Department for Environment Food & Rural Affairs

DARWIN INITIATIVE

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Darwin Initiative
Final Report

To be completed with reference to the Reporting Guidance Notes for Project Leaders (http://darwin.defra.gov.uk/resources/) it is expected that this report will be a ***maximum*** *of 20 pages in length, excluding annexes)*

Darwin project information

Project reference	21-020
Project title	Eels – a flagship species for freshwater conservation in the Philippines
Host country(ies)	Philippines
Contract holder institution	The Zoological Society of London
Partner institution(s)	TRAFFIC, Bureau of Fisheries and Aquatic Resources (BFAR), Department of Environment and Natural Resources (DENR) and Biodiversity Management Bureau (BMB).
Darwin grant value	£306,845
Start/end dates of project	1/5/2014 – 30/6/17
Project leader's name	Matthew Gollock
Project website/blog/Twitter	https://www.zsl.org/conservation/regions/asia/freshwater-eel-conservation-in-the-philippines https://twitter.com/ZSLMarine
Report author(s) and date	Matthew Gollock - 31/08/17

1 Project Rationale

There is growing international concern for the population abundance and escapement trends of the primarily catadromous eels of the family Anguillidae, and incomplete knowledge of their remarkable life-histories hampers stock assessment, management and conservation. Anguillids breed in the ocean and feed and grow in continental coastal and freshwater bodies, and as such they link both marine and inland waters and can act valuable indicator and integrator of the well-being of aquatic ecosystems. These species experience a suite of pressures that include habitat loss/modification, migration barriers, pollution, parasitism, exploitation, and fluctuating oceanic conditions that likely have synergistic and regionally variable impacts, even within species. Equally concerning is our poor understanding of the tropical species some of which, in addition to existing threats, are beginning to be exploited, legally and illegally, in increasing numbers due to the decline in temperate species. As anguillid eels spend a significant portion of their time, often decades, in freshwater, they are able to act as an excellent flagship species for this ecosystem.

Anguillid eel fisheries are locally, nationally and internationally important, but populations are declining. Of particular concern is the increase in illegal trade and export of poorly-understood and unmanaged tropical eels due to reduced availability of other eel species, including the Critically Endangered (IUCN) and CITES Appendix II-listed European eel.

A scoping trip was carried out in 2013 and focussed where eel fisheries in the Philippines were believed to occur - the Cagayan River (Luzon). Increased exploitation of anguillids had resulted in an export ban in 2012 – Fisheries Administrative Ordinance (FAO) 242 – but national fishing and trading remains permitted. However, online adverts for Philippines' exports, reported customs imports into East Asia and data from our scoping trip indicate intensive fishing effort and illegal international trade continue. Eel fishers are extremely poor and fluctuating prices due to variable demand along the supply chain have serious impacts, as many abandoned other work when eel fishing was more profitable. Additionally, methods used for eel fishing negatively impact other fish populations and associated livelihoods.

The project's aims focussed on the threats to anguillid eels as a proxy for the freshwater environment more broadly, and also the human populations that rely upon these resources. Eels are being exploited on a global scale and our understanding of these species and the effects of fisheries, and other threats, on their populations is very limited. This is particularly true for tropical species such as those found in the Philippines where, exploitation has been high in recent years due to demand from East Asia, freshwater conservation and management is limited, and the capacity to catalyse such initiatives is absent. Further the communities that relied on these resources often had poor economic status, no voice at the local government level and lacked capacity to change this situation.

As such, the project proposed to better understand the demand and trade – both legal and illegal - of these species, and how fisheries, and other threats affect eels, freshwater habitats and fisherfolk who rely upon these resources in the Cagayan River Basin (CRB), an area identified as having a huge increase in eel fisheries. By ensuring that eel populations are conserved, and associated fisheries are ecologically sustainable and economically equitable, the security of freshwater biodiversity and associated human populations will improve. Additionally, by identifying the needs and capacity gaps in key locations within the area where eels were exploited, interventions could be crafted to address this.

The project need was identified through a number of routes. ZSL has been working in the Philippines for over 10 years and the need for conservation initiatives focussing on freshwater was very clear. Further, prior to contacting in-country partners, both ZSL and TRAFFIC were leading on activities relating to eel conservation and trade respectively and it was becoming clear that the Philippines was a country that was important as far as both anguillid eel species abundance, and legal and illegal trade was concerned. As such, these organisations carried out a Darwin Initiative-funded scoping trip to develop a project plan and relations with key in-country partners, the Bureau of Fisheries and Aquatic Resources (BFAR) and Biodiversity Monitoring Bureau (BMB). It was through this scoping visit we were able to identify and prioritise the issues that have ultimately been included in the project.

2 Project Partnerships

ZSL engaged with three partner organisations during the initial development of the project primarily through identifying who would fill capacity gaps and/or implement elements of the proposed project. BFAR, TRAFFIC and BMB partners were engaged in the development of all project activities through a scoping trip that was carried out in 2013, and the subsequent period leading up to the proposal being submitted.

TRAFFIC were identified as having relevant expertise relating to trade of anguillid eels and were key in outputs relating to enforcement and data analysis (output indicators [OI] 1.1-1.4; and 2.1). BFAR, are the national authority responsible for 'the development, improvement, management and conservation of the country's fisheries and aquatic resources' and as such would be essential in providing expertise, historical context and implementing the project, and ensuring legacy beyond it's life (OI 1.2-1.4; 2.1-2.3; 3.3 and 3.6; 4.3; and 5.1). To ensure that BFAR's expertise was both locally and nationally relevant we chose specifically to work with 'Region 2' - the administrative area that include the CRB – where Dr Evelyn Ame, the national lead on anguillid eels, is based. This would ensure we had relevant expertise and also a route to disseminate lessons learned to other areas of the Philippines where anguillid eels are found. BMB, the authority charged with conserving and sustainably managing the country's biodiversity, were a key project partner for the first year of the project, focussing on elements of the project relating to the freshwater habitat (OI 2.1; and 4.1-4.4). Due to capacity issues, and the lack of an office in Region 2, we subsequently engaged with DENR in this area in Y2 – the department under which BMB sits – in order to ensure we had habitat management expertise available. BMB continued to support the project but DENR became our on the ground partner from this point onwards.

As the project draws to a close, we feel that the partners have been well selected and were able to cover many of the needs during implementation. Strong working relationships have been developed, which is highlighted in the recent ZSL/DENR/BFAR submission - and successful funding of by the DI - a project that builds on the work of elements of 21-010 focussed on freshwater management. One of the main challenges encountered during the project was engaging with government agencies relating to enforcement e.g. Bureau of Customs, and while we were ultimately able to work with these organisations during a workshop held in 2-5/5/17 (see Annex 7 for agenda), it may have been valuable to include them as a project partner in the first instance in order to ensure more regular input.

ZSL have drafted and collated this report but all partners were engaged during the process and provided input and supporting document.

Figure 1. Maps of study area – ZSL office location in Aparri is labelled.

3 Project Achievements

3.1 Outputs

Output 1. Local and national capacity and policy is amended to improve the chain of custody in national and international trade and CITES commitments are being met.

During the scoping trip in 2013, it was clear that there was significant violation of national legislation, specifically FAO 242 (http://www.bfar.da.gov.ph/LAW?fi=405#post) which was instated in 2012 to prevent the export of juvenile eels under 15c. Fisheries for eel under this size were still legal but there was no market for them fish in the Philippines and so without on-growing facilities – which until recently have been absent – it was assumed that a significant proportion of catches were being exported illegally. Cursory analysis of trade data prior to the project indicated that juvenile eels were being exported from the Philippines to a number of East Asian countries, and a full report on this situation was carried out by TRAFFIC as part of the project (OI 1.1 - http://www.trafficj.org/publication/14_Slipping_Away.pdf; also listed in Annex 5 with other project reports) and highlighted the scale of this problem and the changes in anguillid eel trade dynamics since the EU banned export in 2010. This ban resulted in increased importance of the Philippines – and other countries such as the US, Canada and Morocco - to the trade. The document was extremely useful in raising the profile of the situation in the Philippines amongst other anguillid range states and highlighted the impact of the actions taken by the EU in response to the CITES Appendix II listing of the European eel in 2007 on poorly understood tropical species, such as *Anguilla bicolor*. Since this report was produced, CITES has adopted four decisions (https://cites.org/eng/dec/valid17/81868) in order to examine the impact of the European eel listing and the status of all anguillid eels. Both TRAFFIC and ZSL staff have been engaging closely with the CITES secretariat since this time and attended the 17th Conference of the Parties in Johannesburg (2016), and 29th Animal Committee in Geneva (2017); both organisations have representation on the recently formed working group (https://cites.org/sites/default/files/eng/com/ac/29/sum/E-AC29-ExSum-02.pdf) that will work to achieving the goals of the adopted decisions ensuring that that lessons learned from the project can be inputted to the process. Further, BFAR were invited as an observer to 'Tenth Meeting of the Informal Consultation on International Cooperation for Conservation and Management of Japanese Eel Stock and Other Relevant Eel Species' (https://cites.org/sites/default/files/eng/com/ac/29/inf/E-AC29-Inf-13.pdf).

As part of this output it was hoped that enforcement capacity could be increased in order to reduce illegal trade (OI1.2 and 1.4). A workshop was held in May 2016 (see Annex 8 for meeting agenda) with the original aim of engaging enforcement staff, however, BFAR felt it was more appropriate to address national traceability at this workshop and customs staff were not present. While this was unfortunate, it was a still a productive meeting that will be helpful for dealing with the national chain of custody, and a draft version of a FAO relating to aquatic species traceability was produced (OI 1.3; see Annex 9 for first page of draft FAO). We were able to reschedule the enforcement workshop (see Annex 7) but not until close to the end of the project May (2017) and so there was little opportunity for follow-up. The workshop was well-attended with representatives from BFAR Central Office and Regional Offices, National Fisheries Research and Development Institute, Philippines National Police (Maritime), Philippine Statistics Authority and the Bureau of Customs, and felt to be a successful first step in addressing enforcement capacity (http://www.traffic.org/home/2017/5/12/philippines-workshop-promotes-co-operation-between-enforceme.html). While it is unlikely that we fully achieved OI 1.3, we are confident that it has catalysed communications between areas of government that will benefit the sustainable management of legal, traceable trade in anguillid eels from the Philippines. With regard to OI 1.4, a short follow-up assessment of the trade situation was carried out by TRAFFIC in April 2017 (see Annex 10 for report). By it's nature, the assessment of illegal trade is very difficult and potentially dangerous, however, there were indications in the report, that practices were generally moving towards adhering to FAO 242 i.e. a reduction in export generally, with a shift towards larger juveniles, and an increase in fish farms aiming to grow eels to a legal size. It is also difficult to draw a direct line between the project and these positive actions, however, for over three years we have engaged with national industry stakeholders through the project activities - particularly Output 3 – and increased the profile of the Philippines eel trade in international fora, and as a consequence, are confident that the project and it's partners have played a role in highlighting the illegal anguillid trade both nationally and internationally (see Annex 11 for selected media examples on illegal trade and the project more broadly). Unfortunately, as stated in the report, it is still the case that adverts for illegal exports are still appearing on B2B platforms, however, this was an area discussed with project partners and BFAR are leading a process to begin the licencing of all existing and proposed eel farms (see agenda items in Annex 8) which would be a step towards ensuring farms are trading legally. This process is presently in the phase of stakeholder engagement, as per national law. Further, during the project, BFAR were exploring options as to how to strengthen FAO 242 in response to the information collected as part of Output 1 and Output 2 – this process was on-going at the time of writing, but acknowledged that the eel fishery fluctuated due to overseas demand.

