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	22-008
Project title	Diversifying Indonesian fisheries to protect elasmobranchs and alleviate poverty
Host country(ies)	Indonesia
Contract holder institution	The Wildlife Conservation Society – Indonesia Program
Partner institution(s)	Ministry of Marine Affairs and Fisheries (MMAF), Indonesian National Police – Criminal Investigation Division, Oxford University
Darwin grant value	£272,599
Start/end dates of project	Apr 2015 – Mar 2018
Project leader's name	Hollie Booth and Ken Kassem
Project website/blog/Twitter	https://programs.wcs.org/Indonesia; https://twitter.com/WCS_ID; https://www.instagram.com/wcsmarine/ https://www.facebook.com/wcsindonesia/
Report author(s) and date	Hollie Booth, Efin Muttaqin, Sofi Mardiah, Dwi Adhiasto, Peni Lestari, Ken Kassem. Finalised June 6th 2018.

1 Project Rationale

Due to their inherent vulnerability to extinction, and high levels of exploitation for international trade, Sharks and rays (collectively, elasmobranchs) are now one of the most threatened species groups in the world. Indonesia is the world's largest shark fishing nation, and recognised as a global priority for the conservation of sharks and rays, including several threatened species listed on CITES Appendix II. For decades, shark and ray fishing in Indonesia has largely been unregulated and open-access, however following increased international attention on elasmobranch conservation and CITES-listings, there is now national political support and momentum for improved conservation and management. The Indonesian government has developed National Plans of Action (NPOA) for sharks and manta rays. Exploitation and trade of manta rays and whale sharks was declared illegal under Ministerial Decrees in 2014. However, despite these policy achievements, implementation has been limited because regulatory frameworks are inadequate; capacity and motivation for enforcement is low (at project inception, there had been no successful prosecutions of traders of protected shark or ray products); and the shark industry plays an important role in the national economy, and the livelihoods and well-being of coastal communities.

These challenges are ecologically, politically and socio-economically relevant for government and coastal communities. We identified these challenges through government consultation and scoping research conducted by WCS in 2012-14. At the national-level, this included discussions with environmental ministries (Ministry of Marine Affairs and Fisheries (MMAF) and Ministry of Environment and Forestry (MoEF)) and law enforcement agencies regarding CITES

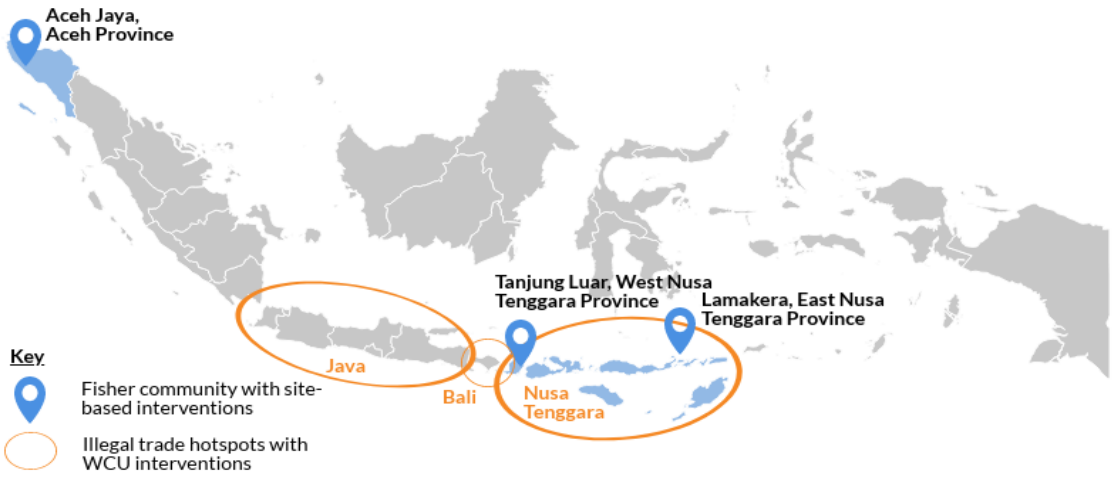
implementation and illegal wildlife trade, in particular through WCS's "Wildlife Crimes Unit" (WCU). At the local-level we monitored and shark and ray landings; gained the trust of local fishers, processors and traders; and developed an understanding of their fishing practices and livelihood concerns.

Overall, this project adopted an integrated approach to addressing overexploitation of elasmobranchs in Indonesia. We aim to ensure a significant reduction in catch and trade of threatened and protected elasmobranchs and improve the sustainability of the elasmobranch industry overall, while maintaining long-term livelihood security and well-being of vulnerable elasmobranch fishers. Our interventions take a multi-faceted approach, focusing on national- and provincial-level policy development and law enforcement, alongside site-based outreach and livelihood-focused incentives in priority fishing communities. We use applied research throughout to design and evaluate our intervention. Thematically, the project focuses on threatened, CITES-listed species. During the project planning phase this included scalloped hammerheads (*Sphyrna lewini*; Endangered), oceanic whitetips (*Carcharhinus longimanus*; Vulnerable), and giant and reef manta rays (*Manta* spp.; Vulnerable), and extended to include thresher sharks (*Alopias* spp.), silky sharks (*Carcharhinus falciformis*) and mobula rays (*Mobula* spp.) following new species listings at CITES CoP 17. Geographically, the project's site-based interventions target fishing communities in three provinces - West Nusa Tenggara, East Nusa Tenggara and Aceh (Figure 1), which were selected based upon scoping research conducted by WCS in 2012-14. East and West Nusa Tenggara have been historically responsible for about 75% of Indonesia's total manta ray catch, while Aceh is a national priority for hammerhead shark conservation and management. Law enforcement efforts target major illegal trade hotspots, primarily in Java, Bali and East and West Nusa Tenggara (Figure 1), with the objective of restricting supply routes for protected species from Indonesia to consumer countries and reducing profitability of illegal trade, as opposed to prosecuting vulnerable fishers.

