, Tulsi Subedi, Naresh Subedi, April 2020

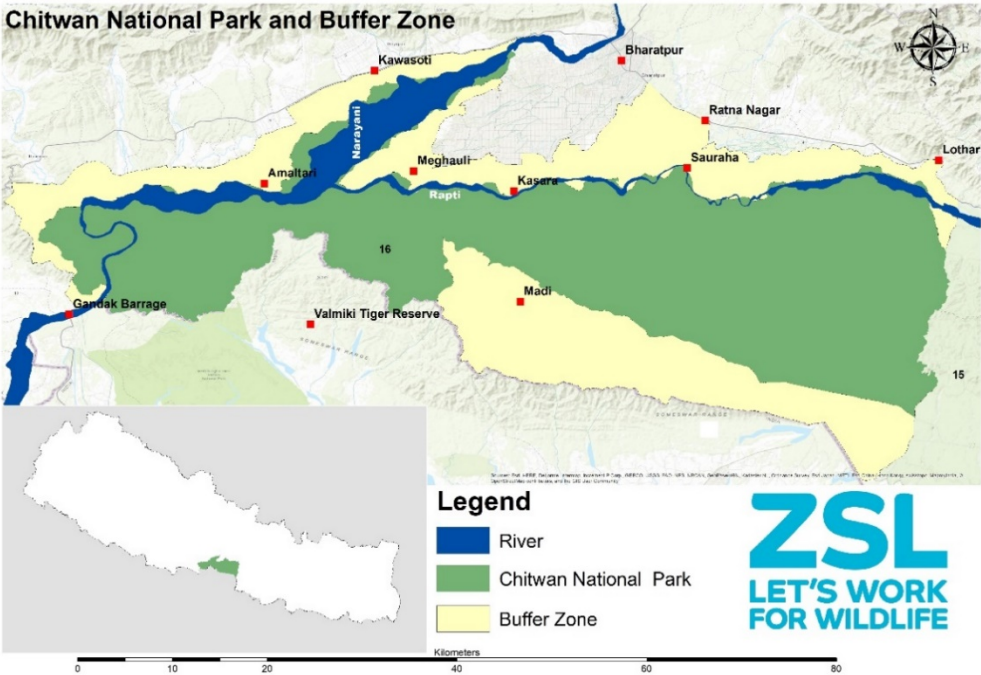
1. Project summary

Freshwater ecosystems have been disproportionately threatened by human activities, causing a rapid decline of aquatic diversity across the globe. Globally we have lost almost twice as many freshwater species as terrestrial species over the last 50 years. Despite this disproportionate decline, and freshwater ecosystems' importance to human health and wellbeing, it receives scant attention and funding relative to other ecosystems, and Nepal is typical of this.

Chitwan National Park (CNP), a World Heritage Site, situated in the south-central part of Nepal, harbours globally important freshwater ecosystems. Two major rivers – the Narayani, that originates from the snow-clad Himalayas and Rapti from the middle mountains, support an intrinsic mosaic of freshwater ecosystems and secures a range of aquatic biodiversity throughout the park. Despite the substantial values of these rivers, land-use changes, modification of riverbank, water pollution, agricultural run-off, excessive extraction of river materials, and invasive alien species have significantly altered the ecological processes of these river systems, dramatically accelerating the decline of associated aquatic life, including the gharial (incl. latin name), the world's most threatened crocodile.

The gharial, a top predator of the freshwater ecosystem, has been extirpated from much of their historical ranges in the last century, now confining to only a few river systems in Nepal and India. In Nepal, they thrive in Narayani, Rapti, Babai and Karnali river systems. The fragile population in CNP, which is the third largest breeding population across its current global range, has suffered devastating decline caused by harmful and unsustainable fishing practices, substantial declines in water quality, the decreasing health of the river ecosystems and fish stocks. The Department of National Parks and Wildlife Conservation (DNPWC) has highlighted the gharial's conservation needs in its recent 'Gharial Conservation Action Plan 2018-2022'. National and international experts have also highlighted the need of gharial conservation in CNP, which is among the world's most significant breeding populations.

Additionally, the indigenous river dependent communities Bote, Musahar and Tharu that live along the Narayani and Rapti rivers rely heavily on these rivers for their food and income. The devastating alteration of the river ecosystems and fish stocks have significantly impacted the health, income, and food security of local communities. Furthermore, healthy freshwater ecosystems have a profound impact on the socio-economic wellbeing of these communities. As the gharial is a key indicator species of a healthy freshwater ecosystem, it is intricately linked with the wellbeing of the communities.



This project is seeking to reverse the current rate of decline in the gharial population and improve the wellbeing of freshwater-dependent communities by restoring the ecosystems of the Narayani and Rapti rivers. The project has established a robust monitoring protocol for the river ecosystem and gharial population; providing knowledge for the formulation of a river ecosystem management plan; increasing river protection through forming community-based protection units; and enhancing the effectiveness of the Gharial Conservation Breeding Centre (GCBC). Since

indigenous fish-dependent communities around CNP are heavily reliant on these river ecosystems, the project aims to support them to enhance their food security and improve their incomes through developing their capacity in sustainable aquaculture livelihoods.

2. Project partnerships

Our relationship with project partners and stakeholders has been strong and integral for biodiversity conservation and protection in Nepal. Our major partners for this project are the Department of National Parks and Wildlife Conservation (DNPWC), National Trust for Nature Conservation (NTNC), and Himalayan Nature (HN). Along with these, we have also engaged with other stakeholders including buffer zone management/user committees (BZMC/BZUC), local community-based organisations, local government, park staff, protection units and especially with local communities. We are facilitating communication and coordination among all partners and stakeholders for effective project implementation. A Project Coordination Committee (PCC) chaired by the Deputy Director General of DNPWC, with section heads of DNPWC and the project manager from ZSL acting as central committee members has continued to work as the main governing entity. This committee has been instrumental in providing guidance for effective implementation of the project activities, and conducting regular monitoring of the project and its effectiveness.

A Project Management Unit (PMU) was formed in CNP for project implementation, chaired by the Chief Conservation Officer of CNP with representatives from NTNC, HN and ZSL as members. Representation of community members, BZUC representatives, local government and protection units is ensured in decision making and project implementation. The members of the PMU are responsible for coordination among partners, BZMCs and local communities, facilitating project activities, monitoring progress and reporting to PCC.

ZSL along with all the project partners have maintained very positive relationships with the local communities, who are direct project beneficiaries with a key role in ensuring the sustainability of the project activities. Also, ZSL and project partners have involved the Fishery Development Centre as an additional stakeholder (the government authority to promote and develop sustainable fisheries in the country) for effective and sustainable results. During the project implementation we have learned that a strong coordination among the project partners will benefit the project through strong commitment from all partners and stakeholders towards achieving the overall project goal. Furthermore, involvement of partners and stakeholders from initial stage of proposal development and throughout the project implementation would enrich the information regarding the existing problem the project is trying to address and finding a sustainable solutions to the existing problems to achieve a desired state of conservation.

3. Project progress

3.1 Progress in carrying out project Activities

Output 1: Improved river ecosystem management delivered through improved management plans and environmental policy based on a robust Gharial and riverine ecosystem monitoring programme.

The project-recruited PhD student's research is ongoing. The student is studying the movement behaviour of the gharial as well as its post release survival. Two MSc students' projects have been completed in the previous year, while one was completed during this reporting period (Supplementary Document 1). Furthermore, one more MSc student will carry out research in the next reporting period under Activity 1.2.

During this reporting period, the project supported orientation training to 59 CBAPU members (Annex 4.1). The orientation training was conducted as a value addition under Activity 1.7 to enhance the capacity of CBAPU members for gharial and other aquatic animal monitoring. During this reporting year, the project conducted annual gharial monitoring across the Narayani and Rapti rivers. A total of 230 individuals were recorded, which was largely comparable with the results of the last year (Annex 4.2). Compared to the baseline result of 2017, this is an increase of 5% in the gharial population, which has been primarily achieved through regular patrols and monitoring of gharials and participation of fish-dependent communities in gharial conservation. As planned, the project has shared the results of the annual gharial monitoring with CNP

authorities and buffer zone communities at the site level and DNPWC officials at the central level (Activity 1.10 - Ongoing). The gharial monitoring data from all three years has been compiled and a final monitoring report will be produced, including the fourth-year monitoring data, by the end of the next reporting period. The manuscripts of the two peer reviewed papers are being reviewed by the co-authors from the partner organisation (Activity 1.11), which will be submitted in the first quarter of the next reporting period.