Overall, it is likely the time-scale required for policy change was under-estimated as there has been no national policy development during the project. However, a number of extremely positive steps have been taken forward with regards to improving traceability, increasing enforcement, and reducing illegal trade which all partners view as both nationally and internationally important.

Output 2. Sustainable eel management plan for the Cagayan River Basin integrated from the community to the national level.

The development of national eel management plans (EMPs) was the mechanism by which the EU aimed to implement the regulation that was developed in 2007 in response to the decline in European eel stocks (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32007R1100&from=EN). These have been in place since 2009 and many lessons, both positive and negative, have been learned we felt could be applied in the development of an EMP in Region 2.

The process of gathering information, producing supporting documents, engaging with relevant stakeholders (see Annex 12 for EMP core group, Annex 13 for an example EMP stakeholder meeting agenda, and Annex 14 which relates to a Value Chain Analysis workshop held by BFAR), and having the EMP adopted by the regional government (OI 2.1 - see Annex 5 for links to EMP and supporting documents) took significantly longer than expected – the EMP will have it's final adoption at the Regional Development Council on 15/9/17. However, we feel that we have ended up with a robust document that BFAR will now lead on implementing over the next five years; further, acknowledging the importance of healthy ecosystems and resilient stakeholders to the success of management measures, it will go beyond simply focussing on eels and benefit aquatic habitats and communities. Prior to the development of the EMP, in-country partners were addressing issues relating to anguillid eels, freshwater habitats and local stakeholders, however there was no real co-ordinated approach which during the scoping trip, was agreed as being necessary both regionally and nationally. The EMP is a first step towards consolidating these activities, laying out clear roles and responsibilities, with an associated monitoring and evaluation plan. Further, the process of creating the EMP has helped to build relationships between eel stakeholders at a local, regional and national level which will hugely facilitate it's implementation. The EMP will be supported by a five-year work plan that is presently being developed by in-country partners. What has been most encouraging is that there is already discussions within BFAR to use the EMP as a template for development in other parts of the Philippines where anguillid eels are found. Beyond the Philippines, it is hoped that the process of developing this document will act as a pilot study for the establishment of EMPs in other areas/countries where poorly understood tropical eels are in need of conservation and management action. Both ZSL and BFAR are well place to promote this through their engagement in fora such as SEAFDEC, IUCN and CITES.

Fisheries-independent data collection (OI2.2) was initiated through the establishment of the 12 Fish Sanctuaries (FS) (See Output 4) and the associated Community Monitoring Groups (CMG). Training was given to community members in fisheries independent data collection and biodiversity monitoring (see OI 4.4) and materials created and distributed (see Annex 15 for an example). Action plans for each CMG were developed as an output of capacity building training and participatory workshops facilitated by ZSL staff.

In relation to fisheries dependent data collection (OI 2.3), it became clear that in the period between the scoping visit and the project beginning that the eel fisheries in the CRB had declined in scale, and according to BFAR, likely being replaced by fisheries in other parts of the Philippines (see Annex 10 for examples in Mindanao). Table 1 shows the results from Focus Group Discussions (FGD) carried out in key communities that highlight this decline, and Table 2 highlights how this was intrinsically linked to the value of the catch – all FGDs indicated that PhP10,000/kg was the minimum price that they would consider fishing for. As such, in the CRB, eel fisheries are, at present, not a sole source of income and occur mainly in response to market prices and as such collection of long-term fisheries data could be problematic.

Barangay	Percentage of community involved in glass eel fishing/Year									
	1990-1994	1995-2000	2001-2005	2007-2009	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Bisagu	x	x	x	x	x	x	75%	25%	30%	3%
Toran	2%	10%		25%	25%	x	50%	90%	10%	x
Sapping	x	x	x	x	x	x	70%	50%	10%	3%
Nagtupacan	x	x	35%	x	50%	90%	95%	30%	10%	x
Namuac	x	x	x	x	50%	x	30%	50 -60%	15%	5%
Centro	x	x	x	x	x	5%	40%	10%	3%	x
Caroan	x	x	x	x	30%	50%	60-70%	90%	30%	10%

Table 1. FGD data relating to eel fishing activity in focal coastal communities.

Barangay	Average price in Philippine Pesos (PhP) per year/kg									
	1990-1994	1995-2000	2001-2005	2007-2009	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Bisagu	x	x	x	x	x	19,000-54,000	4,000-5,000	4,000-5,000	500-1,000	x
Toran	300 - 500	3-4,000	x	9,000	x	12,000 - 54,000	12,000 - 54,000	4,000-5,000	500-1,000	300 - 500
Sapping	x	x	x	x	x	x	4,000-5,000	3,000-4,000	500-1,000	x
Nagtupacan	x	x	x	3,000 - 4,000	14,000	27,000	2,000-5,000	1,000-2,000	500-1,000	x
Namuac	x	x	x	3,000	x	x	28,000	1,000-2,000	500-1,000	x
Centro	x	x	x	x	8,000	24,000 - 50,000	2,000-5,000	1,000-2,000	500-1,000	x
Caroan	x	x	x	3,000	10,000	20,000	40,000-45,000	1,000 - 3,000	500 - 1,000	x

Table 2. FGD data relating to price of juvenile eels in focal coastal communities.

In order to carry out baseline monitoring we established a twelve month programme of working with local fishers in the CRB during 2015/2016 in order to monitor the abundance and species composition of anguillid eels at key sites (See Annex 5 for link to fisheries report). This highlighted that there are three of the seven species found in the Philippines present in the CRB – *Anguilla marmorata*, *A. luzonensis* and *A. bicolor*. Catches were examined visually, and over the year that the study took place it was posited that *A. luzonensis* was the most abundant species (47%) followed by *A. marmorata* (41%) and *A. bicolor* (12%). This was cross-checked using molecular analysis of 30 juvenile eel samples per month and found slightly different results - *A. luzonensis* (41%), *A. marmorata* (53%) and *A. bicolor* (6%). This is likely due to a mixture of inaccuracies in visual identifications, and the small number of samples used in the molecular study due to the cost of processing, however for the purposes of the EMP, it was extremely helpful in identifying that the *A. bicolor* was found in low levels. This is the species that is preferred by other East Asian nations, and the decline – anecdotal discussions with traders indicate the numbers were much higher in the recent past – could indicate why fisheries have declined within the past five years. The collected information was fed in to the EMP, and through engagement with Local Government Units (LGUs) in areas where eel fisheries occur, and fishers, - through the socio-economic surveys and capacity-building programme (see Output 3) – and the creation of the EMP, both an increased skill set, and a mechanism, to provide data to BFAR has been established. As such, should the fishery increase to similar levels seen in 2012 / 2013 the

Ultimately Output 2 has been achieved, though there have been delays in implementation and challenges relating to the establishment of species-specific monitoring. We acknowledge that the workplan is still being created, but through the engagement of stakeholders from national government, to local fishers, the EMP has strong buy-in and a robust structure for implementation.

Output 3. Existing Fisherfolk Associations (FFAs) are trained to manage eel fisheries, collect fisheries dependent data at the community level, and attain financial stability through VSLAs.

In order to fully understand the social and economic aspects of the anguilld eel supply chain it was essential to carry out a survey of locations where fishers and traders lived and worked (OI 3.1 – see Annex 5 for link to report). This survey was essential for identifying areas where existing Fisherfolk Associations (FFAs) were located (OI 3.2) and where the greatest capacity needs were, such that key sites/communities could be identified for training and capacity building activities (OI 3.3). However, as previously stated in our annual reports, the scale of the survey was over-ambitious and our timeline slipped significantly. The survey required follow up Focus Group Discussions (FGDs) with the eight key communities we identified for capacity building and training exercises (Bisagu, Aparri; Toran, Aparri; Abulug, Centro; Pamplona, Nagupacan; Sanchez Mira, Namuac; Santa Ana, Centro; Gonzaga, Caroan; and Camalaniugan, Sapping - see Annex 16 for map of key sites) but this we felt strengthened the data that we collected as well as our relationships with these communities, and offered an opportunity to verify what had been initially collected. The first major community-focussed training course was in organisational skills and leadership (see Annex 17 for training workshop outline); this was designed to address any existing issues in FFAs and ensure that these organisations were engaging with LGUs and adequately representing their members. This course was followed up with a programme of education and training focussed around eels and the associated fisheries, and how communities can feed information to LGUs and BFAR to strengthen management and engage with the implementation of the EMP (See Annex 18 for fisheries dependent monitoring sheet; Annex 19 for example slide from BFAR training presentations; and Annex 20 for output matrix from fisheries training course).

The socio-economic survey highlighted that many of the communities that were engaged often had a fluctuating income and no savings e.g. it was boosted when there was a demand for juvenile eels but would often drop back to 'subsistence level' in the absence of this. Traditional banking services were not available to most of these communities and it was identified that the fishers' would highly benefit from financial literacy training, and access to low technology banking services to increase household financial resilience. ZSL has implemented Village Savings and Loans Associations (VSLAs - http://vsla.net/ - known as COMSCAs in the Philippines) in many communities outside of Luzon with great success and it was felt this would be an appropriate intervention to be included in the project.

Three of the eight focal sites FFAs self-selected to establish COMSCAs (OI 3.4 – see Annex 21 for CoMSCA meeting minutes) consisting of 57 members - CoMSCAs only allowed one member per household to ensure the maximum impact across a community. All three COMSCAs 'matured' in their first year of operation, with two groups moving into their second year with a membership retention of 75% (OI 3.5). The final group that chose to temporarily dissolve due to work demands is currently re-organising itself and in the process of self-selecting additional members. Across all groups, 79 loans were dispersed and 92% of member's availed loans. The majority of loans were taken to cover health care and medical bills (22%), and as additional capital to fund other livelihood activities; fishing and non-fishing related (21%). During the final share-outs after the first 12 month cycle, 28% of members planned to use their final savings on meeting basic needs such as buying food, 20% planned to use it towards education expenses and 21% on making home improvements. The average share out received per member and return of investment per member is shown in Table 3 below.

	Total share out funds	Mean share out funds / member	Total return on investment	Mean return on investment / member
Bisagu CoMSCA Group Association	113,701 PhP (£1,697)	5,984 PhP (£91)	£234 (15%)	812 PhP (15%) (£12)
Caroan CoMSCA Fighters Saving Group	52,380 PhP (£782)	4,029 PhP (£61)	£117 (17%)	593 PhP (17%) (£9)
Centro Abulug Savings Association	411,663 PhP (£6,144)	16,466 PhP (£250)	£1,306 (26%)	3446 PhP (16%) (£52)

Table 3. Summary CoMSCA data

All three groups elected to include an environmental fund as part of their CoMSCA highlighting the wish to invest in local biodiversity management. These funds (totalling PhP10,978 ~ £166 across the three sites), will act as leverage for matched funding from LGUs allowing larger scale activities to occur. Currently, the groups have retained these funds in the community bank and will continue to grow during the second cycle, however, they have expressed interest in using these funds to pay for projects such as waste segregation management. As was evidenced in the results of the socio-economic survey, many of these areas do not have any waste management infrastructure and are not serviced by the government collection.

To ensure the legacy of CoMSCAs was maintained and grown, and in response to the enthusiasm amongst other community members to have access to the service, individuals were selected from each group to act as a village agent – a member of a COMSCA who can train other community members to establish them (see Annex 22 for the summary of outputs from Village Agent training).