Over 10 years, WCS has established the "Wildlife Crimes Unit" (WCU), a highly innovative and effective partnership with law enforcement agencies (MMAF; MoEF; Indonesian National Police (INP); Quarantine, Ministry of Agriculture; Attorney General Office; Supreme Court; and Customs), which has played a role in the majority of enforcement actions against illegal wildlife trade in Indonesia. Building on this partnership, the project aimed to: (1) strengthen regulations governing the protection of elasmobranch species, through providing information and supporting the ongoing MMAF review process; (2) enhance local government and community understanding of the regulations through media outreach and awareness-building campaigns; and (3) support government law enforcement agencies to undertake cases against major illegal elasmobranch traders through the WCU.

Acknowledging that effective implementation of conservation regulations will also have significant implications for the livelihoods of local fishers, appropriate mitigation measures need to be developed. At the time of project inception, WCS research suggested that elasmobranch fishing in Indonesia is highly specialized, conducted by a limited number of poor fishers using far-ranging boats, who land their catches at specific ports. Over 80% of profits are captured by a small number of traders who control the export market. Escalating costs (due to removal of fuel subsidies) and declining catches suggested that elasmobranch fishers may be interested in transitioning to other more sustainable fisheries, if appropriate support was provided. The project aimed to identify opportunities and barriers to livelihood transitions, undertake participatory planning with each interested household, and provide targeted assistance, such as training, equipment and access to capital to successfully navigate livelihood transitions. Following more detailed research during the lifetime of the project, it became clear that providing legal, sustainable alternatives to elasmobranch fishing is challenging in some contexts, due to the largely legal and lucrative nature of the industry. As a result, the project adapted its approach to also improve the overall sustainability of the industry as opposed to pushing alternative livelihoods alone.

Figure 1. Geographic locations of the project, including targeted fisher communities and target illegal trade hotspots (N.B. during the lifetime of the project the WCU conducted law enforcement efforts across several additional provinces not highlighted here, but based on available evidence largest trade networks are located in Java, Bali and Nusa Tenggara)



2 Project Partnerships

The project is led by the Wildlife Conservation Society (WCS) Indonesia Program. WCS has been working to protect biodiversity in Indonesia since 1965, and has had a permanent office in the country since 1995, under a Memorandum of Understanding (MoU) with MoEF and a technical agreement with MMAF.

The project was developed based upon the wishes and direction of MMAF, the ministry responsible for oversight of marine resources, including conservation and management of sharks and rays. WCS is unable to have a formal MoU with MMAF, because as an international organisation WCS can only have one MoU in Indonesia under national law. However, WCS has developed a separate technical agreement (Indonesian acronym: PKS) with three Directorate-Generals (DGs) of MMAF, including the DG responsible for regulating fishing, trade and protection of marine species. The DG specifically invited WCS to help develop the regulatory framework for sharks and rays. This is evidenced by MAAF's request for WCS to second a technical policy expert to work within the Ministry, to build their capacity, support research and implement CITES. The role of MMAF in this project is to serve as the primary implementer of conservation policy and action, with technical support and guidance from WCS. A strong partnership between MMAF and WCS continued throughout the project, through formal and information meetings, and with regular requests for data and technical support on policy developments, particularly for CITES implementation. We have been encouraged by the enthusiasm and commitment from government partners to improve shark and ray conservation and management and implement CITES. This is reflected in MMAF's efforts to introduce new regulations, develop non-detriment finding (NDF) assessments, and becoming the CITES management authority for aquatic species, all of which WCS has helped to facilitate.

The enforcement component of the project was implemented through the WCU. Initiated in 2003, the WCU is an innovative partnership designed to combat illegal wildlife trade in Indonesia, which is coordinate by WCS Indonesia and includes MoEF, MMAF, Indonesian National Police (INP), Attorney General, Quarantine, Supreme Court, Customs. anti-corruption agencies (Financial Transaction Reports and Analysis Centre, PPATK), and civil society and media organisations. At the time of project inception, more than 450 sting operations of illegal wildlife crime involving more than 550 suspects had been prosecuted by law enforcement agencies based upon information from the WCU, including the 10 largest wildlife crime cases in Indonesia. On behalf of the WCU, WCS has technical agreements related to capacity building and law enforcement collaboration with several law enforcement agencies in Indonesia, including Attorney General Office (AGO), 4 province police offices, and the Indonesian Police Education Centre (LEMDIKPOL). WCU also developed a wildlife trafficking curriculum with the Supreme Court and LEMDIKPOL for environment judges and police trainings (conducted on an annual basis). However, the focus had been primarily on terrestrial species, and the project built upon this established partnership to develop and deploy a 'Marine WCU' to enforce new regulations for sharks and rays. The WCU plans all operations jointly with law enforcement agencies, and action

is only taken if the relevant agency is supportive. The WCU also has a network of more than 100 journalists, who are notified when wildlife crime arrests are made and cases are in progress. This serves to publicise the achievements of Indonesian law enforcement agencies and to put wildlife crime cases in the public eye to increase transparency and reduce the chance of corruption. The strength of the WCU's partnerships with these agencies is evidenced by the arrests and successful prosecutions of illegal traders in marine products throughout the lifetime of the project.

For the component with shark and ray fishers, WCS established relationships with fisher communities during pre-project scoping, and initiated a new set of partnerships with several groups and institutions within target communities. These include the *Panglima Laot* (Commander of the Sea) in Aceh; a group of organisations working to support manta fishers in Lamakera, led by Misool Foundation; *Yayasan Masyarakat dan Perikanan Indonesia* (Society and Fisheries Indonesia, MDPI), working on value-added sustainable fisheries; several local NGOs and cooperatives (e.g. *Koperasi Usaha Wisata Bahari* (Cooperation for Marine Tourism, KUWB) and Bank Sampah); and local schools and youth groups. The effectiveness of these relationships is evidenced through regular meetings, both formal and informal, to exchange experiences and lessons learned, as well as specific collaborative efforts to implement conservation action that build on the relative strengths of each organisation. For example, WCS and Misool Foundation have a joint project in Lamakera, with WCS leading on the law enforcement component and Misool Foundation leading on the community outreach and livelihoods component. Similarly, MDPI have helped to provide technical support on developing sustainable fisheries in our project sites.

In Year 2, through our project research partner/advisor Professor EJ Milner-Gulland, we began working closely with Oxford University and the newly established Oxford Martin Program on Illegal Wildlife Trade. This Program is led by Prof. Milner-Gulland, who moved from Imperial College London to Oxford University. The partnership provides access to a range of international experts, academics and practitioners working on understanding and designing solutions for complex, interdisciplinary conservation projects. Through this partnership several WCS Indonesia staff have received world-class training and mentoring in scientific research techniques for conservation, resulting in the preparation of several scientific journal articles.