During this reporting year, a training workshop for 45 park staff and buffer zone community members on river ecosystem management (Annex 4.11) was conducted (Activity 1.14). During the workshop, the participants were briefed about various measures, based on the recommendation of the River Ecosystem Management Plan, that need to be taken to protect the river ecosystem. Moreover, emphasis was given to the importance of upstream and downstream linkages, while suggestions were made to incorporate watershed level conservation into the annual workplan as well as the management plan of CNP. Also, the role of local communities for river ecosystem management was highlighted and various measures that the local communities and institutions need to undertake for sustainable conservation of the river ecosystem were discussed.

Output 2: Threats to fish stocks and gharials are reduced through protection provided by 10 Community Based Anti-Poaching Units (CBAPUs) patrolling sensitive riverine zones in the Narayani and Rapti watersheds to protect the area from unsustainable fishing, poaching and other damaging and unsustainable uses of the river.

The project supported an orientation training to 59 members (five females, 54 males) of 11 CBAPUs on river patrolling, gharial, and river ecosystem monitoring under activity 2.3 (Annex 4.1). During this reporting period, the CBAPUs were supported to carry out 284 rivers patrols, monitoring a total of 24 gharial nests in the Narayani and Rapti rivers (Annex 4.4). The CBAPUs have continually coordinated with the park officials and provided information on illegal activities which resulted in the arrest of 25 people for illegal fishing and nine people for illegal extraction of river materials. Likewise, the CBAPUs actively helped the CNP to rescue four gharials entangled in fish nets, while they also provided prompt information to park authorities that led to the rescue of four mugger crocodiles from community fishponds (Annex 4.3). The project will continue to support the CBAPUs for river monitoring and gharial conservation in the next reporting year as well (Activity 2.4- ongoing). A strong coordination between CBAPUs and park officials has developed since the establishment of the CBAPUs which will help with their sustainability even after the project end.

Output 3: Increased post-release survival of Gharials from the Chitwan Gharial Conservation Breeding Centre (GCBC) delivered through implementing improved husbandry and release protocols, and post-release monitoring.

The project has continued its support for the improvement of infrastructure in the GCBC. With project support, 5178 square foot of ground area in the GCBC was paved with concrete paver blocks. This has helped enhance the visitors' experience in the GCBC as visitors previously had to walk on muddy surface in the compound area mainly during the 4-5 months of monsoon season (Activity 3.2 – Completed/ Annex 4.5).

During this reporting period, five gharials from the GCBC were tagged with GPS tags before their release in the Rapti river, increasing the total to 25 gharials tagged with GPS/VHF radio/ tags and monitored in the river system of the CNP. Also, 150 released gharials (50 this year and 100 last year) from the GCBC were tagged morphologically using standard procedures to enable their post release monitoring. The monitoring is providing crucial information on the survival rate of the released gharials and the reasons for their mortality which will be vital for gharial conservation planning in Chitwan (Activity 3.6- Ongoing/Annex 4.6). The monitoring of the tagged gharials will be continued in the next reporting period as well.

Output 4: Food security of local communities improved through implementing sustainable fishing and reducing the dependence of local communities on fishing through generating sustainable aquaculture livelihoods.

During this reporting year, additional financial support was provided to eight women-led community managed fishponds. This additional financial support was to further strengthen the operation and institutional development of the community managed fishponds to ensure their

sustainability beyond the project life. Up until now, the total income generated by the eight community fishponds is about NPR 3.8 million (Activity 4.5/ Annex 4.9).

The project has supported linkages between these fishponds and the market. Members of community fishponds now have contacts who come to buy fish directly from the ponds and members do not have to take the product to the market themselves (Activity 4.5/ Annex 4.7c). In addition to this, among the eight fishponds that are now linked with the tourism sector through their own initiative, they are now also supported by the local tour operators. The ponds are a part of a guided tour and tourists enjoy the fish from ponds served by the fishpond-established shop.

The project also conducted two aquaculture training workshops followed by an exposure visit for 68 members (47 females, 21 male) of the eight women-led community managed fishponds (Activity 4.6 – Completed; Annex 4.7a & 4.7b).

Also, the project supported additional awareness materials to five community conservation engagement centres (drop-in centres) established in year 2. They are operating well with an average of 30 people visiting each centre daily. An additional 50 mounted posters, 1000 posters and 3000 brochures were distributed through these drop-in centres in this reporting period (Activity 4.7 – ongoing). The project conducted three community workshops for 156 local fishermen during this reporting period to share knowledge on sustainable fishing as well as gharial conservation (Activity 4.8/ Annex 4.8)

3.2 Progress towards project Outputs

The project has been progressing well towards achieving its set outputs. Some minor delays have been faced but the project partners are coordinating well, and are committed to achieving the project outputs within the set timeframe of the project. To do this, the project partners are meeting regularly and planning as needed.

Output 1: Improved river ecosystem management delivered through improved management plans and environmental policy based on a robust Gharial and riverine ecosystem monitoring programme

The project has been progressing well to achieve this output. Ecological baselines have been established in the previous reporting years. Gharial monitoring was also completed consecutively for year three. Year-wise gharial distribution map for project years will be prepared by the end of the next reporting period to measure the success of the project in reducing the threats to the gharials. During this reporting period, gharials were recorded in 12 out of 13 monitoring sections in Chitwan. All the river monitoring section within the park and buffer zones were reported to have gharials. The gharial population has remained stable compared to year 2 results. However, this year's monitoring results also suggest an increase of 5% from the baseline (IND 1.1). One masters level student's project has been completed during this reporting period, while one more masters' student project will be completed by the next reporting period. Similarly, the PhD student's research is ongoing, who has been studying the gharial movement behaviour as well as their survival after they are released from the GCBC. This study will be completed by the end of year four and the results will provide vital information to further improve gharial conservation efforts (IND 1.3). Two EDGE fellows under the project are conducting their research on gharial biology and conservation which will be completed by the next reporting period (IND 1.4). The project has completed the preparation of a map showing the threat and impact to gharial population and fish biodiversity (IND 1.5; Supplementary Document 2). The project has also supported the formulation of a river ecosystem management plan which is now owned by the CNP. Park authorities have committed to integrate this plan with CNP's management plan to emphasize the conservation of the river ecosystem and the gharials (IND 1.6).

Output 2: Threats to fish stocks and gharials are reduced through protection provided by 10 Community-Based Anti-Poaching Units (CBAPUs) patrolling sensitive riverine zones in the Narayani and Rapti watersheds to protect the area from unsustainable fishing, poaching and other damaging and unsustainable uses of the river.

The project has successfully established 11 CBAPUs, which are actively working to conserve gharials and the river ecosystem in close coordination with the park authorities (IND 2.1). The number of patrols conducted by the CBAPUs has increased in year 3 (284) compared to year 2 (132) (IND 2.2). The patrolling has been effective in controlling illegal activities along the rivers, with information provided by the CBAPUs resulting in the arrest of 25 people for illegal fishing and nine for illegal extraction of river materials during this reporting period. The CBAPUs are patrolling all identified sensitive river segments. Strong coordination has been established between the park officials and CBAPU members (IND 2.3). During this reporting period, no gharial poaching has been recorded, however, cases of gharial deaths after entangling in gillnets has surfaced. It is likely such incidences were taking place in the past but due to our increased surveillance especially of upstream areas and the project's contribution towards gharial's significance as an umbrella or key indicator species of the river ecosystems, such information is now being received. The project is working closely with park officials, stakeholders, and communities to adequately find more about such mortalities and develop a pragmatic measure to stop such incidents (IND 2.6).

Output 3: Increased post-release survival of gharials from the Chitwan Gharial Conservation Breeding Centre (GCBC) delivered through implementing improved husbandry and release protocols, and post-release monitoring.

The project has been successful in improving the infrastructure of the GCBC through support provided in previous years and during this reporting period. This has helped enhance the egg laying in GCBC as well as leading to improved visitor experience (IND 3.1). Gharial Husbandry and Release Guidelines have been prepared and submitted to CNP. The guidelines is currently being reviewed by the experts in GCBC and international experts (IND 3.2). A final copy of the guidelines will be shared to DI during the next annual reporting period. CNP is already adopting some of the guidelines outlined in the document which is encouraging news. The project has trained 18 GCBC staff in herpetology husbandry and release mechanism last year. The trained GCBC staff have now improved the herpetology husbandry practice (IND 3.3). Similarly, the project has supported the physical marking of 150 gharials during last reporting period and this reporting period. Out of them, 25 gharials have been tagged with GPS/VHF/ sets prior to release into the wild (IND 3.4). All these gharials are being monitored and their status is being updated. After the final results of the monitoring are produced, we will have better knowledge about the survival rate of the released gharials, and the reasons for their mortality, which will be vital for informing more effective gharial conservation (IND 3.5)

Output 4: Food security of local communities improved through implementing sustainable fishing and reducing the dependence of local communities on fishing through generating sustainable aquaculture livelihoods.