Similar to OI 1.4, OI 3.6, has been slightly ad hoc, due to the decline in fisheries in the region, but we are confident that our engagement with communities through the socio-economic survey, FGDs and the EMP stakeholder meetings has improved information flow between fishers, LGUs and BFAR. However we feel that overall, we have a great deal of success in Output 3, particularly with COMSCAs. This was an intervention that was developed part way through the project's life due to our process of monitoring and evaluation, and while only implemented in three communities, was seen to have a huge impact on the members. We will be rolling out COMSCAs in the region through our follow-up project based on the success of this pilot intervention.

Output 4. Aquatic survey methods are established to monitor the freshwater biodiversity in the Cagayan River Basin and key threats are mitigated against.

The CRB is the largest river system in the Philippines and as such, it was key to the project's aims that a suite of interventions were carried out that has impact beyond just anguillid eels to the freshwater habitat and all the associated species in the region.

A habitat assessment training workshop was conducted and attended by 45 participants from various stakeholders including BFAR, DENR and LGUs in Cagayan which lead to habitat and threat surveys and eel visual census being carried out at 22 sites consisting of 209 sampling stations in seven municipalities and three provinces in the CRB (OI2.1/2.2 – see Annex 5 for habitat survey report). These sites had been identified through engagement with LGUs and local stakeholders such that there was coverage across the region, but also included areas where growth stage eels had been caught historically. The methodology that was used to carry out of the survey was adopted from existing protocols developed in the UK - http://www.sfcc.co.uk/assets/files/SFCC%20Habitat%20Training%20Manual.pdf – such that they would be appropriate for the CRB, and has been adopted by DENR / BMB to ensure future habitat surveys will allow comparison to the data that was collected as part of this project. It was clear that many of the sites surveyed were impacted by stakeholders who live next to the rivers through the cutting of trees for fuel and charcoal; conversion of river banks into agricultural land through slash and burn of existing foliage; construction of Small Water Impounding Projects (SWIPs) and pumping stations of the National Irrigation Administration; unsustainable extraction of aquatic resources; and the constant increase in human population as evidenced by the presence of informal settlers, along the main river. Both in these settlements and existing communities, it was highlighted that waste and inadequate provision for it's disposal was also a major issue. It is stated in Article 51 of Presidential Decree 1067 (known nationally as 'The Water Code - http://www.lawphil.net/statutes/presdecs/pd1976/pd_1067_1976.html) that buffer zones should be established along the banks of rivers and lakes. There was clear evidence during the surveys that these buffer zones were not being adhered to which undoubtedly impacts the river through increased agricultural run-off and direct input of human waste from settlements. As such, a key element of the habitat surveys, was the inclusion of local stakeholders from communities and/or LGUs, such that key sites could be identified for threat mitigation interventions (OI 4.3). As a result of this engagement, twelve key protected biodiversity monitoring sites – hereafter known as freshwater sanctuaries (FS) – were identified and established (Table 4).

Barangay	Name of Sanctuary	Area (Hectares)
Santa Ana	Pinsal falls FS	1
Tanglagan	Tanglagan falls FS	1.2
Pallagao	Blue water Falls FS	1
Asinga-via	Hot spring FS	1
San Miguel	Duba Cave FS	4.5
Agugaddan	Callao FS	8.8
Minanga	Santor FS	4
Buyasan	Buyasan FS	1.5
Disulap	Disulap FS	2.8
Disusuan	Disusuan FS	2.8
Divisoria Sur	Governors rapids FS	4
Ponggo	Siitan FS	2.2
	TOTAL	**34.8**

Table 4. List of Freshwater Sanctuaries.

Barangay Ordinances (see Annex 23 for an example of legal documentation) were formulated for each FS and community management bodies (FSMBs – see Annex 24 for an example list of stakeholders) created and management plans developed by LGUs for adoption and implementation by FSMBs (see Annex 25 for example FS management plan). Additionally, signage was installed at all sites (see Annex 26 for example of FS signage), as have markers for both the strict protection and buffer zones – these are areas that can be entered and used in ways deemed 'sustainable'; these are defined in FS management plans. Outreach programmes were implemented in each of the communities hosting a FS – both to adults and school children - relating to the theory behind protected area establishment and sustainable aquatic resource use (see Annex 27 for agenda of River Warden and fisheries independent monitoring training).

Within FSMBs, are CMGs (see OI 2.2) who are responsible for fisheries independent monitoring of anguillids but biodiversity monitoring more broadly (OI4.4). A suite of biodiversity indicator species has been developed from a BMB freshwater manual in collaboration with DENR and identification material produced (see Annex 28 for example of species guide); monitoring occurs at the twelve sites every 15th and 30th of the month. Further, enforcement training has been carried out (see Annex 27) with all 12 CMG (four members each) and River Warden accreditation approved by BFAR, thus ensuring that there is a mechanism for ensuring that infringements of the ordinance relating to the FS can be prosecuted.

The establishment of the FS and associated legal and management mechanisms are a huge step forward as far as community-lead stewardship of aquatic resources in the region is concerned. These are the first protected areas of their kind and we are hopeful that they will act a template, both locally and nationally, for communities engaging in the natural resources that they live near and rely upon.

Output 5. Pilot farming project and long-term feasibility study for eel farming is complete.

During the initial scoping trip there was a great deal of discussion amongst stakeholders regarding the development of eel farming in the region. Any export of juvenile eels <15cm is illegal and as such there is interest in culturing eels from demand countries in East Asia in the Philippines prompting concern that if these states initiated farming they would not benefit local Filipino communities. Indeed during the period of the project it is believed that over 20 eel farms were established but this is anecdotal and the number and range of new farms across the country is not fully understood, hence BFAR's drive to begin licencing new farms (see Output 1). As such, we proposed a pilot feasibility study that, if successful, would allow replication in communities i.e. using locally sourced feed and requiring a relatively low-cost and simple set-up.

The BFAR compound where the ZSL office is located provided the ideal location for the pilot project as there were farm facilities where several fish species had been successfully reared (OI

5.1). However, it became quickly apparent that farming eels under the constraints that would allow them to be replicated in communities was not going to be feasible. Mortalities, poor growth and low yield were major impediments to the study which was ultimately ended prematurely after discussion with LTS. The pilot study report can be accessed via the link in Annex 5 (OI 5.3). During the study, while we did not carry out site visits for communities and stakeholders (OI 5.2), we did frequently engage with a several commercial eel farmers and many of them, both Filipino and foreign, had very similar issues to those encountered during the study, in spite of having more sophisticated culture systems and imported feeds. As such, we view Output 5 as being a successful feasibility study, which determined that at present, community-based eel farming is not possible. BFAR are presently discussing the how farming can be explored beyond the life of this project and the lessons learned will inform any new initiatives.

3.2 Outcome

Conservation of eels measurably improves freshwater biodiversity in the Cagayan River as a result of ecologically sustainable, community-led management and exploitation, and equitable national and international trade.

The overall outcome of the project was very much focussed on conserving anguillid eel but in doing so, ensuring there was added value to freshwater ecosystems more broadly, and the communities that rely on these natural resources. We feel that overall, the project outputs and activities, made significant progress towards achieving the outcome, however, elements relating to exploitation and trade proved more challenging than we originally envisioned.

As stated in Output 1, an important review of the trade and supply chain of anguillid eels in the Philippines was carried out as part of the project (see Annexes 5 and 10). This provided a number of recommendations including how local and national legislation could be amended and strengthened to ensure that national and international trade of eels was sustainable and benefitting all stakeholders (Indicator 1). At the end of the project, no national legislation had been amended, however, significant progress had been made by BFAR, including input from project partners, with regards to implementing new legislation that would improve the transparency and traceability of trade in eels such that illegal export could be reduced (see Annexes 8 and 9). The existing legislation, specifically focussed on export of eels – FAO 242 – has been the focus of discussions since the beginning of the project, and measures as to how it could be amended or strengthened to ensure that the illegal trade are reduced, have been explored. At present BFAR are continuing to engage stakeholders as to how FAO 242 can be strengthened, but the development of complementary management actions and legislation that deal with national trade as well as export are essential.

In addition to legislation, all partners were keenly aware of the need for increased enforcement capacity, and frequent attempts were made to engage with relevant government organisations. Unfortunately, due to challenging communications and a change of government, it was only at the end of the project we were able to hold a workshop that addressed enforcement on a national level (Annex 7). This is not to undermine how valuable this meeting was, however, it was not possible to carry out a great deal of follow-up, and as such, BFAR will carry on this engagement in the absence of TRAFFIC and ZSL. The project has helped to increase awareness of this issue both nationally and internationally (see Annex 11) and there have been actions taken at the international level (e.g. the regional workshops contained within the CITES decisions discussed in Output 1) that will ensure that there will be opportunities to share lessons learned.

With regards to the establishment of an EMP (Indicator 2 – see Annex 5), while it took significantly longer than we had planned, we are confident we have a robust document in place for the CRB that will support the five-year workplan that is presently being finalised by BFAR and other stakeholders. This is the first time a document such as this has been produced in the Philippines and, as previously stated, there are already discussions within BFAR as to how it can be replicated in other parts of the country where anguillid eels are found and exploited. Due to the significant decline in eel fisheries in the region over the past four years, the management of exploitation – and associated farm-based grow-out of eels (Indicator 5 – see Output 5 above for challenges associated with this) has become less of a priority, however, the EMP contains components that focus on elements of eel biology, freshwater ecosystems and community capacity, which will help to ensure anguillid stocks are more resilient to any future increases in exploitation.

Through the identification of the key communities (Indicator 3 - see Annex 16) we were able to carry out a programme of training and capacity building that has meant that communities are able better represent themselves and manage aquatic resources (including eel) in a more sustainable way. The data from the socio-economic survey (see Annex 5), indicated that eel fisheries were not a sole source of income for any of the respondents, acting as supplementary to other activities. As such, the implementation of COMSCAs was a way to improve financial resilience in the face of these fluctuations.

The establishment of the 12 FSs, FSMBs and associated management plans (see Annex 23-26) was a significant step towards community-based freshwater biodiversity management, and the aim of reducing the impact of threats (Indicator 4). The management plans laid out site-specific interventions that would benefit the habitat and species associated with the protected area, and CMG were tasked with monitoring both inside and outside the FS in order to determine where benefits of establishment were being seen. Due to the process of establishment of the FS and associated management mechanisms taking longer than envisaged only six months of data has been collected at the 12 sites, such that it would not allow a robust temporal analysis of metrics that accounted for seasonal variation. Consequently, it is not possible for us to provide a measurable indicator of improvement due to this intervention as originally outlined. That said we can state that 34.8 hectares of the CRB have now been protected and have associated management structures and plans in place.

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

Impact statement from logframe:
To promote conservation and sustainable management of freshwater biodiversity in the Philippines to meet CBD targets and support equitable community-level fisheries free from over-exploitation and involvement in illegal international trade.