A major lesson learned from these project partnerships is that conservation efforts need to build upon - and build the capacity of - existing local institutions in order to be effective. A strong regulatory framework, developed and implemented by committed Indonesian government and law enforcement agencies, has been critical to the success of this project, as has working closely with local fisher communities to design solutions that not only provide economic incentives, but are culturally and socially relevant.

WCS will work to maintain strong relationships with all partners as we continue to build on the achievements of this project, and work towards achieving effective conservation and management of elasmobranchs in the future.

3 Project Achievements

3.1 Outputs

Output 1: Regulations for CITES-listed sharks and mantas have been developed or revised to ensure enhanced legal protection for at least four species

Overarching Indicator: By 2018, at least two new or revised government regulations have been approved that enhance the protected status of CITES-listed shark or ray species, against a baseline of one regulation approved up until 2014.

During the lifetime of the project four regulations to enhance the protected status of CITES-listed sharks and rays were developed and/or updated, with other processes initiated for developing/revising three further regulatory processes:

1. MMAF Ministerial Regulation (MR) 5/2018 on export ban of oceanic whitetips and hammerheads

2. MMAF MR 49/2016 on status of protected fish
3. NDF, catch quota and zero export quota for CITES-listed hammerhead sharks (*Sphyrna lewini*, *S. mokarran*, *S. zygaena*) developed under MoEF, and published in 2018 *Kuota Pengambilan Tumguhan Alam Dan Penangkapan Satwa Liar* (Quota for the harvesting of wild plant and animal resources) released by the MoEF Directorate General of Conservation of natural resources and ecosystems
4. MMAF MR on limited protected of all shark species (not yet numbered at time of writing)
5. MMAF MR on export ban of devil rays (not yet released/numbered at time of writing)
6. Process to revise overarching conservation law (Law 5/1990) and associated protected species list (Government Regulation (GR) 7/1999) is ongoing.
7. Process to establish zero-quotas for silky sharks and thresher sharks is ongoing

For evidence, see here for copies of policy documents.

Challenges in achieving this output included:
- Limited regulatory power of MMAF to implement CITES, since MoEF is currently the CITES Management Authority for all species, including sharks and rays
- Ethical and political challenges of implementing new regulations due to negative socioeconomic impacts on fishing communities and traders

Output 2. Local government officials, traders and fishers have sufficient awareness and training in the new regulations governing shark and ray conservation and the applied management actions required to adequately manage shark and manta fisheries.

Overarching Indicator: By 2018, surveys indicate that 50% of local government officials and manta/shark fishers understand regulations regarding CITES-listed manta/shark species, against a baseline of 5% in 2014, reflecting improved enforcement capacity and knowledge of shark and ray conservation measures.

Our socioeconomic survey of fishers and traders in Year 3 of the project indicated that 98% of shark fishers are aware of new regulations governing shark and ray conservation, reflecting an increase of 93% relative to 2014 baselines of 5%. In addition, support for management increased significantly during the project life time, from 36% of shark fishers supporting management in 2016 to 71% in 2018. This may reflect an increase in overall understanding of the importance of sustainable resource management in order to maintain benefits from the fishery in the long-run. We also found that the greatest support for regulation and management is amongst the shark boat owners and investors. This is promising, since this stakeholder group is likely to have the biggest influence on shaping the industry in the future.

For evidence, see here for socioeconomics survey reports.

Improved enforcement capacity is evidenced by the 28 arrests and 14 prosecutions of illegal shark and ray traders during the project, against a baseline of zero. We also observed significant increases in average fines and jail time for marine wildlife crimes thorough the project, reflecting an increase in awareness, capacity and motivation of government officials to prosecute illegal traders.

For evidence, see here for assessment of the impact of the WCU.

Output 3. A new "Marine Wildlife Crime Unit", comprising representatives of the Indonesian National Police, Attorney General and Ministry of Marine Affairs and Fisheries, has been established and is focusing on high-profile prosecutions of major manta/shark traders.

Overarching Indicator: By 2018, government law enforcement agencies have successfully prosecuted 10 cases against major exporters or middlemen dealing in CITES-listed shark or ray species, from a baseline of 0 cases as of 2014.

A marine WCU is established and operational. Throughout the lifetime of the project the WCU supported government law enforcement agencies to conduct a total of 25 sting operations

relating to illegal trade of shark and ray products, involving 28 suspects. These have led to 14 successful prosecutions, with more than US$ 30,000 levied in fines and 64 months of jail time. Eight others have received administrative sanctions, while the legal process for the other suspects are still ongoing.

For evidence, see here for a summary of all legal cases and here for an assessment of the impact of the WCU.

Output 4. At least 50 individuals in shark fishing communities have reduced barriers to entry for engaging in non-elasmobranch related economic opportunities, and support structures are in place to promote long-term sustainable fisheries management

Overarching Indicator: By 2018, at least 50 members of shark fisher communities have reduced barriers to entry for engaging in non-elasmobranch-related livelihoods and increased empowerment to participate in fisheries management decision-making.

By the end of the project, a total of 98 individuals were participating in community cooperatives for supporting non-elasmobranch livelihoods, including tourism and sustainable fisheries. The members include 46 people previously engaged in the shark and ray industry, including 22 'top manta hunters' and 13 female traders of manta ray products (*Papalele*) from Lamakera, and 11 shark fishers from Tanjung Luar.

For evidence, see here for signed cooperative registration documents.

Through WCS playing a role to bridge communication between fishing communities and government, more than 200 shark fisher community members in Aceh, West Nusa Tenggara and East Nusa Tenggara have participated in public consultations and focus group discussions relating to shark and ray conservation and management decision-making.

For evidence, see here for a summary of all stakeholder engagement events conducted throughout the project.

Output 5. The conservation and social outcomes of the project are evaluated, based on ongoing monitoring of shark and ray landings and change in the wellbeing and behaviour of fishers.

Overarching Indicator: By 2018, landings of CITES-listed shark and ray species at key sites in Aceh and West Nusa Tenggara provinces (which together comprise 20% of Indonesia's total catch) have been reduced by at least 50%, against a baseline of 924 in 2013 (or 731 in 2014 in Nusa Tenggara Barat only).