The project supported 164 local households that are dependent on the rivers through the formation of eight women-led community managed fishponds. These fishponds are now run by the indigenous community members with minimal support from the project. The project has provided training and seed funds in the past which continued during this reporting period in the form of orientation training and minor support for institutional strengthening (IND 4.1). In this reporting period, the accounts of all eight fishponds (up to November 2019) show a total income of NPR 3.8 million which indicates an average 25% increase in the income of each member (IND 4.2). Likewise, the five drop-in centres established through project support are helping spread awareness on gharial and river ecosystem conservation in the upstream areas. In this reporting period, on average 30 people visited each of the 5 drop-in centres (IND 4.3). Likewise, the project has been organising trainings on sustainable fishing practice and promoting fishers to adopt sustainable fishing techniques. During this reporting period, three workshops were organised for 156 fisher households (IND 4.5).

3.3 Progress towards the project Outcome

After the third year of implementation, the project has made considerable progress towards achieving the desired project outcome (which is "Health of the Narayani and Rapti river ecosystems improved, with increased fish stocks, and stabilised Gharial population, supported

by local communities benefiting from sustainable livelihoods”). The project management team and the partners agree that the indicators set to measure the achievement of this outcome are adequate, and despite some minor delays in delivering some of the activities against the proposed time frame, the project will achieve its outcome by the end of the project. Also, the engagement of various partners like NTNC, DNPWC, CNP, Buffer Zone Management Committee, local government, and the Fishery Development Centre will help enhance the sustainability of the project’s achievements.

Ghariahs have been recorded in 12 out of the 13 monitoring sections during the surveys in year 1, 2 and 3. The data collected in year 1, 2 and 3 will produce a detailed gharial habitat utilisation map, showing the annual change (increment) in habitat utilisation, which will be prepared by year 4 (Indicator 0.1). Annual monitoring of gharial in year 3 has shown no change in the population status of gharial, however this is still a 5% increase as compared to the baseline data. (Indicator 0.4).

An increase in fish stock can be shown by a change in the catch per unit effort of local fishermen. The baseline shows that a total of 50% of fishermen have a valid fishing license, and out of these, 60% have started recording and reporting the weight of each catch (Indicator 0.2). The baseline data revealed that the fisherman’s average catch per effort in Rapti was 445 grams per one effort, and 732 grams per one effort for Narayani (Indicator 0.3). The data is being recorded continually to see the change in numbers of fishermen having valid licenses as well as the percentage of license holders recording and reporting the weight of each catch. Also, data on fishermen’s catch per effort is being managed at the field level, which will be analysed and reported by the end of next reporting year.

The project is in regular coordination with DNPWC and CNP to integrate the plan and protocols prepared by the project into the CNP’s management plan which will be achieved by the end of year 4 (Indicator 0.5).

Furthermore, the project has successfully engaged 164 households from indigenous communities and provided them with seed money to set up the eight community managed fishponds across the buffer zones of CNP. Income records in year three until November 2019 suggest that these households are seeing a 25% increase in their average income from fishing (Indicator 0.6).

3.4 Monitoring of assumptions

	Outcome Assumptions	Comments
Assumption 1	A positive trend in these key indicators indicates an overall increase in the biodiversity value of these river ecosystems. This method has been used successfully in the Chambal river.	This assumption remains reasonable.
Assumption 2	Positive results in all ecological indicators indicates that successful ecosystem restoration has taken place	This assumption remains reasonable.
Assumption 3	Relevant authorities show continued commitment to implement robust management plans and monitoring programmes	DNPWC and CNP authorities are highly committed and gharial conservation has been the priority programme.

	Output 1 Assumptions	Comments
Assumption 1	Monitoring programme sustainably institutionalised by DNPWC in the long term	This assumption remains reasonable. DNPWC has prepared the Gharial Conservation Action Plan. DNPWC played a crucial role in the preparation of the gharial and river monitoring

		guidelines. DNPWC have ownership of documents prepared by the project.
Assumption 2	DNPWC continues to have adequate resources to implement the required changes in all the relevant areas affecting the riverine ecosystem in the Narayani and Rapti watersheds	This assumption remains reasonable.
Assumption 3	Improved plans and policy are effectively translated into improved management	This assumption remains reasonable.
Assumption 4	Management plan is effectively implemented by DNPWC	This assumption remains reasonable.
	Output 2 Assumptions	Comments
Assumption 1	There will be an adequate number of suitable CBAPU applicants	There were an adequate number of suitable applicants.
Assumption 2	Sufficient number and diversity of community members are willing to participate in CBAPUs, the community workshops explaining and demonstrating the benefits of the CBAPU concept will support this.	This assumption remains reasonable.
Assumption 3	That CBAPUs will use the towers and that they will be effective in increasing chances of spotting poacher activity	This assumption remains reasonable.

	Output 3 Assumptions	Comments
Assumption 1	Factors unrelated to the release procedures are not the primary cause of released gharial mortality	This assumption remains reasonable.
Assumption 2	Factors relating to post-release mortality are identified and adequately addressed through other project Outputs, specifically monitoring	This assumption remains reasonable. 40 gharials have been tagged with satellite GPS collars. Post-release mortality monitoring is ongoing.

	Output 4 Assumptions	Comments
Assumption 1	Aquaculture combined with increased awareness and strengthened protected area management disincentives illegal, and harmful fishing practices	This assumption remains reasonable.
Assumption 2	Sustainable fishing increases the food security of local communities	This assumption remains reasonable.
Assumption 3	Communities have the will to manage their resources sustainably long-term	This assumption remains reasonable.
Assumption 4	Unequal benefit sharing, corruption and theft do not fundamentally undermine community aquaculture	This assumption remains reasonable.

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

Target Impact: Narayani and Rapti river ecosystems are protected and restored, with the recovered gharial populations safeguarded and viable long-term, and providing ecosystem services to local fishing communities practicing sustainable livelihoods, reducing poverty.

The project has contributed to the recovery of gharial populations. The 5% increase in the wild gharial population (Indicator 0.4) is a result of the project's support in enhancing protection through regular community patrolling (Indicator 2.1, 2.2, 2.3 and 2.6), increasing community awareness of gharial conservation (Indicator 4.3, 4.5 and Activity 3.3), as well as through enhancing fish-dependent indigenous communities' livelihood through the eight community-managed fishponds (Indicator 4.1 and 4.4).

The focus on Narayani and Rapti river systems makes this a major contribution towards gharial recovery, as these two river systems harbour the largest gharial population in Nepal and are highly significant in terms of global population.

The project is also making a major contribution to human development and wellbeing of the river-dependent communities along the Narayani and Rapti river system, as shown by the estimated 25% increase in average income of 164 households (Indicator 4.2). Currently, the declining river quality and the fish stock is adversely impacting the well-being of these communities, leading them to put further pressure on the already declining fish stock and river resources. This in turn undermines economic development, hampers community wellbeing and contributes to further marginalisation of these groups. Supporting sustainable alternative livelihoods for local communities increases their wellbeing in the short-term, provides for greater levels of well-being, which are sustainable in the long-term, and also increases incentives to conserve river ecosystems and the flora and fauna dependent on it - including gharials.

Also, the community members involved in the management of community fishponds have reported to have reduced fishing in rivers (pers. comms) The project will work towards quantifying this reduced dependency of community members on rivers for fish and seek to support this trend through further support to the communities to manage the community fishponds.

4. Contribution to the Global Goals for Sustainable Development (SDGs)

The following SDGs are relevant to the project.

Goal 1: No poverty: The project has supported the formation of women-led committees to manage the eight community managed fishponds which has resulted in 25% increase in income for 164 households from river dependent indigenous communities. Seed money and training on aquaculture has been provided to these eight groups to enable long-term income generation.

Goal 3: Good health and wellbeing: Through the eight fishponds, the project is supporting to secure this source of food as well as income for local communities, contributing to their health and wellbeing.

Goal 5: Gender equality: The membership of the women-led community fishponds established under the project, consists of 76% females from indigenous communities. This promotes women's role in the community and in income generating activities specifically.

Goal 6: Clean water and sanitation: Contribution to this goal at this stage cannot be quantified but the project aims to restore the river quality and ecosystem through its partnership work on a robust river management plan providing for improved water quality.

Goal 11: Sustainable cities and communities: The project activities have contributed towards sustainable communities through the development of a sustainable community governance mechanism for the community-managed fishponds.

Goal 12: Responsible consumption and production: Communities have reported to project staff (pers comms) that their frequency of fishing in rivers has decreased as they have started to harvest the fish from community-managed fishponds.