Prior to the scoping trip carried out in 2013 in order to develop the project, a review of the 4th Philippine National Report to the CBD (4NRCBD - https://www.cbd.int/doc/world/ph/ph-nr-04-en.pdf) identified the statement that "*inland waters are the most threatened of all ecosystem types"* due to "*physical alteration, habitat degradation, water withdrawal, overexploitation, pollution, and introduction of invasive alien species'.* Further, BMB confirmed that there are virtually no conservation initiatives for Philippines' freshwater ecosystems. As such, the development and implementation of our project identified a clear need for a project focussing on freshwater ecosystems, highlighting the need for similar projects to be replicated across the Philippines, and also building capacity in communities and government to manage these resources (OI 2.1-2.3; 3.3 and 3.6; and 4.3). This project as a whole falls in line with Goal 1 of the vision for the Environment and Natural Resources sector stated in 2014 5th Philippine CBD Report (5NRCBD - https://www.cbd.int/doc/world/ph/ph-nr-05-en.pdf) *'Improved conservation, protection, and rehabilitation of natural resources'*, particularly the sub-goals '*Sustainably manage forests and watersheds'* and '*Improve protection and conservation of biodiversity*'. There have been challenges to addressing these threats and the 5NRCBD stated *'…there has been difficulty in determining status and trends due to lack of nationally-agreed indicators and targets and lack of monitoring systems but historical data are available for some*'. Having developing regionally agreed survey methods that will be applied by BMB/DENR beyond the life of the project, and trained staff to carry these out, as well as identifying key sites that will be monitored regularly beyond the life of the project (OI 4.4) steps have been taken to support this data gap and lack of capacity.

The situation in relation to fisheries and illegal trade (OI 1.2-1.4) has been complicated by the decline in fisheries and local trade in the region, likely due to a shift to the other parts of the Philippines (Annex 10). As such, the project's impact on this at the local level is less than had been proposed. However, activities of project staff in relation to trade of eels on the global level through mechanisms such as CITES (Annex 29 – both TRAFFIC and ZSL are part of the recently established working group on anguillid eels) and SEAFDEC (http://www.seafdec.org/anguillid-eel-survey-northern-luzon-philippines/), has raised the profile of the situation in the Philippines encouraging an increased engagement with stakeholders in other species range states and/or importing countries. Therefore, we would argue that the project has catalysed discussions relating to illegal trade that will ultimately benefit the situation in the Philippines.

Through the identification the key sites (OI 3.2 and 4.3; Annex 16) where a range of interventions have been implemented, we have addressed a number of poverty-related issues. Training and outreach programmes and materials have increased skills relating to resource management organisation and leadership, and freshwater biology (Annexes 15, 17, 18, 19 and 20). The establishment of COMSCAs (Annex 21) has provided financial services that would otherwise have been unavailable to three communities and ensured that savings and/or loans can be used to pay for unexpected expenses, or for improving members' quality of life through education, vocational development or paying for medical treatment (see Section 3.1).

4 Contribution to Darwin Initiative Programme Objectives

4.1 Contribution to Global Goals for Sustainable Development (SDGs)

Through the establishment of COMSCAs (OI 3.3-3.5) focal communities now have access to financial services (SDG 1.4 - Equal access – including finance mechanisms) and have improved their economic stability meaning that they are able to use savings and/or loans in order to deal with unexpected monetary demands (SDG 1.5 Resilience) – see previous examples in Section 3.1. The project's impact statement was very much focussed on the protection (SDG 6.6 - Freshwater conservation/protection) and management of freshwater resources (SDG 15.1 - Conservation of ecosystem services / SDG 15.5 – Prevention of biodiversity loss) in the Philippines and the establishment of the 12 FS and associated management mechanisms (OI 4.3 and 4.4) have taken a step towards this at the community level. Moreover, the establishment of the EMP and associated community and government capacity building (OI 2.1-2.3; OI 3.3 and 3.6) that will support it's implementation will work towards ensuring that eel stocks are better understood and any exploitation is carried out responsibly (SDG 12.2 - Sustainable use) and legally (SDG 15.7 – Wildlife trafficking) (OI 1.4). Many of the examples above highlight the importance of capacity building (SDG 17.9 – Capacity building) at the local and government level and we feel this has been core to the success of the project make a contribution to the SDGs.

4.2 Project support to the Conventions or Treaties (CBD, CMS, CITES, Nagoya Protocol, ITPGRFA))

None of the species of anguillid eels that are found in the Philippines are listed on either CMS or CITES appendices. However, during the project's lifetime, here have been developments in relation to both conventions that relate to anguillids more broadly which project partners have been engaging in.

With regard to CITES, both TRAFFIC and ZSL – as an organisation and the host of the chair of the IUCN Anguillid Eel Specialist Group (M. Gollock - https://www.zsl.org/conservation/species/fish-and-invertebrates/eel-conservation/iucn-anguillid-eel-specialist-group) – have engaged in the activities since the listing of the European eel in Appendix II. It has generally been accepted that the listing and subsequent export ban by the EU in 2010 is at least partly responsible for the enormous increase in export of the anguillid eels from the Philippines in 2011 and 2012 (see Annex 5 for trade report). A similar increase in export was also identified in North America and North Africa, highlighting the diversification of export to meet East Asian demand for these species. At the 2016 Conference of the Parties, this was acknowledged through a document submitted by the EU, which called for an analysis of the listing on the European eel, but also an analysis of the status of all other anguillid species despite them not being listed on CITES appendices. This point had been raised in our trade review published the previous year and as such we have continued to engage with the EU and the CITES secretariat on this matter and will aim to play a role in the drafting of these reports (Annex 29). The national CITES contact in the Philippines has been kept appraised of the project during it's lifetime.

Again, it is only the European eel that has been listed in CMS (Appendix II), however, it has been recognised in the actions following this listing – of which ZSL play a key role, attending Science

Council meetings and producing key documents (; http://www.sargassoseacommission.org/storage/documents/SSC_briefing_note_-_FINAL_1.pdf) - that they could easily be used as a template for other eel species that occur across multiple range states (See 'Associated Benefits' section - http://www.cms.int/sites/default/files/document/cms_cop12_doc.26.2.1_ca-european-eel_e.pdf).

The project's relevance to the CBD was discussed to some extent in section 3.3, but project partner BMB are the national representatives in relation to the CBD ensuring that relevant issues are communicated. As previously stated, both the 4NRCBD and 5NRCBD highlight freshwater systems as a focus of urgent conservation attention. The project's fundamental aim is to increase our understanding of the largest freshwater system in the Philippines and begin to implement community-focussed management measures that will protect these resources – Outputs 1-4 are all underpinned by this aim. As such, we believe that our project has taken steps towards achieving Aichi targets 1 (Valuing biodiversity), 6 (Sustainable management of aquatic stocks), 11 (Biodiversity protection), 14 (Ecosystem services) and 19 (Knowledge sharing).

4.3 Project support to poverty alleviation

The project primarily addressed poverty through activities that built capacity, increased empowerment and improved financial resilience in focal communities (see previous sections and Annex 3). We have outlined a number of elements of the programme of work that focussed on building capacity in focal communities that were tailored to meet the needs identified during the socio-economic survey, as well as ensure that management of natural resources was improving due to increased local stewardship. By using the FFAs as a focus for many of our interventions we were working with organisations that were designed to represent local stakeholders. It was clear that some of the FFAs were unable to do this due to poor organisation and leadership, lack of communication with relevant government staff/departments and limited skills. As such by strengthening these organisations, and engaging them in the process of developing management interventions such as the FSMBs and EMP, the FFAs were able to ensure that the voice of stakeholders was fed in to these interventions.

Through conducting socio-economic surveys and focus group discussions, it became clear that; 1) communities are heavily dependent of fishing as a primary source of income, and 2) improving access to financial services i.e. savings and loans would be hugely beneficial for fishers, particularly as income was variable. As such, we piloted the establishment of COMSCAs. As COMSCAs are self-sufficient after 12 months with a low rate of failure we view this as a long-term impact on poverty – see key facts http://www.vsla.net/. During the 12 month period we monitored the CoMSCAs in the three focal communities, there was increasing interest from other local people such that we carried out training of Village Agents selected from existing CoMSCAs who will now be able to establish new CoMSCAs in their communities.

We explored the possibility of developing community-based eel farming as a livelihood intervention (OI 5.1-5.3). It was clear from the report that (see Annex 5), at present, this was not going to be a viable option, and as such, while it was disappointing, we view the study as successful in that an intervention bound to fail was not rolled out in communities looking for increased income.

4.4 Gender equality

At the outset of the project, very little was known about the role of women in eel fishing and trading, and also what influence they had over existing natural resource management at the local level. As such, one of our aims was to assess this (OI 3.1) and carry out appropriate interventions that would work towards addressing any gender imbalance (see Annex 3). The survey respondents were identified from BFAR data relating to fishers communities in areas where eel exploitation was occurring. 26% of the total number of respondents were female, and of the 90% of all respondents that were engaged in eel fisheries (including processing and trading), 20% were female. Of the 66% of all respondents who report eel gathering, 18% were female, but of the 36 people who were employed as traders, 56% were female. Traders are one of the most powerful roles in the supply chain, and while the number is low, it is clear women are well represented here. Due to focussing on FFAs, which are predominantly male due to the gender bias highlighted above, some of the training courses did favour men. However, due to the fluctuating nature of the fishery we integrated CoMSCAs into the project and from ZSL's previous establishment of this intervention, we knew that on average 78% of members were female. This number was lower in the three communities we engaged (61% female), however, four out of the five (80%) CoMSCA members that volunteered for Village Agent training were female.

In relation to management interventions, examples of how women were involved in both the EMP and FSMBs are presented in (Annexes 12 and 24). It should be noted that four of the five project leads were female (Annex 6).

4.5 Programme indicators

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

The establishment of 12 FSMBs (Annex 24) has meant that local stakeholders are now able to directly manage protected areas and aquatic resources proximate to them. Further, the CMGs mean that they have hands on experience of biodiversity monitoring and how this data can be used to feed in to monitoring and evaluation of the associated FS management plans. Similarly, the implementing management structure contained within the EMP (see Annex 5) shows the inclusion of FFAs, and as such communities will be directly involved in the activities developed in the workplan.

- **Were any management plans for biodiversity developed?**

We have discussed the EMP in detail, and in addition to this, management plans were developed for each FS (Annex 25).

- **Were these formally accepted?**

The EMP will be formally ratified 15/9/17. The FSMPs are underpinned by Barangay Ordinances (Annex 23) approved by LGUs and FSMPs have also been approved by LGUs and will adopt these documents into their municipal development plans.

- **Were they participatory in nature or were they 'top-down'? How well represented are the local poor including women, in any proposed management structures?**

The project partners were very much of the opinion that without the support of stakeholders at the community level, it would be very difficult to implement the EMP, and as such, as well as being a data collection exercise, the socio-economic survey (OI 3.1) was viewed as an opportunity to discuss resource management with the eel stakeholders and gauge the level of interest in participating in future activities (97% stated that they would like to input in some way). The data collected during the socio-economic survey was used to inform relevant aspects of the EMP and during the process of developing the document fisherfolk had representation (Annex 12).

The process of establishing FS began through participatory meetings with local community members as part of the habitat surveys carried out during the project (OI 4.1). This meant engaging with the barangay councils which are the fundamental unit of governance in the Philippines and are made up of community members. The establishment of the FSMBs and associated management plans was carried out in a similar manner with ZSL and BFAR acting as a facilitators rather than leading the process. Over the 12 FS, there are 72 members of FSMBs of which 17 (26%) are female (see Annex 24 as an example).

- **Were there any positive gains in household (HH) income as a result of this project?**

As previously stated, a large amount of fluctuation relating to the demand, and therefore the price, of anguillids from the CRB became evident during the projects lifetime. It was also clear that eel fisheries were supplementary to other species and no fisher solely caught this species. This meant that addressing income was going to be a challenge, however, we did address access to savings and loans through establishment of CoMSCAs.

- **How many HHs saw an increase in their HH income?**

As mentioned in Section 3.1 above all 57 members graduated through the first cycle receiving a return on their investment (Table 3) and 92% of members took out a loan, of which 21% used their loans as capital for other income generating activities.