During the period April 2017- April 2018 a total of 23 manta ray landings were recorded across key monitoring sites (Tanjung Luar and Lamakera). This represents a significant decline of 86% against 2013-2014 baselines (163 individuals in total).

There have been no significant observed declines for catch in other CITES-listed species at key sites. This is predominately because while there is a strong legal framework to protect manta rays (full protection), legal protection for most CITES Appendix II sharks remains limited. With only export bans in place for other species, fishing and domestic trade is still allowed. Controlling catch of these species is also considerably more challenging – manta rays are caught in highly targeted fisheries, while other species are caught in non-species-selective fisheries or as incidental catch in non-target fisheries. This has been a key challenge and lesson learned of this project, highlighting the need to develop practical fisheries management measures to reduce mortality of priority species (see Section 6).

For evidence, see here for an analysis of trends in catch and trade of CITES-listed species, and here for an assessment of changes in community awareness and well-being indicators.

3.2 Outcome

Outcome: Enhanced law enforcement, alongside community empowerment and reduced barriers to livelihood adaptation, leads to a 50% reduction in catches of protected elasmobranch species whilst increasing community adaptive capacity and promoting sustainable fisheries management.

The project has achieved it's intended outcome:

- **Enhanced law enforcement** is evidenced through the 25 sting operations against illegal trade in shark and ray products involving 28 suspects, with 14 successful prosecutions leading to a total of more than $US 30,000 in fines and 64 months of jail time.
- **Community empowerment and adaptive capacity** is evidenced through 98 community members participating in local cooperatives with improved access to capital and training for non-elasmobranch livelihoods, and more than 200 community members participating in focus group discussions and public consultations for management decision making. Cooperative members reported higher income, and more consistent income/improved income security.
- **Reduction in catches of protected elasmobranch species** is evidenced through 86% declines in manta ray mortality, based on landings data at case study sites in East Nusa Tenggara and West Nusa Tenggara

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

Impact statement from log frame: Globally threatened elasmobranch populations in Indonesia are protected by simultaneously reducing trade through improved law enforcement, and diversifying livelihoods, demonstrating a replicable, scalable model for other highly threatened fisheries.

The project has had a major impact on regulation and trade of protected elasmobranchs. The project has continued to work with MoEF and MMAF to achieve regulatory reform for shark and ray species, and has ensured implementation of these regulations through supporting effective trade enforcement and livelihood adaptation strategies. Mortality of threatened manta ray populations at key landings sites has significantly declined, providing evidence of the project's impact. This provides a model and lessons learned for other highly-targeted elasmobranch fisheries.

For mixed-species elasmobranch fisheries, and fisheries taking elasmobranchs as incidental catch, more holistic, sustainable fisheries approaches are required such as spatial and temporal closures, gear modifications, and effort controls. These lessons, and their application to other problematic fisheries, are detailed in our manuscript *Practical measures for sustainable shark fisheries: lessons learned from an Indonesian targeted shark fishery*, which has accepted with revisions to PLOS1.

4 Contribution to Darwin Initiative Programme Objectives

4.1 Contribution to Global Goals for Sustainable Development (SDGs)

The project contributed towards SDG 14 "Conserve and sustainably use the oceans, seas and marine resources for sustainable development". It specifically supports Target 14.4, to effectively regulate harvesting and end overfishing and illegal, unreported and unregulated fishing, through regulating the fishing and trade of CITES-listed shark and ray species. This is evidenced through the on-going arrests and successful prosecutions of traders of protected marine species. It also supports Target 14.b by improving access for artisanal fishers to marine resources and markets.

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

The project supported the Government of Indonesia to develop domestic measures for implementing CITES regulations for shark and ray species. This included: facilitating meetings and public consultations to develop new regulations for CITES-listed species, collecting and analysing scientific data to inform regulations, and building the in-house capacity of the government to implement CITES through, for example, providing training in the NDF process for the CITES scientific and management authorities and providing training in species identification

for law enforcement agencies. The arrests conducted since the inception of this project represent the first time any enforcement has been undertaken against the trade of any CITES-listed marine species in Indonesia, and the NDFs developed/currently being developed for mobula rays, scalloped hammerhead sharks and silky sharks are some of the first NDFs to be undertaken for marine species in Indonesia. These are of high importance given that Indonesia is the world's largest shark and ray fishery and lies at the heart of the Coral Triangle.

The project is assisting Indonesia to fulfil its obligations under the CBD, in particular Strategic Goals A, B, C and E, by:

1. Raising awareness of the importance of biodiversity and conservation measures (Aichi Target 1), through the trainings and awareness-raising sessions with government officials, private sector and local communities and fisher groups.
2. Contributing towards ensuring the sustainable management of fisheries (Target 6), through developing and strengthening regulations for over-fished shark and ray species, supporting enforcement of these regulations, and facilitating livelihood diversification
3. Conservation of globally threatened species (Target 12), focusing on threatened elasmobranchs that have been targeted by the enforcement component of this project and are the subject of new MMAF regulations.
4. Gathering and synthesising data on shark and ray fisheries in Indonesia (Target 19) and bringing this knowledge to bear on policy and practice.
5. Overall, the project has contributed towards improving the protected area networks for biodiversity and ecosystem conservation (Target 11), particularly through supporting the development on the new regulation on the utilisation of all shark and ray species, which declares all of Indonesia's MPAs shark sanctuaries, and via the actions of the marine WCU to target illegal traders, which indirectly helps to improve the effectiveness of those new marine protected areas.

WCS interacted regularly with CITES and CBD focal points through our policy advisor based within the Ministry and regular joint meetings and workshops.

4.3 Project support to poverty alleviation

The project was designed to provide direct and indirect benefits to marginalised fishing communities, improving shark and ray fishers' economic situation in the short term whilst putting in place structures that will create conditions for longer-term financial security through more sustainable fisheries and tourism.

Direct poverty alleviation impacts have been difficult to achieve due to the high profitability of shark and ray fishing, and lack of legal, sustainable alternatives that offer similar financial returns. However, this project has contributed to improving multi-dimensional human well-being by reducing barriers to entry for alternative livelihoods and building institutions for sustainable shark and ray fishing. These outputs will support the long-term resilience and security of target communities, build social relations and participation in decision-making, and improve overall freedom of choice for shark fishers. Overall 98 individuals in target communities have directly benefited from participation in sustainable livelihoods cooperatives, which will benefit at least 600 people in total, through impacts at the household level. More than 200 community members have also benefited from improved participation in fisheries, planning and tourism management decision-making.