Goal 15: Life on Land: Gharial and fish monitoring surveys show an increase in gharial population, while the upgrades to the GCBC provide long-term infrastructure for gharial conservation and population recovery.

Goal 17: Partnership for the goals: Close partnerships have been built among the communities, conservation stakeholders and government agencies to carry out the activities that contributes to the goals.

5. Project support to the Conventions, Treaties or Agreements

S.N.	Convention, treaty, agreement	Project contribution to meet national obligations
1	Convention of Biological Diversity	<p>The project contributes to following Aichi Biodiversity Targets:</p> <p>Target 5: We are working to reduce habitat loss, and improve habitat quality through our work with upstream communities, construction of sandbanks at the GCBC, and work with partners on the River Ecosystem Management Plan (Indicator 0.1)</p> <p>Target 6 and 7: We are working to train local people in sustainable aquaculture, so they can manage fish stocks in the community fishponds, while also taking pressure off the river to avoid overfishing and ensure ecosystem health. (Indicator 0.2, 0.3, 0.6)</p> <p>Target 8: We are working to increase the water quality, through our work with partners on the River Ecosystem Management Plan and awareness-raising with upstream communities. (Indicator 0.1, 0.5, 0.3 and 0.4)</p> <p>Target 12: The Critically Endangered gharial is at clear risk of extinction, but this project has shown a slight growth in Nepal's largest population, which is a globally significant result. (Indicator 0.1, 0.3 and 0.4)</p> <p>Target 14: The contribution to water quality (Target 8), also contributes to ecosystem health; the project is designed to be of particular benefit to women, indigenous and poor local communities.</p> <p>Target 18: The number of people keen to take part in the Gharial Guard Groups demonstrates the relevance of the project to the knowledge and practice of these indigenous communities. We work with local institutions, such as the Buffer Zone User Committees (Indicator 0.2, 0.3 and 0.6).</p> <p>Target 19: The project support to the GCBC, post-graduate students, and local conservation awareness all support the knowledge base in Nepal for conservation. (Output 1)</p>
	CITES	We are working to conserve the gharial, which is listed on Annex 1 of CITES. However, the illegal wildlife trade does not pose a major threat to this population.

6. Project support to poverty alleviation

The project supports poverty alleviation for eight indigenous fish-dependent communities: *Samudayama Aadharit Ghaaila Maachapalan Samuha (A and B)*, *Majhi Utthan Samuha*, *Santi Srijana Kirsak Samuhain*, *Shreee Gyan Jyoti Krisak samuha*, *Srijansheel Mahila Machhapalan Samuha*, *Bote Mahila Machhapalan Samuha*, *Darai Mahila Machhapalan Samuha* in the buffer zone of CNP. Specific support for poverty alleviation has been provided through activities conducted under output four. The project has successfully set up eight women-led community fishpond management committees and provided them with seed funds. These community fishpond groups have started harvesting the fish and have reported 25% increase in income for 164 households, as compared to the baseline.

More generally the project is supporting the reduction of poverty through long-term increased ecosystem services leading to, for example, food security and improved community health through water quality. These are not yet quantifiable.

7. Consideration of gender equality issues

The project has addressed the issue of poor representation of women in decision-making processes and limited access to resources which were evident through our preliminary socio-economic studies. Women were included in project planning meetings and have been heavily involved in the implementation of all project activities.

The project has also focused on providing better access to income generating activities for women. Women's leadership was prioritized in the formation of committees to manage the community fishponds, with 76% of the members of these committees being women. One committee (named Srijansheel Women Fish Farming Group at Kathar) in the buffer zone of CNP is run by women only. Additionally, to offset the existing gender gap in the capacity for conducting income generation activities in local communities, women were prioritised for inclusion in training programmes on aquaculture.

8. Monitoring and evaluation

The two key monitoring units established for monitoring and evaluation of project implementation, progress and results are Programme Coordination Committee (PCC) and Project Management Unit (PMU). Similarly, CNP in coordination with project partners is conducting regular monitoring of the project progress at the site. Regular visits and other organised visits for specific purposes have been conducted by the project manager to monitor and evaluate project implementation. Three monitoring visits have been made by senior ZSL staff, joined by CNP senior staff, partners, representatives of buffer zone users committee and local government. The chair of PCC also conducted a monitoring visit to project sites observing the project's intervention in communities as well as in GCBC. He has provided his feedback and provided project management team with few suggestions to improve the implementation.

The project uses a performance appraisal framework (PAF), tied to the log frame, for ZSL staff to conduct M&E. The PAF uses ZSL's web-based systems to track progress and promote interaction between project partners. Monthly highlights reports are generated from the PAF with input from all the relevant project components. These feed into the regular project reports both for the Darwin Initiative and ZSL's internal M&E procedures.

The PAF is supplemented with rapid appraisals anonymously completed at the end of training sessions, forums, workshops and seminars, with data disaggregated by gender. In order to promote adaptiveness project reporting also feeds into an internal review process. Where amendments are deemed necessary, these will be put forward to the DI in a formalised approval process.

9. Lessons learnt

Regular meetings among partners and project beneficiaries are vital for successful implementation of the project activities.

Involvement of existing and institutionalised community organisations such as Buffer Zone Management Committees and Buffer Zone User's Committees are vital for successful implementation of the project and to bring about positive changes.

River CBAPUs (Gharial Guard Groups) face some challenges in patrolling during the monsoon season, which reduces the motivation of community members during this period. We are exploring options to work in alignment with this seasonal pattern to ensure adequate year-round river protection.

New targeted institutions, working in coordination with the existing institutions mentioned above, have proven to be an effective means of establishing and embedding new livelihood activities, such as aquaculture under this project. Forming these under the umbrella of Buffer Zone User's

Committees also support the sustainability of these new institutions by helping them to access existing support and resources for the long term.

Communities should be an integral component of any conservation programmes and providing them an alternative to direct use of natural resources will benefit conservation in the long run as communities with alternative livelihood options work as guardians of the nature. As is the case of the project supported fishing communities, who are guarding the gharials and river ecosystem, becoming the Guardians of Gharials.

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

Please report on the gender breakdown of patrol unit members in AR3

Response: Gender breakdown of the patrol unit members reported (Annex 4.10)

Please clarify whether DI funding is a distinct project or whether it forms part of a larger programme.

Response: This has been clearly explained in section 13. Darwin identity.

11. Other comments on progress not covered elsewhere

NA.

12. Sustainability and legacy

The key achievement towards sustainability of the project activities are:

- 1) Active involvement of DNPWC, CNP office, NTNC, Himalayan Nature, CBAPUs and local communities in gharial surveys.
- 2) Involvement of wider stakeholders throughout the project implementation such as local government, Fishery Development Centre etc., buffer zone committees, local community organisations.
- 3) CNP DNPWC and CNP have owned all the project produced documents including the river and gharial monitoring guidelines, egg collection protocol, herpetology husbandry and gharial release guideline (currently under review) and river ecosystem management plan.
- 4) The eight fishpond management committees have been formed within the existing institutional framework of BZMC. Therefore, the BZMC fully owns the operation and management of these committees. Guideline documents for their management and operation are in place.
- 5) Five community engagement centres (drop-in centres) have been institutionalized under the buffer zone committees and other community-based organisation that is already functioning well.

Collectively, the close involvement of the responsible local agencies and the phased hand-over of all project achievements to them remains a sound exit strategy to ensure a sustained legacy.

13. Darwin identity

- This project supported by the DI is a distinct project. However, the project aligns with the government programmes of gharial conservation outlined in the Gharial Conservation Action Plan 2018-2022. The DI has been mentioned in each agreement signed with the partners. The DI logo and a description of the project has been published in ZSL's Quarterly Newsletter. The DI logo along with the partner logo has been placed on the rubber boats which were handed over to CNP and NTNC for gharial monitoring and river patrolling. DI's contribution has been mentioned in all drop-in centres as well as in GCBC.

DNPWC, partner organizations, other conservation organizations working at national and site level, office of BZMC, and local communities know about the DI support through inception workshops, meeting, and interaction programmes.

- The project webpage, hosted on the ZSL's as well as HN website, and the first in a series of blogs (details above) have highlighted the critical support provided to the project by the Darwin Initiative.

14. Safeguarding

ZSL has its own safeguarding policies and procedures that are applied to the operations across the society, globally. The safeguarding policies which includes Global safeguarding policy; Global whistleblowing Policy and Procedure, Global Code of Conduct; DBS and Criminal Convictions Policy; Employing Younger Workers Policy; Disciplinary Policy and procedures. Violence and Aggressive Behaviour Policy; The 4 Rs Safeguarding Procedure and Staff Handbook has been ensuring the appropriate and adequate safeguarding measures are in place during the project implementation. In addition, ZSL has been working towards its environment and social management system to align with IUCN ESMS standards. ZSL has been managing many projects funded by IUCN and has been implementing the standard IUCN ESMS and ESMP procedures. All these learning has been from other project has been used during the implementation of this project.