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

See above.

4.6 Transfer of knowledge

This project is the first of its kind in the Philippines and has very much been informed by previous experience of temperate anguillid eel stakeholders i.e. the development of EMPs in Europe. As such, we have been very keen to ensure the lessons learned from the Philippines are highlighted. The project lead has taken a number of opportunities to present the work of this project at both national and international for a (see Annex 31 for examples). These have included presentations in Japan (https://twitter.com/ZSLMarine/status/791474323244523520), the USA (http://www.sargassoseacommission.org/about-our-work/workshops/american-eel-workshop – this was an event linked to CMS), South Africa at the CITES CoP17 (https://twitter.com/ZSLMarine/status/779988241319620608) and most recently at the International Eel Science Symposium in the UK (https://twitter.com/ZSLMarine/status/877492859682816000). See also previous references to ZSL and TRAFFIC's engagement in the CITES anguillid eel working group (Annex 29) and the project lead's chairmanship of the IUCN Anguillid Eel Specialist Group, and membership of the IUCN Freshwater Conservation Subcommittee (https://www.iucn.org/theme/species/about/species-survival-commission/ssc-leadership-and-steering-committee/sub-committees/freshwater-conservation-sub-committee).

Did the project result in any formal qualifications?

No.

4.7 Capacity building

As stated previously, staff from BFAR were invited as an observer to 'Tenth Meeting of the Informal Consultation on International Cooperation for Conservation and Management of Japanese Eel Stock and Other Relevant Eel Species' indicating the increased standing the Philippines now holds in East Asia in relation to anguillid eel trade. Further, the project lead from BFAR, Dr Evelyn Ame, has now been formally recognised as the national contact point for anguillid eels in the Philippines.

5 Sustainability and Legacy

As the conservation focus on freshwater systems globally is significantly lacking, this project has provided an excellent first step to highlighting the importance of these projects within the Philippines. By partnering with relevant government agencies at the national and local level, it has stimulated activities that will continue in the project's absence. Further, as stated in Section 4.6 this project has been presented on the international stage as a pioneering freshwater conservation project, and are interested in how it can act as a case study for replication in other countries / locations.

The development of a regional EMP was a time-consuming and challenging exercise but the document will provide robust guidance for the management of this species, but also for relevant elements of the freshwater ecosystems they are part. Additionally, community engagement and stakeholder needs have been central to the development of the document and the associated workplan ensuring the EMP addresses both biological and socioeconomic issues. The workplan, which is presently being developed by BFAR has a five year time scale which provides a measurable first stage legacy – we very much expect the EMP to develop over that period and have included a detailed monitoring and evaluation section as part of the document. As previously mentioned, BFAR are already looking to replicate the EMP in other regions of the Philippines where eel fisheries have developed over the past five years.

While there have been no national policy developments during the project's lifetime we have outlined a number of areas where progress has been made in amending and/or developing new legislation that will benefit anguillid eels and stakeholders. The establishment of FS required local level legislative change and these are now legal entities that will exist in the region beyond the life of the project. The supporting management bodies and plans will provide a mechanism to ensure they are sustainably managed by local stakeholders. More broadly, by providing training to local communities to increase their stewardship of natural resources, and represent themselves at the LGU level, the project has ensured that both stakeholders and freshwater ecosystems have increased resilience. This also applies to the three focal sites where CoMSCAs were established – an intervention proven to have a very high retention and success rate (www.vsla.net). Further, by employing the Village Agent model, CoMSCAs will be established in focal communities in to the future.

As this project was novel to the Philippines, much of the work was identifying and collecting baseline socio-economic and biological data relating to freshwater natural resources, as well as the threats that impact them and the management systems that were in place. In the present project we have gone some way towards addressing these in focal communities, however, we identified numerous opportunities where the project team could potentially have a beneficial impact on the management of natural resources and better engage with local stakeholders. As such, we developed a second project focussing on community-based freshwater resource management and that built on the strengths of the present one for submission to the Darwin Initiative. This submission was successful and the project began 1/7/17; consequently, project resources will be used in this, and three of the six project staff will continue to work for ZSL as their expertise is appropriate for the new project.

6 Lessons learned

6.1 Monitoring and evaluation

In the first year of the project (2014-2015), three change requests were submitted. The majority of the changes included in these were either financial – including a rollover of £13,504 - or slight amendments to the logframe, The rollover of finances was invaluable to the project due to the project start-up period taking longer due to issues recruiting staff. We fully appreciate the challenges around rolling funds over from one year to another, however, from our experience, any flexibility afforded in relation this can be hugely beneficial. Two changes that could be considered major were included in the year one changes requests. The first of these was the addition of DENR as a project partner which occurred in order to ensure we had freshwater habitat expertise closer to the focal sites that we were beginning to identify during our activities. This added capacity was undoubtedly a positive step. The second change was to request an extension into a fourth year by three months. This was primarily due to the recruitment issues highlighted above and we acknowledge that recruitment to a relatively remote location such as Aparri, was more challenging than we initially expected. We have been more conservative in our approach to the follow-up project and allowed a period of 'project start-up' to ensure that the team is at full-strength – this something we would recommend to all applicants.

During year two, we also submitted three change requests that were more substantial and primarily focussed on amending the logframe in light of the progress of project activities. Due to the socio-economic and fisheries surveys highlighting the variation in eel fishing and associated income, we proposed the inclusion of CoMSCAs to the project to address the lack of financial resilience in our focal communities. This turned out to be possibly one of the most successful elements of the project. It provided an excellent interface to engage with local stakeholders that also helped build capacity and afforded members access to savings and/or loans for unexpected financial needs. Further, through the village agent model, the CoMSCA network associated with the three that we established during this project will continue to grow – there was a huge interest in CoMSCAs once they had been established. We have included CoMSCAs in the follow-up project to this one, such was their success.

It became clear during year two that Output 5 – community-based eel culture - was proving increasingly challenging and that it would be a much better use of staff time, resources and project funds to cease this early. High mortalities, poor yield and unfavourable environmental conditions meant that at present we did not feel it was going to be a viable option for a livelihood intervention at this point. While it was disappointing, we had very much approach this element of the project as a pilot study, as at the time project was developed there were no commercial ventures in Luzon, but a great deal of discussion amongst stakeholders about how important it was that this option was explored. The project partners felt it was important to make sure that a study was carried out to determine whether communities could feasibly farm eel that had been caught locally, in a sustainable manner. We feel that in this instance, our M+E was effective, such that we identified where an element of the project was not effective and brought it to an end.

At the end of year two, we submitted a final request that included changes to top level elements of the logframe; most significantly, the Outcome, from:

> *Conservation of eels measurably improves freshwater biodiversity in the Cagayan River as a result of ecologically sustainable, community-led management and exploitation, and equitable national and international trade.*
>
> to:
>
> *Conservation of eels measurably improves sustainable management of freshwater biodiversity in the Cagayan River as a result of increased capacity of government and communities.*

This change was included primarily due to the fact that we didn't feel we would have monitoring mechanisms in place in time to determine whether we had improved freshwater biodiversity, but also due to the uncertainty surround the trade of anguillid eels. We recognise that this means the outcome is less measurable which is unfortunate, however, the new statement is more realistic and with the production of an EMP with a robust M+E section, and a programme of biodiversity monitoring at 12 FS, we feel confident that the legacy of the project has left a mechanism to assess the longer term impact of the project.

The biggest failure of the project was that many of the activities did not achieve the proposed timeline. This was down to some over-ambitious targets and the socio-economic survey was a good example of this. The logistical challenges of visiting many of the remote areas were significantly under-estimated which meant that data collection took longer than envisaged. Further the transcription of the data and subsequent analysis was also more time-consuming than expected. This was in part due to multiple enumerators being used and some variation in their collection methods meaning data analysis took longer than expected. If we were to repeat the survey we would interview less people and use less questions but overall the activity served it's purpose as it facilitated excellent engagement at national, local and individual level, identified focal sites for tailored interventions and the data has fed in to the EMP.

We have highlighted the issues relating to both trade and policy change and how identifying measurable indicators was problematic, however we feel we have provided evidence to support that progress has been made on these elements of the project. Despite this, we feel the project M+E programme worked well to identify where changes should instigated – Darwin change requests were a very useful tool; and the project staff certainly benefitted from attending LTS/Darwin meetings. For example, the project lead was asked to present on the M+E of the project - http://www.darwininitiative.org.uk/assets/uploads/2016/04/11.-Day-2-ZSL-Eels-Philippines-Presentation.pdf - and the feedback from both organisers and attendees was extremely helpful and encouraging. ZSL's internal M+E protocol and capacity has strengthened during the life of the project due to the hiring of staff members who have a specific focus on this, which has undoubtedly benefited the work.

6.2 Actions taken in response to annual report reviews

Annual reviews were greatly appreciated and very helpful and the process of writing the reports a useful way to consolidate progress and the monitoring and evaluation procedure in place. The annual reports were lead by ZSL but partners were always engaged and given opportunity to input to the process. The requests that we received from reviews were primarily clarifications and outlined in Annex 30. All the requests were responded to and no follow-up has been required.

7 Darwin identity

In country, the Darwin logo sits side-by-side with partner logos on all communications relating to the project (see reports in Annex 5, Annex 31 for presentations; and also see fish sanctuary signage in Annex 26). Further, in all consultation meetings or publications, DI, and specifically DfID, is acknowledged as the funder**.** This project has not been borne out of any previous work by ZSL in this part of the Philippines and as such is a stand-alone Darwin project, however, ZSL have (had) a number of DI-funded projects and within our partners, such as BFAR and BMB, DI is a known entity. We do not have a project specific Twitter, however, we do have a general ZSL Marine and Freshwater Twitter account which project updates are posted on (e.g. https://twitter.com/ZSLMarine/status/712232642674954240?lang=en-gb - Section 4.6 also highlighted examples of where social media has been used to highlight activities both directly and indirectly related to the project.