The project also provides indirect, long-term benefits to poverty alleviation by protecting valuable marine resources, which are a source of future sustainable income. Indonesia's shark and ray industry is worth approximately $US 125 million annually in export value alone, and employs thousands of people as fishers, processers, traders, and retailers. This industry must become more sustainable if it is to provide long-term economic benefits, and this project represents some of the first efforts in the region (and indeed globally) to build systems for sustainable fishing and trade of sharks and rays. The tourism industry also forms a significant component of Indonesia's economy, and the government intends to grow this sector considerably over the next decade. Marine tourism focussed around charismatic megafauna is central to efforts to conserve marine biodiversity throughout the Coral Triangle, and will provide income and employment opportunities

to coastal communities across Indonesia, and attract international investment. Indirectly, the new regulations to protect sharks and rays, particularly manta rays which are of high tourism value, will help to protect hugely valuable tourism resources that generate millions of dollars in revenue and considerable employment opportunities now and in the future.

4.4 Gender equality

WCS has been committed to gender equality and this is evidenced by the composition of our management and project teams. For example, the Director of WCS Indonesia, Dr. Noviar Andayani, is female; as is the project leader and Sharks and Rays Advisor for SE Asia, Hollie Booth; the team leader for the livelihoods component, Peni Lestari; and, the team leader for the policy component, Sofi Mardiah. The applied research component is also being advised by a female professor, Prof. EJ Milner-Gulland (Oxford University). This helps to improve the participation of women in science, and will help with career development for the Indonesian female scientists who will be publishing international standard peer-reviewed papers through our collaboration with Professor Milner-Gulland and Oxford University.

Meetings, trainings and awareness-raising events also promote participation of and leadership by women throughout the stakeholder groups we work with, from local communities to government and academia. For example, at our recent NDF capacity building workshop, 11 out of 33 participants were women, and the workshop was organised and led by a female team.

In the fishing communities in which we work women play in important role in the shark and ray trade chain, often involved in processing and selling products in landing sites and local markets. In Tanjung Luar the project worked towards providing a platform for community members to participate in management decision-making, including female processors and traders, thus giving them a voice in decisions that ultimately affect their household income and the well-being of their families. In the co-operatives and microfinance institutes there are a total of 18 female members, with loans given to 13 *Papalele* (women from Lamakera traditionally engaged in processing and trading manta ray parts) for developing non-elasmobranch livelihoods.

Programme indicators

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

Yes – the project facilitated fisher communities' participation in national- and provincial- level policy development processes.

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

Yes – the project provided data and lessons learned which fed in to a national-level document entitled '*Shark and Ray Conservation and Management in Indonesia: Status and Strategic Priorities*'. Several regulations for managing sharks and rays in Indonesia were also developed and implemented, and national and local-level fisheries management plans for specific CITES-listed elasmobranch species are underway.

- **Were these formally accepted?**

Yes – new ministerial regulations were formally accepted. Additional fisheries management plans are still under development.

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

This is a mixed result. Public consultations and focus group discussions were conducted to give fisher communities a voice in these processes, and WCS played a key facilitation role in ensuring participation of communities.

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

Household socioeconomic surveys did not indicate any significant positive gains in average HH income, although significant positive gains in average Material Style of Life (MSL) (material wealth based on household asset ownership) were recorded between 2016 and 2018.

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

Our socio-economic surveys design used a random systematic sampling methodology to assess the average HH income at the population-level, as opposed to the individual household level. This random sampling approach also means that different households were surveyed in 2016 and 2018, and we maintained the anonymity of all survey participants. As such, we are not able to identify which individual households saw an increase in HH income from our socio-economic survey.

Despite this, all 98 individuals participating in community cooperatives reported increases in income and income security during meetings and focus group discussions, however we do not have quantitative data on the magnitude of these changes.

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

See above.

4.5 Transfer of knowledge

We have conducted applied research and used it to inform policy and practical conservation challenges throughout this project. For example, our shark and ray landings monitoring has fed in to government NDF studies and quota-development processes, as well as the development of fisheries management and MPA policy at the local and national level. Similarly, our socio-economic surveys have been used to design practical livelihood-focused interventions in vulnerable shark fishing communities.

More broadly, knowledge transfer has also taken place through writing reports and publications in both English and Bahasa Indonesia, which have been shared with national and international audiences. We have had on-going consultation with partners throughout the project, through formal meetings and informal discussions, to share data, give presentations on our findings, and explore lessons learned. We have also presented at various national and international conferences/symposia to communicate our findings, such as the Oxford Martin Program on Illegal Wildlife Trade first Annual Symposium and the 2nd Indonesia Sharks and Rays Symposium.

Lessons from the WCU model have also been taken to other countries in the region, and globally, through presentations and capacity building workshops on the WCU approach conducted in Vietnam, Malaysia, Cambodia, Thailand, Singapore, Nepal, UK, US, Guatemala, Belize, Peru, Mozambique, and Germany.

Did the project result in any formal qualifications?

The project supported one female student from the UK to complete a research project in partial fulfilment of an MSc in Conservation Science at Imperial College London.

4.6 Capacity building

The project supported three female members of staff from WCS Indonesia to attend research placements at the University of Oxford:

- Peni Lestari, Socioeconomic Specialist
- Yunita Setyorini, Wildlife Crime Intelligence Analyst
- Nuruliawati, Wildlife Policy Researcher

During these placements, they were able to participate in international symposia/conferences (e.g. The Oxford Martin Program on Illegal Wildlife Trade Annual Symposium) and present their work to international audiences.

Peni Lestari was also invited to present on her socioeconomic research and experiences in Tanjung Luar at an IUCN Illegal Wildlife Trade "Beyond Enforcement" workshop in Hanoi in 2016, and contribute to a book chapter on ‘Research to integrate local resource users' perspectives and priorities into conservation practice’.

Several other members of staff presented research at national conferences and symposia, and have been accepted to present findings on our shark and ray work at the Society for Conservation Biology's 5th International Marine Conservation Congress (IMCC5) in Kuching, Malaysia in June 2018.