The project has set standard safeguarding tools from the beginning of the project. The communities were consulted during the project preparation and project implementation phase. Beneficiaries were selected based on the household information collected from social surveys conducted in the beginning of the project. The project has targeted women and most vulnerable ethnic groups for inclusion in livelihood activities. During the project activity planning and implementation, all stakeholders were engaged. The project has not worked against the interest of local communities. Also, there is a grievance mechanism in place, which the project beneficiary and stakeholders have been informed about.

15. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2019 – 31 March 2020)

Project spend (indicative) since last annual report	2019/20 Grant (£)	2019/20 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items				
Others				
Audit costs				
TOTAL				

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2019-2020

Project summary	Measurable Indicators	Progress and Achievements April 2019 - March 2020	Actions required/planned for next period
<p>Impact</p> <p>Narayani and Rapti river ecosystems are protected and restored, with the recovered gharial populations safeguarded and viable long-term, and providing ecosystem services to local fishing communities practicing sustainable livelihoods, reducing poverty.</p>		<p>By the end of year 3, the project has set some milestones towards achieving the Impact. A 5 % increase in wild gharial population has been recorded. Likewise, the project intervention has resulted in a 25 % increase in average income of 164 households ably practicing sustainable fish farming in community ponds.</p>	
<p>Outcome <i>Health of the Narayani and Rapti river ecosystems improved, with increased fish stocks, and stabilised Gharial population, supported by local communities benefiting from sustainable livelihoods</i></p>	<ol style="list-style-type: none"> 1. Habitat utilisation by gharials increases by 10% by the end of Year 2 and 15% by the end of Year 4 (baseline that will be set in Year 1) 2. By Year 4 100% of the fishermen in the Narayani and Rapti river system will have a valid Fishing licenses, will be recording and reporting the weight of each catch (Baseline to be set in Year 1) 3. By Year 4 Fisherman's catches will show a 20% increase in weight per unit effort and with key high value fish species showing a population recovery (baseline to be set in Year 1) 	<ol style="list-style-type: none"> 1. Habitat utilisation of gharials stable. 12 of the 13 monitoring sections are used by the gharial during the survey conducted in year 3 similar to that in Year 2 and Year 1. Details to be reported by the end of the project. 2. 50% of fishermen have a valid fishing license and 60% of fishermen records and reports the weight of each catch. Updated data to be reported by the end of the project. 3. Baseline set in year 2 on fisherman catch per effort which was 445 grams for Rapti and 745 grams for Narayani river. Updated report to be reported by the end of the project. 4. The annual gharials survey in year 3 showed a 5 % increase in the wild gharial population in 	<p>Key activities planned for next year</p> <ul style="list-style-type: none"> • Revise gharial and river monitoring guidelines as necessary according to the survey findings • Organise meeting with conservation stakeholders to support DNPWC in the development of river ecosystem management plan. • Prepare husbandry and release guidelines for gharials of Nepal • Conduct training for GCBC staff on gharial handling and release. • Establish drop-in centres in upstream communities • Hold community workshop on sustainable fishing and gharial conservation

	<ol style="list-style-type: none"> 4. By the end of Year 4 there will be a 30% increase in the Gharial populations in the wild within Chitwan National Park (Baseline to be set in Year 1) 5. By the end of Year 4 adaptive management plans and participatory approaches have been adopted and are being implemented in the management of the wild and released Gharial population in Chitwan NP 6. By Year 4 120 fish-dependent Household are sustainably managing fishponds, and receiving a regular income from farmed fish 	<p>Chitwan National Park compared to the baseline set in year 1.</p> <ol style="list-style-type: none"> 5. During the previous reporting period, the river ecosystem management plan has been prepared. Gharial and river monitoring guidelines have been revised and an egg collection protocol prepared. The project is coordinating with Chitwan National Park and DNPWC to implement adaptive management plans and a participatory approach is currently being mainstreamed into the planning and implementation process. 6. 164 households from fish dependent communities supported with seed money. They are managing the fishponds and already have started receiving income. A 25% increase in income from fish farms has been reported by year 3 compared to the baseline data. 	
<p>Output 1. Improved river ecosystem management delivered through improved</p>	<ol style="list-style-type: none"> 1. Ecological baselines established for prey fish stocks/biodiversity, and 	<ol style="list-style-type: none"> 1. Baseline established in previous year. Gharial distribution map prepared annually (Supplementary Document 3). Final fish stock survey will be conducted in year 4. (On Schedule) 	

<p>management plans and environmental policy based on a robust Gharial and riverine ecosystem monitoring programme</p>	<p>gharial distribution in year 1, and repeating every year following that.</p> <ol style="list-style-type: none"> 2. Gharial and river ecosystem monitoring guidelines finalised, on the basis of successful monitoring in year 1, by end of year 2 3. PhD student project underway and 2 Masters students projects completed on Gharials and the river ecosystem by year 3 to feed into management plans 4. EDGE Fellow recruited with project focussed on gharial conservation to feed into management plans 5. Threats and impacts to Gharial population and fish biodiversity mapped across Narayani and Rapti ecosystems, including illegal fishing by year 2 6. Management plan for CNP updated, including strengthened policies on sustainable use of riverine biodiversity and reducing industrial and domestic waste by year 4 	<ol style="list-style-type: none"> 2. Completed in the previous years. (Completed) 3. All master students' project have been completed. The PhD student project is ongoing and will be completed in Year 4. (Slightly delayed and Ongoing) 4. Project recruited EDGE fellow continuing their research project. The results will be fed into the management plans. (On Schedule) 5. Threats and impacts to the gharial population and fish biodiversity mapped across Narayani and Rapti. (Completed this reporting Period) (Supplementary Document 2) 6. River ecosystem management plan drafted for Chitwan National Park. Project has been regularly coordinating with Chitwan National Park to ensure the CNP management plan updated and policies strengthened on sustainable use of riverine biodiversity and reducing industrial and domestic waste by year 4. (Ongoing)
<p>Activity 1.1 Collect and collate relevant literature available for Gharial and riverine ecosystem research and conservation</p>	<p>Completed in year 1.</p>	
<p>Activity 1.2 Recruit 1 PhD candidate, 2 MSc student and on EDGE Fellow</p>	<p>PhD student is conducting research on gharial movement and survival, two EDGE fellows are near completion of their research on gharial conservation and three M.Sc. students have all completed their research under this project of which one is completed during this reporting period.</p>	
<p>Activity 1.3 Conduct large scale Local Ecological Knowledge survey.</p>	<p>Completed in year 1.</p>	

Activity 1.4 Organise 2 inception meetings with conservation stakeholders (including DNPWC, NTNC, HN and BZCs) and experts	Completed in year 1.
Activity 1.5 2 workshops with wider stakeholders, consultation meetings with experts and community members for developing guidelines	Completed in year 1.
Activity 1.6 Produce gharial/river monitoring guidelines	Completed in year 1.
Activity 1.7 Conduct field training courses to train participants for the use of monitoring guidelines for PA staff, CBAPUs, conservation stakeholders, and university students.	Completed in year 1 and 2. During this year an orientation training has been organised for 59 CBAPUs members (Male = 54 and Female=5) from 11 CBAPUs (Gharial Guard Groups) set up with project assistance in year 1. The trainings covered gharial and other aquatic animal monitoring and conservation in Rapti, Narayani and its tributaries in CNP, its buffer zone, and the surrounding area (Annex 4.1).
Activity 1.8 Conduct baseline surveys for fish stock, amphibian stock, and water quality in major rivers of Chitwan National Park, these to repeat in year 4. Annual monitoring of Gharial's will start in year 2.	Annual gharial monitoring survey repeated in year 3. The results from the survey showed up to 230 (224-230) gharials in Rapti (111-116) and Narayani (109-119) river combined which is stable in comparison to the year 2 population survey, with a 5 % increment estimated compared to the baseline (Annex 4.2).
Activity 1.9 Revise gharial/river monitoring guidelines as necessary according to survey findings.	Completed in year 2
Activity 1.10 Share findings to park managers and stakeholders in a wider forum and agree on an annual monitoring plan	Results from the annual monitoring has been shared with Chitwan National Park (CNP) at the site level and to DNPWC officials at the central management level. ZSL is working together with CNP and DNPWC to further strengthen the recovery of the gharial population through evidence-based conservation actions guided by the Gharial Conservation Action Plan prepared and implemented by the government of Nepal. Also, CNP authorities have committed to further strengthening the gharial conservation works through their periodic management plan.
Activity 1.11 Publish at least 2 peer reviewed papers	This activity has been delayed. Two research articles have been drafted and are being currently reviewed by the co-authors from our partner organisation. The papers will be submitted within the first quarter of year 4 and the project will update progress on this activity during the half yearly report during the fourth year.
Activity 1.12 Organise preliminary meeting with conservation stakeholders (including DNPWC, NTNC, HN and BZCs) and experts to support DNPWC in development of river ecosystem management plan for Chitwan National Park	Completed in year 2.