8 Finance and administration

8.1 Project expenditure

Project spend (indicative) since last annual report	2016/17 Grant (£)	2016/17 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			-3%	
Consultancy costs			0%	
Overhead Costs			25%	ZSL reduced their core costs to account for the increased travel and subsistence costs.
Travel and subsistence			-71%	Costs were significantly greater than envisaged due to the extended process needed for EMP and FSMP development.
Operating Costs			32%	Less fieldwork was being carried out by the project team and implemented by community members.
Capital items (see below)			-36%	This was due to the early cessation of the pilot farm project.
Others (see below)			42%	This was due to the need for significantly less maintenance than envisaged.
TOTAL	£ 94,016	£94,015	0%	

Staff employed (Provide name and position)	Cost to Darwin (£)
Surshti Patel – ZSL Project Co-ordinator (UK)	
Cassandra Murray – ZSL Conservation Education Co-ordinator (UK)	
Glenn Sant – TRAFFIC Programme Leader	
Vicki Crook – TRAFFIC Programme Officer	
Joyce Wu – TRAFFIC Programme Officer	
Katherine Robinson - Administrative Assistant	
Glenn Labrado – ZSL Country Manager (Philippines)	
Rainero Morgia – ZSL Project Manager (Philippines)	

Alejandro Belen - ZSL Biologist (Philippines)	
Precious Bacuyag – ZSL Assistant Biologist (Philippines)	
Leonarda Labugen – ZSL Community Organiser (Philippines)	
Reynor Aquino – ZSL Assistant Community Organiser (Philippines)	
Melchie Aquino – ZSL Administrative Assistant (Philippines)	
Various temporary survey enumerators (Philippines)	
TOTAL	**£59,698**

Capital items – description	Capital items – cost (£)
Computer and peripherals Environmental monitoring probe and unit Aquaculture and fisheries monitoring equipment	
TOTAL	£2,034

Other items – description	Other items – cost (£)
Repairs, maintenance and fuel Medical Kit Aquaculture feed and consumables	
TOTAL	£2,902

Project spend (indicative) since last annual report	2017/18 Grant (£)	2017/18 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			5%	
Consultancy costs			0%	
Overhead Costs			24%	Office costs were lower than expected.
Travel and subsistence			-579%	Costs were significantly greater due to the extended process required for both the EMP and FSMP development.
Operating Costs			51%	Workshop costs were primarily travel-related and as such this line was underspent.
Capital items (see below)				
Others (see below)			45%	This was due to the need for significantly less maintenance than envisaged.
TOTAL	£16,879	£16,346	3%	

Staff employed (Provide name and position)	Cost to Darwin (£)
Surshti Patel – ZSL Project Co-ordinator (UK)	
Vicki Crook – TRAFFIC Programme Officer	
Rainero Morgia – ZSL Project Manager (Philippines)	
Alejandro Belen - ZSL Biologist (Philippines)	
Precious Bacuyag – ZSL Assistant Biologist (Philippines)	
Leonarda Labugen – ZSL Community Organiser (Philippines)	
Reynor Aquino – ZSL Assistant Community Organiser (Philippines)	
Melchie Aquino – ZSL Administrative Assistant (Philippines)	
Various temporary survey enumerators (Philippines)	

TOTAL	£11,834

Capital items – description	Capital items – cost (£)
Computer and peripherals Aquaculture and fisheries monitoring equipment	
TOTAL	**£11**

Other items – description	Other items – cost (£)
Repairs, maintenance and fuel Medical Kit	
TOTAL	**£608**

8.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
N/A	
TOTAL	

Source of funding for additional work after project lifetime	Total (£)
Darwin Initiative – Sustainable community-based stewardship of freshwater resources in the Northern Philippines.	
TOTAL	**£378, 174**

It should be noted that during 2016, the UK made the decision to leave the EU which had an impact on the strength of the pound. The effects of the pound's weak position and associated poor exchange rates can also be assumed to play a part in any lines that were overspent.

8.3 Value for Money

ZSL has been working in the Philippines for over 15 years and as a consequence we have established both an in-country office and a team of centralised staff and associated infrastructure. Having this support base means that the project had both in-country management and a well-developed network of contacts. Further, prior to our scoping trip for this project, we had identified the key government organisations that work in the fields that this project relates to. As a result the project partnered with organisations – primarily BFAR and BMB/DENR - that had relevant infrastructure, both regionally and nationally. This allowed us to minimise the cost of certain elements of the project, particularly the development of a pilot eel farm which would have otherwise been prohibitive. Partnering with BFAR also meant that office space was available and kept the start-up costs, and in-country overheads low.

The socio-economic survey helped to identify skills and capacity gaps and through programmes of training and outreach, we aimed to ensure that aspects of the project were self-sufficient and have longevity - and consequently, impact - beyond the project's endpoint e.g. CoMSCAs; also note the comment relating to 2016/2017 Operating Costs. It will also ensure that further resources are not required to ensure external actors are constantly required to fill these capacity needs.

To the greatest extent, the project aimed to take advantage of opportunities that would add value. For example, TRAFFIC, BFAR and ZSL staff have been engaging with anguillid eel fora that while not directly related to the project - e.g. SEAFDEC, national and regional workshops, CMS - allowed the progress, outputs and lessons learned to be shared. This benefitted the project through input from other stakeholders and also increased awareness of the activities.

We have also used change requests to modify the budget such that any areas where there maybe underspend, can be utilised to have a greater impact on elements of the project that are more resource-hungry.

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
Impact To promote conservation and sustainable management of freshwater biodiversity in the Philippines to meet CBD targets and support equitable community-level fisheries free from over-exploitation and involvement in illegal international trade.			
Outcome Conservation of eels measurably improves management of freshwater biodiversity in the Cagayan River as a result of increased capacity of government and communities.	**Indicator 1.** Local and national legislation is amended to improve management of the supply chain of eels, and enforcement capacity is increased by the end of Q1 year 4. **Indicator 2**. A national eel management plan is in place by the end of Q1 year 4, and local capacity is increased to sustainably manage fisheries and improve household economic security. **Indicator 3**. Seven FFAs are strengthened through training resulting in improved local stakeholder capacity, ensuring the eel fishery management plan is implemented by the end of Q1 year 4. **Indicator 4** .Key threats to the freshwater environment are identified and mitigation plans in place resulting in a 5% improvement in abiotic	**Indicator 1**. Trade analysis report – included proposed changes to legislation; Updated local and national legislation; Customs import and export data; Seizure reports; Increased number of trained / trainer enforcement staff; Enforcement reports; Stakeholder meeting minutes; **Indicator 2.** Eel management plan; Training manuals; Stakeholder meeting minutes; fisheries-independent data sets **Indicator 3.** Socioeconomic survey reports; POs terms of reference; Legal ratification and registration of active, effective POs; POs meeting minutes; Training materials; Fisheries datasets; **Indicator 4.** Biodiversity and threat survey reports; Habitat mitigation plan; Abiotic indicator analysis dataset; Stakeholder meeting minutes;	Riverine exploitation projects e.g. mining are not developed further. Currency rates/rate of inflation does not fluctuate to levels that compromise delivery of the project. Prices of eels in black market does not increase to such a high level that illegal fisheries proliferate and enforcement becomes impossible. Eel fishery does not collapse. Management plan is accepted by fisher communities. Supply-chain actors buy in to the long-term development of sustainable fisheries management. Pilot farming project is successful. Natural disaster does not affect project sites.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
	indicators of freshwater biodiversity by the end of year 3. **Indicator 5.** The pilot farming project is managed by ZSL and government staff resulting in the development of a feasibility study report by Q2 the end of year 3.	**Indicator 5.** Farming ponds in existence; Farming training materials; Farming records; Feasibility study report – including business plan.	
Output 1 Local and national capacity and policy is amended to improve the chain of custody in national and international trade and CITES commitments are being met.	**Indicator 1.** Trade analysis carried out to inform development of management plan and policy and legislation development by end of year 1. **Indicator 2.** Enforcement capacity is increased to ensure improved management through training of government staff in year 3. **Indicator 3.** New, scientifically-informed, legislation developed through a consultative process is implemented at the local, regional and national level by the end of year 3. **Indicator 4.** Illegal exports are reduced by the end of year 3.	Trade analysis report; export/import logs; Stakeholder meeting minutes; policy advice documents; policy documents; enforcement records	All key stakeholders are willing to engage in the fora for development of management plans and policy development, and associated training courses. There will be no resistance to proposals in changes in legislation locally, regionally and nationally. Changes in government at next election do not impact on the government partners and project objectives. Newly developed enforcement measures are effective. Fishers are willing to amend practices in line with management plan recommendations.
Output 2 Sustainable eel management plan for the Cagayan River Basin integrated from the community to the national level	**Indicator 1.** Eel management plan is developed with stakeholder engagement by middle of year 2. **Indicator 2.** Collection of fisheries-independent data on eel species in the Cagayan is initiated by the middle of year 3.	Eel management plan; fisheries-independent data sets; Training manuals; Stakeholder meeting minutes	

Project summary	Measurable Indicators	Means of verification	Important Assumptions
	Indicator 3. Eel population and fisheries data are being collected and consolidated by LGUs and BFAR in order to ensure eel management plan targets are being met by the end of Q1 year 4.		
Output 3 Existing Fisherfolk Associations (FFAs) are trained to manage eel fisheries, collect fisheries dependent data at the community level, and attain financial stability through VSLAs.	**Indicator 1.** Needs and socio-economic assessments identify key capacity issues to be addressed by FFAs and number of beneficiaries identified and disaggregated by household and gender by the end of Q3 year 3. **Indicator 2.** Candidate FFAs are identified and the process of establishment is initiated by the end of year 1.	Socio-economic assessments reports; Training course records and materials; fisheries-dependent data sets; POs terms of reference;	
	Indicator 3. Training courses are held to teach FFAs and other associated stakeholders about data collection, enforcement and fisheries management during years 2 and 3. **Indicator 4.** VSLAs are established in three key locations (with a maximum of 25 persons per group) to include members from candidate FFAs and associated communities during year 3 – these will be self-reliant by Q1 Y4.		
	Indicator 5. Using baseline data collected from the socio-economic survey, disaggregated by household and gender, VSLAs are monitored during Y3 to ensure savings and loan		

Project summary	Measurable Indicators	Means of verification	Important Assumptions
	use increases and members have greater financial stability by end of Q1 year 4. **Indicator 6.** Collection of fisheries-dependent and national trade data on the anguillid species of the Cagayan River is initiated and delivered to BFAR in-line with management plan recommendations by the end of Q4 year 2.		Key stakeholders relating to potentially damaging activities on the Cagayan River engage with project staff to discuss mitigation and CSR.
Output 4 Aquatic survey methods are established to monitor the freshwater biodiversity in the Cagayan River Basin and key threats are mitigated against.	**Indicator 1.** Baseline biodiversity assessment of the Cagayan River has been carried out by the end of year 1 and integrated into Department of Environment and Natural Resources river management plan by the middle of year 3. **Indicator 2.** Threat assessment is carried out to prioritise mitigation activities by the middle of year 2. **Indicator 3.** Threat mitigation actions are developed and implemented in collaboration with stakeholders responsible for potentially damaging activities by the end of year 3. **Indicator 4.** A suite of biodiversity indicators is developed and regular monitoring at key sites on the Cagayan River is initiated by the middle of year 3.	Biodiversity and threat assessment report; Habitat mitigation plan; Stakeholder meeting minutes; monitoring reports and datasets.	

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Output 5	**Indicator 1.** Pilot farming project at BFAR facilities is initiated by the end of year 1 **Indicator 2.** Communities and other stakeholders are engaged, through site visits, throughout years 1 and 2. **Indicator 3.** Feasibility study of the pilot project is completed by the end of Q2 year 3.	Farming ponds in existence; Stakeholder meeting minutes; Farming training materials; Farming records; Feasibility study report.	
Pilot farming project and long-term feasibility study for eel farming is complete.			

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)

Activity 1.1 Trade policy, enforcement and existing data review, and policy and legislation development document is drafted and agreed.
Activity 1.2 Regular national, regional and municipal eel stakeholder meetings and associated engagement relating to policy development are initiated.
Activity 1.3 Governmental policy development and implementation process is supported.
Activity 1.4 Relevant CITES authorities are engaged to ensure existing and future legislation relating to trade in anguillid eels is fully implemented.

Activity 2.1. Regular national, regional and municipal eel stakeholder meetings and associated engagement relating to management plan and policy development are initiated.
Activity 2.2. Eel fishery is assessed, recommendations developed and eel management plan – including a best practice guide - is produced.
Activity 2.3. Key sites and appropriate methods for fisheries independent monitoring of anguillids are identified and data collection initiated.