5 Sustainability and Legacy

The project supported the Indonesian government to establish long-term systems and capacity for analysing, regulating and controlling trade of CITES-listed marine species, in order to meet their CITES obligations. There have been several policy outcomes (see Output 1), as well as significant increases in human capacity and motivation within MMAF and law enforcement agencies for CITES implementation and illegal shark and ray trade. These are highly likely to endure, since they are built in to government institutions, and MMAF shows continued interest and motivation to implement CITES for sharks and rays.

At the community level, we have developed and/or built on local institutions, to embed sustainable concepts and practices in the long-term. In Tanjung Luar, fishers frequently turn to WCS for information relating to shark and ray fishing regulations, and for facilitating their relationship and communication with the government. These achievements are likely to endure in the long-run, as they are highly relevant to the livelihoods and well-being of shark fisher communities.

Project staff and resources will be maintained by WCS-Indonesia now the project funding has ceased, as we have secured follow-on funding from other donors to continue to build on the successes of this project.

6 Lessons learned

Partnerships: The significant achievements made in policy, investigative, and judicial processes throughout this project can be attributed to the strong partnerships WCS has with government agencies and civil society organisations. These enabled us to design a project which aligned closely with government needs and interests, securing commitment and momentum from the beginning, and allowing us to jointly conduct policy-relevant activities. WCS has continuously facilitated and led discussions and meetings with government agencies, which have instigated critical regulatory reform for shark and ray conservation and management. For law enforcement efforts, WCS has successfully linked WCU monitoring data with relevant government law enforcement agencies, and built national and global awareness of marine wildlife crime through close collaboration with journalists and media groups. To achieve policy changes, we learned that intensive communication with partners, with a combination of formal and informal approaches, is critical to maintain interest and momentum. Embedding a full-time WCS staff member within the Ministry was instrumental in achieving this. Ultimately, these successes would not have been possible without the government's commitment and willingness to learn and adapt. Ensuring relevant individuals and agencies receive appropriate recognition for their actions has been critical in maintaining motivation and momentum.

Adaptive management: Continuous learning and adaptation has allowed us to circumvent unforeseen risks and barriers, and respond to new opportunities. Throughout the project WCS adapted through the identification and building of new partnerships, using a range of approaches for regulatory reform (e.g. using Ministerial Decrees as a short-term solution for species protection since reforming Law No.5/1990 is a more lengthy process), and understanding and capitalising on various parts of the legal system to more successfully prosecute wildlife crimes.

Trust: Securing the trust of communities is crucial for collecting data, particularly data on sensitive issues. The community in Tanjung Luar have been continuously open to our fisheries monitoring. This is largely thanks to the field team's on-going efforts to engage the community on a daily basis, and create a two-way dialogue by providing them with information on their fishery and regulations, so that they can see the value in our presence. Embedding ourselves within the fishing communities in which we work, and employing local people, has been central to building relationships and trust.

A long-term approach: Despite these achievements challenges remain. For example, regulatory loopholes still exist and marine wildlife crime cases have not yet resulted in maximal fines and sentences. We also need to focus on building long-term institutional capacity for tackling wildlife crime. Further, there is not necessarily an ultimate goal or end point for sharks and rays regulatory reform – the ecological, political, and socioeconomic context for conservation is highly dynamic and long-term support is required to advise on continuous adaptation to change. For example, during the lifetime of this project CITES CoP17 resulted in the listing of 13 new shark and ray species on CITES Appendix II, which represents a huge step forward for elasmobranch conservation, but also a significant challenge for implementation. During years 1 and 2 of this project, WCS successfully supported regulatory reform for all species listed on CITES appendices at that time, but additional efforts are now required to support the government to adapt to achieve its international obligations in this new policy context. This also highlights the importance of ensuring that regulatory reform is robust to change. For example, a revision of Law no 5/1990 to formally link the categorization of Indonesia's protected species to the CITES appendices will enable automatic updating of the list in the future, and circumvent the need for lengthy processes of reactive regulatory reform every time new species are CITES-listed. This is particularly important in the context of the export ban on oceanic whitetips and hammerheads: the original ministerial regulation has now been extended twice, requiring a new decision every time. The implementation and impact of this regulation needs to be assessed, and a longer-term approach and legal framework developed, to secure the protection of these species in to the future. Similarly, affecting behaviour change and embedding sustainable practices within shark fishing communities requires a long-term approach. Given the profitability of shark and ray fishing, and that is it still, to a large extent, completely legal in Indonesia, establishing institutions and incentives for livelihood diversification and long-term sustainability required significant investment.

Data: In Indonesia there is a paucity of policy-relevant data from across the country to inform the regulation of sharks and ray exploitation and trade and to assist the government in meeting its obligations under CITES (e.g. conducting non-detriment findings). MMAF recognizes that it is challenging to develop regulations on exploitation and trade of sharks and rays without better information (e.g., on distribution and population size, resource use status, traceability, etc.) and has developed a program of research needs for species protection and management going forward. The overall lesson learned is that sharks and rays are a relatively new area of interest, and the capacity for research and monitoring in Indonesia is limited. More efforts are required to conduct applied research on sharks and rays throughout Indonesia, and build capacity within MMAF, MoEF, LIPI, and Indonesian research institutions to develop and implement policy-relevant monitoring systems, particularly for traceability and the collection of species-specific information in support of CITES NDFs. This will be crucial for informing appropriate and nuanced regulations, plans, and management in the future.

Data collection also became increasingly challenging for some species, particularly following the initiation of enforcement actions against manta ray traders. For example, no mantas have been openly landed in Tanjung Luar since 2016, however this does not necessarily mean that the entire trade has been eliminated. Using mixed methods and multiple sources and datasets is important for building a reliable picture of sensitive behaviours.

Acknowledging complexity and uncertainty: Identifying and implementing appropriate livelihood-focused interventions has been one of the biggest challenges for this project. The lesson learned is that overexploitation of sharks and rays in Indonesia is a complex, multifaceted issue, which is driven by local social and economic drivers and national and global market forces. Addressing these drivers, and identifying economically and environmentally sustainable alternatives, requires dramatic changes in the attitudes and motivations of multiple user groups – from fishers, to traders, to local and international consumers. It is necessary to explore practical, locally-relevant options for livelihood diversification, whilst also acknowledging that full substitution of environmentally harmful livelihood practices is often very challenging. Adaptation is also important, so that interventions can be updated as information and understanding is improved, and allow for changes in socio-economic context.