<p>Activity 1.13 2 workshops with wider stakeholders, consultation meetings with experts and community members to input into ecosystem management plan</p>	<p>Completed in year 2</p>
<p>Activity 1.14 Conduct training workshop for the park staff and buffer zone community for river ecosystem management</p>	<p>A training workshop has been completed for 45 participants which included park staff, buffer zone representatives, members of local communities and relevant stakeholders. The training workshops primarily focused on various measures recommended by the River Ecosystem Management Plan prepared by the project in year 2 (Annex 4.11)</p>
<p>Output 2. Threats to fish stocks and gharials are reduced through protection provided by 10 Community-Based Anti-Poaching Units (CBAPUs) patrolling sensitive riverine zones in the Narayani and Rapti watersheds to protect the area from unsustainable fishing, poaching and other damaging and unsustainable uses of the river.</p>	<ol style="list-style-type: none"> 1. 6-person CBAPUs established in 10 local communities with a total of 60 members trained in river patrolling, with support and enabling roles targeted at women by year 1 2. Each CBAPU conducting 2 patrols of the river system per month in year 2 3. Protected area authorities actively collaborating with CBAPUs and utilising intelligence gathered by year 2 to inform patrol planning 4. Each CBAPU conducting 3 patrols of the river systems per month in year 3 with 100% of identified sensitive riverine zones being protected 5. Illegal fishing incidents down 50% from baseline in year 1 to year 4 6. Zero gharial poaching incidents in year 4 <ol style="list-style-type: none"> 1. A total of 66 members recruited under 11 CBAPUs. As value addition, 59 members trained in year 3. (Completed in previous years) 2. Each CBAPU (11 units) conducted river patrolling thrice a month for the final seven months of year 3. Total river patrols in year 3 was 284. The river patrol was continued by CBAPUs even during the monsoon floods. (Ongoing). 3. Protected areas authorities were actively collaborating with CBAPUs and are utilising their information to curb the illegal activities, rescue gharials and monitor the gharial nests. During this reporting year, 25 people were arrested for illegal fishing inside the national park and nine persons for illegally collecting river materials inside the national park based on the information provided by the CBAPUs. There is a strong mechanism for coordination established between CBAPUs and Park Authorities. (Completed by this reporting period) 4. Project achievement against indicator 2.4 presented in 2.2 above. (Partially Completed by year 2). 5. This will be reported by the end of the year four. 6. No records of gharials poaching this year. ZSL is constantly working with Park authorities and other stakeholders to maintain zero poaching of gharials. (On Progress)
<p>Activity 2.1 Assessment of status in the key locations for Gharial conservation for the establishment of CBAPUs</p>	<p>Completed in year 1.</p>

Activity 2.2. Identify 10 existing CBAPUs and establish additional CBAPUs if needed	Completed in year 1 and year 2.		
Activity 2.3 Train and equip CBAPUs in river patrolling	<p>Completed in year 1 and 2.</p> <p>As a value addition, a refresher training was conducted for 59 members of CBAPUs for monitoring river ecosystem, gharials and river patrolling. Out of the 59 members, five were females and 54 were males. The activity has been conducted together with Activity 1.7 (Annex 4.1).</p>		
Activity 2.4 Support the CBAPU for yearly monitoring programmes, linked with park authority to control illegal activities in the rivers	<p>The project has been continuously supporting CBAPUs for their yearly programmes for river monitoring, gharial and its nests monitoring and protection, reporting illegal activities. The project support has enabled CBAPUs members to timely report incidents of gharial net entanglement to PA authorities who then were able to rescue four gharials entangled in fish nets and four mugger crocodiles from community fish ponds. (Annex 4.3)</p> <p>As part of annual programmes 11 CBAPUs all together monitored 24 gharial nests among which 16 were from Rapti and eight in Narayani. CNP officials decided to transfer eggs from 10 nests to Gharial Conservation and Breeding Centre (GCBC). The eggs were transferred from the nests that were in the lower banks and were susceptible to be washed out by floods during pre-monsoon. The rest of the nests were guarded and monitored for protection from human interference to aid the in-situ breeding programme (Annex 4.4).</p> <p>During the year 3, the project supported a total of 284 patrols conducted by CBAPUs in 11 different monitoring sections in Rapti and Narayani.</p> <p>These river patrols were conducted in coordination with the park authority and have been effective in controlling illegal activities that included the arrest of 34 people.</p>		
<p>Output 3.</p> <p>Increased post-release survival of Gharial's from the Chitwan Gharial Conservation Breeding Centre (GCBC) delivered through implementing improved husbandry and release protocols, and post-release monitoring.</p>	<table border="0"> <tr> <td data-bbox="611 1110 1104 1418"> <ol style="list-style-type: none"> 1. GCBC infrastructure improved and identified required equipment supplied by year 1 2. Gharial husbandry and release guidelines developed and implemented at GCBC by year 3 3. All 12 GCBC staff trained in herpetology husbandry and release by year 2 </td> <td data-bbox="1104 1110 2096 1418"> <ol style="list-style-type: none"> 1. The project has supported the improvement of the GCBC's infrastructure. ZSL will further support infrastructure improvement in GCBC during year 4 and beyond the project timeline. (Completed) 2. Gharial husbandry and release guidelines have been prepared and submitted to CNP. It is currently under review, however, some recommendations are already being adopted. (Completed) 3. All 12 GCBC staff have been trained in herpetology husbandry and release in the previous reporting period. (Completed) 4. All 150 gharials released during year 2 and this reporting period were tagged. Of these, 25 gharials were fitted with GPS or VHF devices before </td> </tr> </table>	<ol style="list-style-type: none"> 1. GCBC infrastructure improved and identified required equipment supplied by year 1 2. Gharial husbandry and release guidelines developed and implemented at GCBC by year 3 3. All 12 GCBC staff trained in herpetology husbandry and release by year 2 	<ol style="list-style-type: none"> 1. The project has supported the improvement of the GCBC's infrastructure. ZSL will further support infrastructure improvement in GCBC during year 4 and beyond the project timeline. (Completed) 2. Gharial husbandry and release guidelines have been prepared and submitted to CNP. It is currently under review, however, some recommendations are already being adopted. (Completed) 3. All 12 GCBC staff have been trained in herpetology husbandry and release in the previous reporting period. (Completed) 4. All 150 gharials released during year 2 and this reporting period were tagged. Of these, 25 gharials were fitted with GPS or VHF devices before
<ol style="list-style-type: none"> 1. GCBC infrastructure improved and identified required equipment supplied by year 1 2. Gharial husbandry and release guidelines developed and implemented at GCBC by year 3 3. All 12 GCBC staff trained in herpetology husbandry and release by year 2 	<ol style="list-style-type: none"> 1. The project has supported the improvement of the GCBC's infrastructure. ZSL will further support infrastructure improvement in GCBC during year 4 and beyond the project timeline. (Completed) 2. Gharial husbandry and release guidelines have been prepared and submitted to CNP. It is currently under review, however, some recommendations are already being adopted. (Completed) 3. All 12 GCBC staff have been trained in herpetology husbandry and release in the previous reporting period. (Completed) 4. All 150 gharials released during year 2 and this reporting period were tagged. Of these, 25 gharials were fitted with GPS or VHF devices before 		