Activity 3.1. Baseline socio-economic and needs assessments are carried out in fisher communities.
Activity 3.2. Household fisheries-related income is monitored through socioeconomic surveys and analysed and fed into fisheries management plan development and implementation.
Activity 3.3. Existing Fisherfolk Associations are enhanced and strengthened at key locations across the range of the fishery and regular meetings between FFAs, local government and other key stakeholders are established (Y1Q2 to Y4Q1).
Activity 3.4. Training of existing Fisherfolk Associations in organisational capacity and collection of fisheries dependent data e.g. CPUE and in basic fisheries management theory and techniques is initiated in concert with IEC programme (Y1Q3 to Y4Q1).
Activity 3.5. VSLA training is carried out in key locations and, through self-selection within the FFAs and associated communities are developed with facilitation, and established (Y2Q4 to Y3Q4).
Activity 3.6. Data collection and analysis from VSLAs (Y3Q1 to Y3Q4).
Activity 3.7. Fisheries dependent data collection is initiated and submitted to BFAR (Y1Q4 to Y4Q1).
Activity 3.8. Fisheries dependant and independent data are used to optimise fishery and inform annual management actions to ensure sustainability.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Activity 4.1. Baseline biodiversity, habitat and threat surveys of the Cagayan River are carried out and reports produced. Activity 4.2. Meetings with key stakeholders relating to potentially damaging activities are held, and mitigation activities are proposed in light of reports produced in 4.1. Activity 4.3. Mitigation measures are developed and implemented in key sites along the Cagayan River. Activity 4.4. Enforcement training courses are run in fisher communities and river wardens deputised. Activity 4.5 Monitoring of biodiversity indicators on the Cagayan River is initiated. Activity 5.1. Seed stock for farming at BFAR facilities are collected in collaboration with selected fisher communities. Activity 5.2. Farming conditions e.g. water quality / feed regimes are optimised and methodologies are produced. Activity 5.3. Feasibility study – including recommendations – is produced.			

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

Project summary	Measurable Indicators	Progress and Achievements
Impact: To promote conservation and sustainable management of freshwater biodiversity in the Philippines to meet CBD targets and support equitable community-level fisheries free from over-exploitation and involvement in illegal international trade.		Our work focussed broadly on the freshwater environment with habitat surveys taking place and establishment of FS. The EMP is step towards ensuring sustainable management of anguillid eel stocks and the establishment CoMSCAs will ensure that communities.
Outcome Conservation of eels measurably improves sustainable management of freshwater biodiversity in the Cagayan River as a result of increased capacity of government and communities.	**Indicator 1.** Local and national legislation is amended to improve management of the supply chain of eels, and enforcement capacity is increased by the end of Q1 year 4.	At the time of writing, no policy changes had occurred at the national level, however, a great deal of input had been provided to BFAR with regards to strengthening the existing FAO 242 through direct engagement, trade reports (Annex 5) and updates (Annex 10) and participation in, and support of, trade-related workshops (Annexes 7 and 8). The workshop relating to traceability (Annex 8) stimulated the development of draft legislation, and both this and the amendments to FAO 242 are being progressed by BFAR. The process of strengthening enforcement capacity was more challenging than expected however a workshop held in early 2017 (Annex 7) resulted in positive discussions around how illegal trade could be tackled.
	Indicator 2. A national eel management plan is in place by the end of Q1 year 4, and local capacity is increased to sustainably manage fisheries and improve household economic security.	The EMP (Section 3.1 / Annex 5) is due to be ratified 15/9/17, however it was decided that a plan focussing on the CRB was more appropriate and that it should act as a case study for other regions, and possibly a national plan. BFAR have already indicated that other regions are beginning to explore how to develop an EMP. At present eel fisheries are extremely limited and in some cases absent (Table 1) but measures have been taken to improve local capacity (see below).
	Indicator 3. Seven FFAs are strengthened through training resulting in improved local stakeholder capacity, ensuring the eel fishery management plan is implemented by the end of Q1 year 4.	Training has been provided in key coastal sites such that FFAs are better organised and have the skills to collect relevant fisheries data (Annexes 17, 19, and 20), should the eel fishery re-establish. Household economic security has been addressed in three key sites through the establishment of CoMSCAs – see Annex 21.
	Indicator 4. Key threats to the freshwater environment are identified and mitigation plans in	The habitat survey (Section 3.1 / Annex 5) helped to identify key threats within the CRB and as a consequence 12 FSs, FSMBs and associated management plans (see Annex 23-26) were established to act as pilot

Project summary	Measurable Indicators	Progress and Achievements
	place resulting in a 5% improvement in abiotic indicators of freshwater biodiversity by the end of year 3.	mitigation interventions. The management plans laid out site-specific actions that would benefit the habitat and species associated with the protected area, with associated monitoring regimes. However, the process of establishment of the FS and plans was longer than expected and only six months of data has been collected at the 12 sites. As such we are not able to determine the impact of these as yet, however, these sites are providing the basis for our follow-on project and the FS can be monitored over the coming three year, and appropriate amendments made in order to maximise their impact.
	Indicator 5. The pilot farming project is managed by ZSL and government staff resulting in the development of a feasibility study report by Q2 the end of year 3.	The pilot farm study was carried out in order to determine whether community-based eel culture was possible. Both ZSL and BFAR staff developed this study but it was clear that the eels were not thriving under a variety of feeding regimes. The feasibility study was produced (Section 3.1 / Annex 5) and at present community-based eel farms are not a viable intervention in the Philippines.
Output 1. Local and national legislation and policy is amended to ensure any international trade is sustainable and CITES commitments are being met.	**Indicator 1.** Trade analysis carried out to inform development of management plan and policy and legislation development by end of year 1.	Elements of the trade report were fed in to the EMP where appropriate, and recommendations produced as part of the report to guide policy development – see report in Annex 5.
	Indicator 2. Enforcement capacity is increased to ensure improved management through training of government staff in year 3.	TRAFFIC, ZSL and BFAR held a joint enforcement workshop close to the end of the project - see Annex 7. It focussed on engaging with staff who have the potential to come in to contact with illegal trade networks e.g. enforcement staff and customs officers.
	Indicator 3. New, scientifically-informed, legislation developed through a consultative process is implemented at the local, regional and national level by the end of year 3.	In-country permitting / customs procedures and policy are being reviewed and strengthened by BFAR to improve traceability. FAO 242 is being reviewed by BFAR in light of data gathered as part of the project.
	Indicator 4. Illegal exports are reduced by the end of year 3.	Our data has indicated that illegal trade is continuing, which is obviously of concern, however, it is also clear from the proliferation of farms that the industry is developing infrastructure in order to grow eels to a size where export is legal (>15cm). Further, BFAR are making progress in relation to policy change by focussing on traceability and the chain of custody, and as such reducing illegal trade will be a key element of new legislation.

Project summary	Measurable Indicators	Progress and Achievements
Activity 1.1 Trade policy, enforcement and existing data review, and policy and legislation development document is drafted and agreed.		Trade report produced (Annex 5).
Activity 1.2 Regular national, regional and municipal eel stakeholder meetings and associated engagement relating to policy development are initiated.		Stakeholder meetings at local, regional and national levels relating to policy development were held on a regular basis - see Annex 8 for an example relating to traceability.
Activity 1.3 Governmental policy development and implementation process is supported.		BFAR has developed a number of initiatives relating to traceability and transparency in the chain of custody and committed to using data produced from the project to strengthen FAO 242 which relates to eel. Both TRAFFIC and ZSL fed in to discussions with BFAR regarding the development of new policy and amendment of FAO 242 directly, and through the production of reports (Annex 5) and updates (Annex 10).
Activity 1.4 Relevant CITES authorities are engaged to ensure existing and future legislation relating to trade in anguillid eels is fully implemented.		The national CITES co-ordinator, Edwin Alesna, was kept appraised of project activities but at the time of writing, none of the species of eel in the Philippines were listed in CITES Appendices. Both TRAFFIC and ZSL were engaged in a number of fora that have allowed communication of the project and legislation in the Philippines relating to trade in eels, in the context of CITES, at the international level – see Annex 29.
Output 2. Sustainable eel management plan for the Cagayan River Basin integrated from the community to the national level.	**Indicator 1**. Eel management plan is developed with stakeholder engagement by middle of year 2.	Biological and socio-economic data was collected to input to the EMP (see Annex 5). EMP development and stakeholder engagement process followed – EMP is expected to be ratified by RDC on 15/9/17. This process took significantly longer than expected.
	Indicator 2. Collection of fisheries-independent data on eel species in the Cagayan is initiated by the middle of year 3.	Monitoring began in 12 FS following community training/education (Annex 27).
	Indicator 3. Eel population and fisheries data indicate that new management practices are ensuring stocks of the multiple anguillid species in the catchment are not impacted to their detriment by the end of year 3.	Fisheries and market data was collected to inform the EMP which is presently being drafted. But due to the huge variability in demand nationally and internationally for glass eels, long-term monitoring of the stocks through fisheries may be challenging.

Project summary	Measurable Indicators	Progress and Achievements
Activity 2.1. Regular national, regional and municipal eel stakeholder meetings and associated engagement relating to management plan and policy development are initiated.		Regular Technical Working Group – created at the beginning of the project from partner organisations and key stakeholders to monitor progress - meetings have allowed regular assessment by both partners and stakeholders of the progress and direction of the development of the EMP (Annex 13). In addition, to this there have been meetings of key stakeholders to address the EMP specifically (Annex 12). Specific workshops have been held to discuss certain aspects of eel management - see Annexes 7, 8 and 14.
Activity 2.2. Eel fishery is assessed, recommendations developed and eel management plan – including a best practice guide - is produced.		Our fisheries dependent survey was corroborated through molecular analysis carried out by BFAR's NFRDI, and all the results are presented in the fisheries-dependent survey (Annex 5). The EMP has been finalised and will be ratified 15/9/17.
Activity 2.3. Key sites and appropriate methods for fisheries independent monitoring of anguillids are identified and data collection initiated		CMGs were trained in order to carry out fisheries independent monitoring in FS – this will be combined in general biodiversity monitoring (see Output 4).
Output 3. Existing Fisherfolk Associations (FFAs) are trained to manage eel fisheries, collect fisheries dependent data at the community level, and attain financial stability through VSLAs.	**Indicator 1.** Needs and socio-economic assessments identify key capacity issues to be addressed by FFAs and number of beneficiaries identified and disaggregated by household and gender by the end of Q3 year 3.	The socio-economic survey proved extremely valuable in both engaging with communities and identifying and prioritising capacity needs – see household and gender disaggregation in report (Annex 5).
	Indicator 2. Candidate FFAs are identified and the process of establishment is initiated by the end of year 1.	Seven coastal FFAs whose members had engaged in eel fisheries were identified for further engagement through the socio-economic survey - see Annex 16.
	Indicator 3. Training courses are held to teach FFAs and other associated stakeholders about data collection, enforcement and fisheries management during years 2 and 3.	FFAs were trained in leadership, organisational skills, and fisheries management – see Annexes 17, 19, and 20. It was decided that enforcement training should not be offered to community members as it was considered too dangerous, however an enforcement workshop was held in 2017 with relevant regional and national stakeholders – see Annex 7.
	Indicator 4. VSLAs are established in three key locations (with a maximum of 25 persons per group)	Three VSLAs (CoMSCAs) were established with a total of 57 members. All three COMSCAs 'matured' in their first year of operation, with two groups moving into their second year with a membership retention of 75%. The final