6.1 Monitoring and evaluation

At the end of year 2 there was an approved change to the project design and log frame, with changes to Output 4 and related activities and indicators. This was because our socioeconomic research and field-based experience indicated that some of our assumptions regarding livelihood diversification were incorrect. We also altered our approach to no longer use KAP surveys to measure the impact of awareness-raising campaigns. Baseline surveys were not implemented in Year 1, and we felt more robust indicators of knowledge and behaviour were covered in the household socioeconomic surveys and direct and indirect field observations (e.g. landings data collection, law enforcement data).

Overall, this project was implemented jointly by three WCS Indonesia project teams – the policy team (Output 1), the Wildlife Crime Unit (Outputs 2, 3 and 5) and the marine team (Outputs 2, 4 and 5). All three teams use their own specific M&E plans, which are consolidated into the results reported here. The M&E system proved to be useful for tracking and demonstrating the impact of our conservation efforts, both internally, and to partners, stakeholders and other donors. Some elements of the originally planned M&E system, such as conducting KAP surveys or surveys of government officials knowledge, proved to be less practical and to some degree superfluous. We felt that observations of actual behavioural outcomes (e.g. fishing effort, arrests and prosecutions) were better indicators of change.

In April-October 2016, an MSc student from Imperial College London worked to consolidate different types of monitoring data available for manta ray exploitation and trade in to a monitoring framework and assess the suitability and usefulness of the data (see Booth 2016). Although there are a number of challenges associated with collecting some of the monitoring data, particularly for protected species, the availability of multiple sources of data from various levels of the trade chain (e.g. landings data, price data, trade data) collected through various methods (e.g. overt and covert) enables triangulation of evidence. Several additional technical reports that assess trends in catch and trade of CITES listed species, and assess the impacts of the WCU on illegal shark and ray trade were also produced. The key findings of these assessments are that our efforts under this project are having an impact, although quantification and attribution remains challenging. There were several lessons learned regarding methods for assessing the impacts of wildlife trade policy, and practical implementation of shark and ray conservation regulations in terms of different approaches that might work for different species and contexts.

We have responded to all issues raised in the reviews of our annual reports and have no further comments.

7 Darwin identity

The contribution of the Darwin Initiative has been widely recognised in formal government meetings, focus groups and public consultations, as a contribution from the UK Government. The UK Embassy in Jakarta also continued to be supportive. Within the WCS program, the Darwin Initiative funding is recognised as a distinct project with a clear identity, which is focused on increasing the sustainability of shark and ray fisheries.

Where appropriate Darwin logos are used on communications materials and presentations, and the UK government's contribution is noted. For example, the Darwin Initiative was clearly acknowledged as a funder during an international presentation of our conservation efforts at the Oxford Martin Program on Illegal Wildlife Trade First Annual Symposium (recorded live stream available here). WCS acknowledges the contribution of the Darwin Initiative on relevant websites (e.g. https://www.hiupari.info/), and through social media channels (e.g. through publicising our Life Below Water article in the Darwin Initiative Newsletter via Twitter). However, much of WCS's press releases on sharks and rays focus on congratulating the government for their achievements. WCS is therefore careful not to overly credit ourselves or our donors in publicity for policy and wildlife crime achievements, since we are aiming to congratulate and motivate government and officials for taking action.

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)			100%	
Consultancy costs			111%	We performed social survey in NTB and Aceh where the location was in remote area, so we increase the number of consultant to join the team
Overhead Costs			107%	
Travel and subsistence			90%	
Operating Costs			93%	
Capital items (see below)			NA	
Others (see below)			98%	
Audit costs			95%	
TOTAL				

Staff employed (Name and position)	Cost (£)
Kenneth Kassem (Marine Program Director)	
Hollie Booth (Deputy Director)	
Sofi Mardiah (Program Manager)	
Shinta Tri Lestari, Efin Muttaqien (Senior Scientist)	
Benaya, Muhammad Ichsan (Field Coordinator, Lombok)	
Ahmad Mukminin, Riswan (Field Coordinator, Aceh)	
David Kuntel, Nuruliawati (Policy Coordinator)	
Irma Hermawati (Legal Expert)	
Haryo Pradityo, Poliman, Dwi Citra (Marine Crime Unit facilitator)	
Ardi Maulana, Ayut Enggeliat, Dinny Pratami, Eva Muharti, Melati Amor, Nina Kusumaningrum, R Agus, Sayu Innaza, Skundita, Susy, Yulia S., Elsa (Admin Officer)	
Yunita Dwi (Research Scientist)	
TOTAL	

Capital items – description	Capital items – cost (£)
TOTAL	

Other items – description	Other items – cost (£)
Bank Fee Communications Courier and shipping Bogor Office Maintenance Office Supplies Printing Work Permit	
TOTAL	

8.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)*
Vulcan/Paul G Allen Family Foundation	
The Walton Family Foundation	
USAID BIJAK	
The Global Partnership on Sharks and Rays (GPSR)	
The David & Lucile Packard Foundation	
MacArthur Foundation	
Margaret A Cargill Foundation	
TOTAL	

Source of funding for additional work after project lifetime	Total (£)*
The Shark Conservation Fund (previously GPSR)	
Vulcan/Paul G Allen Family Foundation (NCE of above grant)	
The David & Lucile Packard Foundation	
The Food and Agriculture Organisation of the United National	
USAID BIJAK (continuation of above grant)	
MacArthur Foundation	
TOTAL	

*N.B. Most of our grants are in US$. We have used conversation rate of US$ 1.00: GB$ 0.70

8.3 Value for Money

WCS Indonesia is proud of making long-term, on-the-ground commitments, and leveraging these commitments through strong in-country partnerships with both government and local communities. We apply the contextual knowledge and lessons gained through these partnerships to plan culturally-appropriate and feasible projects, which are scalable and build on local institutions that will long outlast the lifetime of our projects. This positions us to deliver results and make significant impacts for a relatively modest investment.