	<ol style="list-style-type: none"> 4. 40 gharials tagged on release in year 2 as a pilot, and monitored from then on 5. Released gharial annual mortality reduced 20% by year 4 from year 1 baseline 	<p>the release for regular monitoring of their movement. (Tagging Completed / Monitoring on going)</p> <p>5. The monitoring of the released gharial ongoing. (On Schedule)</p>
Activity 3.1. Conduct assessment of the GCBC infrastructure and prioritise for improvement		Completed in year 1.
Activity 3.2. Renovate GCBC infrastructure aiming to increase the egg laying, visitor experience, etc.		During this reporting year, the project further supported the improvement of the infrastructure in GCBC to improve the visitor's experience. (Annex 4.4)
Activity 3.3. Review GCBC's current egg collection practice from the wild and revise guidelines as appropriate		Completed in year 2.
Activity 3.4. Prepare husbandry and release guidelines for gharials of Nepal		Gharial husbandry and release guidelines have been prepared and submitted to CNP. It is currently under review; however, some recommendations are already being adopted.
Activity 3.5. Conduct training for GCBC staff on gharial handling and release		Completed in year 2.
Activity 3.6. Post-release monitoring of gharials with state-of-the-art methods e.g. satellite tagging, data loggers, etc. Include research on some existing wild populations for comparison		In addition to 20 gharials tagged in year 2, 5 gharials from GCBC were tagged with GPS tags before release during year 3. In addition to these 25 GPS/VHF Radio tagged gharials, all other gharials were also marked morphologically before release and are regularly monitored. The final monitoring report will be shared by end of year 4. (Annex 4.5)
Activity 3.7. Make recommendations to park managers and stakeholders in a wider forum based on findings		Planned in year 4.
<p>Output 4.</p> <p>Food security of local communities improved through implementing sustainable fishing, and reducing the dependence of local communities on fishing through generating sustainable aquaculture livelihoods.</p>	<ol style="list-style-type: none"> 1. 8 fish ponds, run by indigenous fish-dependent communities established of sufficient size to support at least 20 households each in the buffer zones of CNP, with a focus on management by women's groups by the end of year 1. 2. 60 households with a member trained in aquaculture are receiving 20% higher 	<ol style="list-style-type: none"> 1. The project supported eight community fishponds run by indigenous fish dependent communities. The total number of households involved in all these community managed fishponds is 164. This target was achieved in the previous year. (Completed) 2. The average household income has increased by 25 % compared to the baseline in this reporting period. A total of 164 households were trained on aquaculture. (Completed by this reporting period)

	<p>aquaculture income than baseline fishing income recorded in year 1, by year 2</p> <ol style="list-style-type: none"> 3. 20 people per day visiting each of 5 community conservation engagement centres in upstream communities by year 2 4. 120 households with a member trained in aquaculture livelihoods are receiving 20% higher aquaculture income than baseline fishing income recorded in year 1, by year 3 5. 90% (180 households) of practicing fishermen with valid licenses are using sustainable fishing methods by year 4 	<ol style="list-style-type: none"> 3. 5 drop-in centres established in upstream communities with 30 people visiting on average per day. (Completed by this reporting period) 4. Project achievement against indicator 4.4 reported in 4.2 above. (Completed) 5. The project has been working towards meeting this target. (On Schedule)
Activity 4.1. Meetings with park managers and buffer zone committees to identify indigenous fish dependent communities and households		Completed in year 1.
Activity 4.2. Conduct socioeconomic and livelihoods survey in fish-dependent communities in years 1 and 4		Completed in year 1.
Activity 4.3. Prioritise households based on the wealth ranking from the socioeconomic survey		Completed in year 1.
Activity 4.4. Identify areas suitable for the establishment of community managed ponds		Completed in year 2.
Activity 4.5. Set up 5 women-led committees of 10 households to manage and operate community fishponds		<p>Completed in Year 2.</p> <p>Project supported additional NPR 500,000 has been provided to further strengthen operation of the eight women-led communities. Community managed fishponds have been linked with existing markets, and two communities have been linked directly with tour operators to directly sell their fish products, resulting in increased income (NPR 1.76 million in two years) to members. Also, these community fishponds are now linked with local contractors of the district who directly buy fish from community fishpond to sell in bigger district markets</p>

<p>Activity 4.6. Organise 2 aquaculture training workshops for 150 households and 2 exposure visits for community leaders of identified communities</p>	<p>Two aquaculture training workshops were organised followed by exposure visits for the members of community-based fishponds. The trainings were to enable members of community managed fishponds for management and sustainable operation of the community-based fishponds (Annex 4.6a). The training covered various topics including fish farming concept, fish seed, care and management during fish rearing and fingerling production. Detail of the training syllabus provided in Annex (4.6 b). A total of 68 members (Male = 21, Female = 47) were trained.</p> <p>The trainings were followed by exposure visits to community fish community being run successfully in Koshi and Chitwan outside the project location. During these exposure visits participants observed and learned the best practices on account keeping, fishpond management, market linkages and benefit sharing mechanism (Annex 4.6c).</p>
<p>Activity 4.7. 5 community conservation engagement centres will be established in upstream communities for awareness raising of the project and the benefits of gharial and freshwater conservation.</p>	<p>The five-community conservation engagement centres or drop-in centres established through project support in previous years are functioning well and are fully owned by community members. Additional educational materials were provided to these drop-in centres during this reporting period(3000 brochures, 1000 posters displaying information on gharial and freshwater conservation). Likewise, 50 mounted posters have been distributed to national park offices, buffer zone offices, schools, local community-based organisations and crossroad tea shops. The records of drop-in centres show that in an average 30 people visit each community conservation engagement centres on a daily basis, totalling more than 50000 visits per year across the five centres.</p>
<p>Activity 4.8. Hold 10 community workshops on sustainable fishing and gharial conservation reaching 200 households</p>	<p>Altogether three community workshops have been completed in this reporting period to share knowledge with local communities on sustainable fishing and gharial conservation. Through these community workshops, 156 households were reached with the educated on sustainable fishing and gharial conservation. This will be continued as planned in the proposal. Annex 4.7.</p>

Annex 2: Project’s full current logframe as presented in the application form (unless changes have been agreed)

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Impact: Naranyi and Rapti river ecosystems are protected and restored, with the recovered gharial populations safeguarded and viable long-term, and providing ecosystem services to local fishing communities practicing sustainable livelihoods, reducing poverty.</p>			
<p>Outcome: Health of the Naranyi and Rapti river ecosystems restored, with improved water quality, increased fish stocks, and stabilised Gharial population, supported by local communities benefiting from sustainable livelihoods</p>	<p>1. By Year 4 the UNEP Water Quality Indicator for Biodiversity score in each river will show a steady increase, particularly in pollution hotspots (baseline that will be set in Year 1)</p>	<p>1. Water quality test for conductivity, Nitrogen, Oxygen, pH, Phosphorous, Temperature results</p>	<p>Positive trend in these key indicators indicate an overall increase in the biodiversity value of these river ecosystems. This method has been used successfully in the Chambal river.</p>
	<p>2. By Year 4 100% of the fishermen in the Narayani and Rapti river system will have a valid Fishing licenses, will be recording and reporting the weight of each catch (Baseline to be set in Year 1)</p>	<p>2. Social survey results and Socioeconomic survey on livelihood composition, DNPWC records</p>	<ul style="list-style-type: none"> • Positive results in all 3 ecological indicators (Gharial populations; fish populations; and water quality) indicate successful ecosystem restoration has taken place
	<p>3. By Year 4 Fisherman's catches will show a 20% increase in weight per unit effort and with key high value fish species showing a population recovery (baseline to be set in Year 1)</p>	<p>3. Fisherman landing records</p>	<ul style="list-style-type: none"> • Relevant authorities show continued commitment to implement robust management plans and monitoring programmes
	<p>4. By the end of Year 4 there will be a 30% increase in the Gharial populations in the wild within Chitwan National Park (Baseline to be set in Year 1)</p>	<p>4. Gharial population monitoring records</p>	
	<p>5. By the end of Year 4 adaptive management plans and participatory approaches have been adopted and are being implemented in the management of the wild and released Gharial population in Chitwan NP</p>	<p>5. DNPWC records showing iterative updates to Gharial management plans, and management plans</p>	

	6. By the end of Year 4 there will be a 30% increase in the Gharial populations within Chitwan National Park (Baseline to be set in Year 1)	6. Gharial population monitoring records	
	7. By Year 4 120 fish-dependent Household are sustainably managing fish-ponds, and receiving a regular income from farmed fish	7. Fish pond records, socioeconomic survey results	
Output 1: Improved river ecosystem management delivered through improved management plans and environmental policy based on a robust Gharial and riverine ecosystem monitoring programme	1. Ecological baselines established for prey fish stocks/biodiversity, and gharial distribution in year 1, and repeating every year following that.	1. Partner reports, Scientific Papers, survey reports, senior DNPWC briefing	• Monitoring programme sustainably institutionalised by DNPWC in the long term
	2. Gharial and river ecosystem monitoring guidelines finalised, on the basis of successful monitoring in year 1, by end of year 2	2. Guideline documents	• DNPWC continues to have adequate resources to implement the required changes in all the relevant areas affecting the riverine ecosystem in the Narayani and Rapti watersheds
	3. PhD student project underway and 2 Masters students projects completed on Gharials and the river ecosystem by year 3 to feed into management plans	3. PhD and MSc researcher producing at least 2 briefings written to inform decision makers. 1 technical work shop host each year for PA and partners staff. Data from field research is incorporated in to M&E system.	• Improved plans and policy are effectively translated into improved management
	4. EDGE Fellow recruited with project focussed on gharial conservation to feed into management plans	4. Scientific Papers, survey reports, policy briefing	Management plan is effectively implemented by DNPWC
	5. Threats and impacts to Gharial population and fish biodiversity mapped across Narayani and Rapti ecosystems, including illegal fishing by year 2	5. Scientific Papers, survey reports, policy briefing	