Project summary	Measurable Indicators	Progress and Achievements
	to include members from candidate FFAs and associated communities during year 3 – these will be self-reliant by Q1 Y4.	group that chose to temporarily dissolve due to work demands is currently re-organising itself and in the process of self-selecting additional members. The training of Village Agents (Annex 22) means that the CoMSCAs will proliferate beyond the life of the project.
	Indicator 5. Using baseline data collected from the socio-economic survey, disaggregated by household and gender, VSLAs are monitored during Y3 to ensure savings and loan use increases and members have greater financial stability by end of Q1 year 4.	CoMSCAs only allowed one member per household to ensure the maximum impact across a community, and 61% of membership was female. Across all groups, 79 loans were dispersed and 92% of member's availed loans. The majority of loans were taken to cover health care and medical bills (22%), and as additional capital to fund other livelihood activities; fishing and non-fishing related (21%). During the final share-outs after the first 12 month cycle, 28% of members planned to use their final savings on meeting basic needs such as buying food, 20% planned to use it towards education expenses and 21% on making home improvements - see Table 3.
	Indicator 6. Collection of fisheries-dependent and national trade data on the anguillid species of the Cagayan River is initiated and delivered to BFAR in-line with management plan recommendations by the end of Q4 year 2.	This element of work has been hampered by the significant decline in eel fisheries in the region – it appears primarily due to a change in the species composition of the catch, meaning the favoured *Anguilla bicolor*, is now ≤10%. Despite this, steps have been taken to ensure that key communities now have the skills and materials to collect and record basic fisheries data (Annexes 18-20), and stakeholder meetings have strengthened communications between fisheries, LGUs and BFAR.
Activity 3.1. Baseline socio-economic and needs assessments are carried out in fisher communities.		Report completed – see Annex 5.
Activity 3.2. Household fisheries-related income is monitored through socioeconomic surveys and analysed and fed into fisheries management plan development and implementation.		Data from the survey was fed in to the EMP development, however, we shifted the focus of our intervention from income to savings, and the monitoring of this will be through the COMSCAs (see below).
Activity 3.3. Existing Fisherfolk Associations are enhanced and strengthened at key locations across the range of the fishery and regular meetings between FFAs, local government and other key stakeholders are established (Y1Q2 to Y4Q1).		Seven FFAs were identified for further training and engagement - see Annex 16. Regular meetings between project partners and communities took place during training and educational visits - see Annex 17, 19 and 20.
Activity 3.4. Training of existing Fisherfolk Associations in organisational capacity and collection of fisheries dependent data e.g. CPUE and in basic fisheries management theory and techniques is initiated in concert with IEC programme (Y1Q3 to Y4Q1).		Training courses were delivered to the seven communities - see Annex 17, 19 and 20.

Project summary	Measurable Indicators	Progress and Achievements
Activity 3.5. VSLA training is carried out in key locations and, through self-selection within the FFAs and associated communities are developed with facilitation, and established (Y2Q4 to Y3Q4).		CoMSCAs were established in three communities through a process of self selection – see Annex 16 and 21.
Activity 3.6. Data collection and analysis from VSLAs (Y3Q1 to Y3Q4).		See section 3.1 and Table 3.
Activity 3.7. Fisheries dependent data collection is initiated and submitted to BFAR (Y1Q4 to Y4Q1).		Data was collected over 12 months by ZSL and community members, and submitted to BFAR – see Annex 5 for fisheries report. However, as previously stated, there have been issues with the continuation of fisheries data collection. This has been proposed for inclusion in the EMP workplan.
Activity 3.8. Fisheries dependant and independent data are used to optimise fishery and inform annual management actions to ensure sustainability.		At present the fishery is very depressed, and in places absent; as such this activity has had little progression.
Output 4 Aquatic survey methods are established to monitor the freshwater biodiversity in the Cagayan River Basin and key threats are mitigated against.	**Indicator 1.** Baseline biodiversity assessment of the Cagayan River has been carried out by the end of year 1 and integrated into Department of Environment and Natural Resources river management plan by the middle of year 3.	The habitat survey occurred in year 2, but provided an excellent basis for the identification of key sites and establishment of FS. We have submitted out report (Section 3.1 / Annex 5) to DENR, however the CRB management plan remains in draft form.
	Indicator 2. Threat assessment is carried out to prioritise mitigation activities by the middle of year 2.	The threat assessment was carried out as part of the habitat survey (Section 3.1 / Annex 5); key pressures identified were the cutting of trees for fuel and charcoal; conversion of river banks into agricultural land through slash and burn of existing foliage; construction of Small Water Impounding Projects (SWIPs) and pumping stations of the National Irrigation Administration; and the waste produced by an increasing urban and rural population.
	Indicator 3. Threat mitigation actions are developed and implemented in collaboration with stakeholders responsible for potentially damaging activities by the end of year 3.	Twelve FS have been established (Annex 26) and support FSMBs and management plans have been created – see Section 3.1 and Annexes 23-27. As the stewardship and enforcement of the FS are in the hands on community members the incentive to reduce damaging activities is greater.
	Indicator 4. A suite of biodiversity indicators is developed and regular	A suite of indicators has been developed (Annex 28) but due to the delay in establishing CMGs and providing training in biodiversity monitoring, this was

Project summary	Measurable Indicators	Progress and Achievements
	monitoring at key sites on the Cagayan River is initiated by the middle of year 3.	not initiated till late 2017 and no analysis has been carried out to date. These sites will be the focus of the ZSL-lead follow-up project and as such we will be able to monitor this data collection and the effectiveness of FS establishment.
Activity 4.1. Baseline biodiversity, habitat and threat surveys of the Cagayan River are carried out and reports produced.		Survey carried out and report produced – see Section 3.1 / Annex 5.
Activity 4.2. Meetings with key stakeholders relating to potentially damaging activities are held, and mitigation activities are proposed in light of reports produced in 4.1.		Meetings were held in the 12 key sites as part of the creation of FS, development of the Barangay Ordinances, and establishment and roll-out of FSMBs – see Annexes 23 and 24.
Activity 4.3. Mitigation measures are developed and implemented in key sites along the Cagayan River.		FS have been established (Annexes 16, 23 and 26) and associated management plans created (Annex 25) – see Section 3.1.
Activity 4.4. Enforcement training courses are run in fisher communities and river wardens deputised.		Training courses were carried out – see Section 3.1 and Annex 27.
Activity 4.5. Monitoring of biodiversity indicators on the Cagayan River is initiated.		This has been initiated by CMGs but only in 2017.
Output 5 Successful pilot farming project and long-term feasibility study for eel farming is complete.	**Indicator 1.** Pilot farming project at BFAR facilities is initiated by the end of year 1 **Indicator 2.** Communities and other stakeholders are engaged, through site visits, throughout years 1 and 2. **Indicator 3.** Feasibility study of the pilot project is completed by the end of Q2 year 3.	The study began in collaboration with BFAR, as proposed. We have carried out a number of courtesy visits to eel farms in the Philippines and regularly engaged with traders. This has highlighted that many of the commercial enterprises are experiencing similar problems. After extended discussion, it was agreed that this element of work would be brought to an early close. The report was produced and detailed the challenges faced (see below).
Activity 5.1. Seed stock for farming at BFAR facilities are collected in collaboration with selected fisher communities.		This was carried out for the period that the farm project was active.
Activity 5.2. Farming conditions e.g. water quality / feed regimes are optimised and methodologies are produced.		The farming project experienced high mortality due to issues beyond our control, such-as high temperatures and poor groundwater quality on-site. As such, our ability to optimise growth conditions have been limited and those

Project summary	Measurable Indicators	Progress and Achievements
		that did survive were not showing good growth rates. We have engaged eel farms that have proliferated in the Philippines during the last two years to compare methods and many of them have had similar issues. In addition to this, the abundance of the species that has the highest market value has declined in the region over the past three years. As such, we concluded that community-based farming would not be feasible or cost-effective at present. This is detailed in the report.
Activity 5.3. Feasibility study – including recommendations – is produced.		Report completed (see Annex 5).

Annex 3 Standard Measures

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
1a	Number of people to submit PhD thesis						
1b	Number of PhD qualifications obtained						
2	Number of Masters qualifications obtained						
3	Number of other qualifications obtained						
4a	Number of undergraduate students receiving training						
4b	Number of training weeks provided to undergraduate students						
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)						
6a	Number of people receiving other forms of short-term education/training (e.g., not categories 1-5 above)	233	Filipino	82F 151M		Tagalog Ilocano Ybanag	2015/2016 Habitat survey methods; Leadership training; CoMSCA training. 2016/2017 River Warden and fisheries independent data

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
							collection; FFA Organizational Capacity and Fisheries Dependent Data Collection training; Village Agent training.
6b	Number of training weeks not leading to formal qualification	2.7 weeks					
7	Number of types of training materials produced for use by host country(s) (describe training materials)	2				English	Biodiversity indicators; Freshwater fish field guide for CMGs; FFA Organizational Capacity and Fisheries Dependent Data Collection presentations and handouts
Research Measures		**Total**	**Nationality**	**Gender**	**Title**	**Language**	**Comments/ Weblink if available**

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
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			Eel Management Plan – Cagayan River Basin, Region 2 – Northern Philippines.	English	This document was lead by ZSL's in-country team but through a participatory process with stakeholders (see Annex 5).
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						
11b	Number of papers published or accepted for publication elsewhere	5				English	See Annex 5.
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country						
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country						
13a	Number of species reference collections established and handed over to host country(s)						
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	2			Anguillid eel trade.	English; Filipino	2015/2016 National traceability workshop; 2016/2017 National enforcement workshop.
14b	Number of conferences/seminars/workshops attended at which findings from Darwin project work will be presented/disseminated.	5			Anguilld eels; Freshwater biodiversity.	English; Filipino	2014 / 2015 - Philippine National Eel Forum; World Parks Congress, Sydney. 2015/2016 – ZSL Freshwater Science Meeting. 2016/2017 - Japanese eel stakeholder workshop, Kagoshima. 2017-2018 – International Eel Science Symposium, London.

Physical Measures		Total	Comments
20	Estimated value (£s) of physical assets handed over to host country(s)		
21	Number of permanent educational, training, research facilities or organisation established		
22	Number of permanent field plots established		Please describe

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						

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.	
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.	
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.	
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.	
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.	x
7	Areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	
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.	x
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.	
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.	

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.	
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.	
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

PLEASE NOTE THAT THE EMP AND SUPPORTING ACTIVITY REPORTS WILL NOT BE ONLINE UNTIL 15TH SEPTEMBER WHEN THE EMP IS RATIFIED; THEY CAN BE PROVIDED ELECTRONICALLY PRIOR TO THIS DATE.

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)
Trade Review *	Slipping Away; Vicki Crook; 2015	UK	Global	Female	N/A	http://www.trafficj.org/publication/14_Slipping_Away.pdf
Activity Report *	Socio-economic report; Surshti Patel and Cassandra Murray, 2017	UK	UK	Female	N/A	https://www.zsl.org/conservation/regions/asia/freshwater-eel-conservation-in-the-philippines
Activity Report *	CRB Habitat Survey Report; Alejandro Belen 2016	Philippines	Philippines	Male	N/A	https://www.zsl.org/conservation/regions/asia/freshwater-eel-conservation-in-the-philippines
Activity Report *	Fisheries Report; Alejandro Belen 2017	Philippines	Philippines	Male	N/A	https://www.zsl.org/conservation/regions/asia/freshwater-eel-conservation-in-the-philippines
Activity Report *	Pilot eel farm report; Precious Bacuyag and Alejandro Belen, 2017	Philippines	Philippines	Female	N/A	https://www.zsl.org/conservation/regions/asia/freshwater-eel-conservation-in-the-philippines

Policy document *	Eel Management Plan – Cagayan River Basin, Region 2 – Northern Philippines. Alejandro Belen, 2017	Philippines	Philippines	Male	N/A	https://www.zsl.org/conservation/regions/asia/freshwater-eel-conservation-in-the-philippines

Annex 6 Darwin Contacts

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