	6. Management plan for CNP updated, including strengthened policies on sustainable use of riverine biodiversity and reducing industrial and domestic waste by year 4	6. Management plan, DNPWC strategic documents, CNP reports, workshop with senior DNPWC leaders	
Output 2: Threats to fish stocks and gharials are reduced through protection provided by 10 Community-Based Anti-Poaching Units (CBAPUs) patrolling sensitive riverine zones in the Narayani and Rapti watersheds to protect the area from unsustainable fishing, poaching and other damaging and unsustainable uses of the river.	1. 6-person CBAPUs established in 10 local communities with a total of 60 members trained in river patrolling, with support and enabling roles targeted at women by year 1	1. Training attendance records, results of post-training assessment	• CBAPUs continue to be respected and influential within the community
	2. Each CBAPU conducting 2 patrols of the river system per month in year 2	2. CBAPU reports, SMART reports showing prioritisation of sensitive riverine zones	• Sufficient number and diversity of community members are willing to participate in CBAPUs
	3. Protected area authorities actively collaborating with CBAPUs and utilising intelligence gathered by year 2 to inform patrol planning	3. Monthly coordination meetings are being held between PA authorities and CBAPU leads, and intelligence-led patrols by DNPWC using intelligence gathered from CBAPU patrols taking place	• Fishing of prey fish and the killing of gharials, both unintentionally via fishing and through poaching, are the key threats for the Gharial population.
	4. Each CBAPU conducting 3 patrols of the river systems per month in year 3 with 100% of identified sensitive riverine zones being protected	4. CBAPU reports, SMART reports showing that 100% of identified sensitive riverine zones have been patrolled	
	5. Illegal fishing incidents down 50% from baseline in year 1 to year 4	5. DNPWC Records, CBAPU reports, SMART reports	
	6. Zero gharial poaching incidents in year 4	6. DNPWC Records, CBAPU reports, SMART reports	
Output 3: Increased post-release survival of Gharial's from the Chitwan Gharial Conservation Breeding Centre (GCBC) delivered through implementing improved husbandry and release	1. GCBC infrastructure improved and identified required equipment supplied by year 1	1. Equipment records, installation records and GCBC reports	• Factors unrelated to the release procedures are not the primary cause of released gharial mortality
	2. Gharial husbandry and release guidelines developed and implemented at GCBC by year 3	2. Training attendance records, results of post-training assessment	Factors relating to post-release mortality are identified and adequately addressed through other project Outputs, specifically monitoring??
	3. All 12 GCBC staff trained in herpetology husbandry and release by year 2	3. Gharial tagging and monitoring reports	
	4. 40 gharial tagged on release in year 2 as a pilot, and monitored from then on	4. Guideline document approved by GCBC, GCBC records	

protocols, and post-release monitoring.	5. Released gharial annual mortality reduced 20% by year 4 from year 1 baseline	5. Release reports, reports from post release monitoring	
Output 4: Food security of local communities improved through implementing sustainable fishing, and reducing the dependence of local communities on fishing through generating sustainable aquaculture livelihoods.	1. 8 fish ponds, run by indigenous fish-dependent communities established of sufficient size to support at least 20 households each in the buffer zones of CNP, with a focus on management by women's groups by the end of year 1.	1. Fish pond management, environmental safeguarding guidelines on fishpond construction and management, and lease records	• Aquaculture combined with increased awareness and strengthened protected area management disincentives illegal, and harmful fishing practices
	2. 40% (60) of those households with a member trained in aquaculture are receiving aquaculture income higher than baseline fishing income recorded in year 1 by year 2	2. Partner reports, alternative livelihood records, social surveys	• Sustainable fishing increases the food security of local communities
	3. 20 people per day visiting each of 5 community conservation engagement centres in upstream communities by year 2	3. Partner reports of drop in centres	• Communities have the will to manage their resources sustainably long-term
	4. 80% (120) of those households with a member trained in aquaculture livelihoods receiving aquaculture income by year 3	4. Partner reports, alternative livelihood records, social surveys	• Unequal benefit sharing, corruption and theft do not fundamentally undermine community aquaculture
	5. 90% of practicing fishermen with valid licenses are using sustainable fishing methods by year 4	5. Fishing techniques survey at start of project and in year 4, and a reduction in the number of accidental deaths of gharials	
Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)			
1.1	Collect and collate relevant literature available for Gharial and riverine ecosystem research and conservation		
1.2	Recruit 1 PhD candidate, 2 MSc student and on EDGE Fellow		
1.3	Organise 2 inception meetings with conservation stakeholders (including DNPWC, NTNC, HN and BZCs) and experts		
1.4	2 workshops with wider stakeholders, consultation meetings with experts and community members for developing guidelines		
1.5	Produce gharial/river monitoring guidelines		
1.6	Conduct field training courses to train participants for the use of monitoring guidelines for PA staff, CBAPUs, conservation stakeholders, and university students.		
1.7	Conduct baseline surveys for fish stock, amphibian stock, and water quality in major rivers of Chitwan National Park, these to repeat in year 4. Annual monitoring of Gharial's will start in year 2.		
1.8	Revise gharial/river monitoring guidelines as necessary according to survey findings.		
1.9	Share findings to park managers and stakeholders in a wider forum and agree on an annual monitoring plan		
1.1	Publish at least 2 peer reviewed papers		
1.11	Organise preliminary meeting with conservation stakeholders (including DNPWC, NTNC, HN and BZCs) and experts to support DNPWC in development of river ecosystem management plan for Chitwan National Park		
1.12	2 workshops with wider stakeholders, consultation meetings with experts and community members to input into ecosystem management plan		

1.13	Conduct training workshop for the park staff and buffer zone community for river ecosystem management
2.1	Assessment of status in the key locations for Gharial conservation for the establishment of CBAPUs
2.2	Identify 10 existing CBAPUs and establish additional CBAPUs if needed
2.3	Train and equip CBAPUs in river patrolling
2.4	Support the CBAPU for yearly monitoring programmes, linked with park authority to control illegal activities in the rivers
3.1	Conduct assessment of the GCBC infrastructure and prioritise for improvement
3.2	Renovate GCBC infrastructure aiming to increase the egg laying, visitor experience, etc.
3.3	Review GCBC's current egg collection practice from the wild and revise guidelines as appropriate
3.4	Prepare husbandry and release guidelines for gharials of Nepal
3.5	Conduct training for GCBC staff on gharial handling and release
3.6	Post-release monitoring of gharials with state of the art methods e.g. satellite tagging, data loggers, etc. Include research on some existing wild populations for comparison
3.7	Make recommendations to park managers and stakeholders in a wider forum based on findings
4.1	Meetings with park managers and buffer zone committees to identify indigenous fish dependent communities and households
4.2	Conduct socioeconomic and livelihoods survey in fish-dependent communities in years 1 and 4
4.3	Prioritise households based on the wealth ranking from the socioeconomic survey
4.4	Identify areas suitable for the establishment of community managed ponds
4.5	Set up 5 women-led committees of 10 households to manage and operate community fish ponds
4.6	Organise 2 aquaculture training workshops for 150 households and 2 exposure visits for community leaders of identified communities
4.7	5 community conservation engagement centres will be established in upstream communities for awareness raising of the project and the benefits of gharial and freshwater conservation.
4.8	Hold 10 community workshops on sustainable fishing and gharial conservation reaching 200 households

Annex 3: Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
6A	Training on aqua culture	M = , F=	Nepali	75	75	74	149	150
6A	Orientation training to CBAPUs on gharial and other aquatic animal monitoring	Male = 54 Female = 5	Nepali	27	64	59	150	200
6A	Training on river patrolling to CBAPU members	Male = 54 Female = 5	Nepali	27	33	59	119	150
14 A	Workshop	-	Nepali	-	4	3	3	10
2	Number of people to attain Masters' qualifications		Nepali	-	3	-	3	4
	Number of people to attain PhD Qualification		British	-	1	1	1	1
	Number of people to complete EDGE Fellowship		Nepali	-	2	2	2	2

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
NA						

Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@itsi.co.uk putting the project number in the Subject line.	√
Is your report more than 10MB? If so, please discuss with Darwin-Projects@itsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	√
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	
Have you involved your partners in preparation of the report and named the main contributors	√
Have you completed the Project Expenditure table fully?	√
Do not include claim forms or other communications with this report.	