For example, through our partnerships with government and law enforcement agencies this project shut down major trade networks of some of the world's most charismatic and threatened

marine species, and generated real change in fisher behaviour (particularly manta fishers) thus helping to secure the future of a substantial, and significantly growing, marine tourism industry. To put this in to context, this project has prevented the mortality of an estimated 190 individual manta rays (assuming a uniform catch rate of 163 individuals per year throughout 2015-2018, as per pre-project (2013-14) baselines, in the absence of this project). A recent study by WildAid estimated that one single living manta ray is worth $1 million dollars in tourism value throughout the course of its lifetime. This project has therefore secured an estimated US$ 190 million in manta ray tourism value to date, which will continue to accumulate in to the future.

We also directly improved the livelihood security and well-being of 98 people through their participation in cooperatives, which will be leveraged far beyond the direct project beneficiaries through trickle down to their households as a whole, and long-term integration of capacity and capital in to local institutions.

In addition, through our strong partnerships with international experts and institutes, we were able to access world-class technical support, at low cost, which is channelled back in to Indonesia. For example, through our partnership with Prof. Milner-Gulland and Oxford University, we were able to access teaching and mentorship programs for 3 Indonesian staff members without paying any costs apart from travel. These staff members remain at WCS Indonesia, and through their work will continue to share their expertise with other WCS staff members and our in-country partners.

For contracts and purchasing WCS has a competitive bidding process for all good/services worth more than US$ 500. At least three different quotations or sought from three different vendors/service providers, which ensures that WCS receives the best value for money for all external procurements.

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: Globally threatened elasmobranch populations in Indonesia are protected by simultaneously reducing trade through improved law enforcement, and diversifying livelihoods, demonstrating a replicable, scalable model for other highly threatened fisheries.			
Outcome: Enhanced law enforcement, alongside community empowerment and reduced barriers to livelihood adaptation, leads to a 50% reduction in catches of protected elasmobranch species whilst increasing community adaptive capacity and promoting sustainable fisheries management.	1. By 2018, at least two new or revised government regulations have been approved that enhance the protected status of CITES-listed shark or ray species, against a baseline of one regulation approved up until 2014.	Revised regulations and government documents.	The project assumes that the government is willing to strengthen and implement shark and manta fisheries regulations. WCS has been a key partner supporting MMAF and the CITES Scientific Authority (the Indonesian Institute of Science; LIPI) with the development of national assessments of the scientific case for introducing regulation, including evaluation of the costs and benefits of protection (e.g. the value of the trade versus the potential benefits from marine tourism). This led to the MMAF decision to protect whale sharks and mantas in 2013 and 2014 respectively. Similar legal routes will be used to introduce regulations for other species, such as CITES-listed sharks.
	2. By 2018, surveys indicate that 50% of local government officials and manta/shark fishers understand regulations regarding CITES-listed manta/shark species, against a baseline of 5% in 2014, reflecting improved enforcement capacity and knowledge of shark and ray conservation measures.	1.2 Training sessions and project notes with fisheries officers and communities. Surveys of the level of awareness of government officers, community leaders and manta/shark fishers.	Local Government officials and fisheries agencies must be willing to engage in awareness-raising about new manta/shark regulations and support prosecutions. Local government's primary concern is not to penalize against poor fishers, hence the developed of improved livelihoods for manta/shark fishers is critical in order to secure their support.

	3. By 2018, government law enforcement agencies have successfully prosecuted 10 cases against major exporters or middlemen dealing in CITES-listed shark or ray species, from a baseline of 0 cases as of 2014.	1.3 Documented evidence of successful prosecutions, such as court documents, public announcements, and cases recorded by the Attorney General and Indonesian National Police	Government law enforcement agencies (Indonesian National Police, Attorney General) must also be interested in undertaking prosecutions of manta/shark traders under the revised regulations, and doing so in a fair and un-corrupt manner. WCS has more than 10 years of experience in Indonesia advising law enforcement agencies on prosecutions for illegal wildlife trade. Through a combination of legal advice, providing accurate information about illegal activities, training and engaging local media, WCS has been able to enhance the prosecution rate for wildlife crimes from 10% to over 90%, which is unparalleled in the Southeast Asian context and is a testament to the "Wildlife Crime Unit" approach. Local media interest is critical where cases have the potential to be dropped or criminals released due to corruption and nepotism. Similar approaches will be used to enhance the likelihood of successful, fair prosecutions under this project.
	4. By 2018, at least 50 members of shark fisher communities have reduced barriers to entry for engaging in non-elasmobranch-related livelihoods and increased empowerment to participate in fisheries management decision-making.	Surveys of the 134 fishers documented as involved in the fishery (by a WCS pilot study in 2012-14), to assess incomes and livelihood security, and the role of shark/manta fisheries in their livelihoods, at start and end of project.	Fishers must be willing and able to transition to other fisheries or non-fishing livelihoods, and able to generate increased incomes from these livelihood transitions if provided with appropriate support. Manta/shark fishers are already highly interested in successfully navigating these transitions, as declining catches and increasing costs reduce the profitability of their livelihoods. These fishers are particularly vulnerable to increases in fuel prices, as the Government withdraws fuel subsidies, because they travel large distances to find the sharks and mantas. Initiating enforcement further up the supply chain is likely to

			increase the incentives to transition. WCS is therefore confident that manta/shark fishers will want to make the transition, if appropriate support is available.
	5. By 2018, landings of CITES-listed shark and ray species at key sites in Aceh and West Nusa Tenggara provinces (which together comprise 20% of Indonesia's total catch) have been reduced by at least 50%, against a baseline of 924 in 2013 (or 731 in 2014 in Nusa Tenggara Barat only).	Shark and manta fisheries catch data available on a quarterly basis from the sites.	Fisher communities and customary fisher institutions are receptive to embracing new laws on sharks and rays so long as mitigation measures are in place to ensure there are no adverse livelihood impacts. The letter of support from some of the strongest customary fisher institutions (the *Panglima Laot*) demonstrates that this political will exists.
Outputs: **1**. Regulations for CITES-listed sharks and mantas have been developed or revised to ensure enhanced legal protection for at least four species	1.1 In year 1, MMAF and WCS produce a report in consultation with other key government agencies, which identifies policy and regulatory gaps, options to introduce regulation of trade in CITES-listed sharks and rays and increase the level of species protection. 1.2 During the life of the project, at least 5 government-civil society meetings are held with the support of WCS to review the status of CITES-listed sharks and rays and identify mechanisms to regulate the trade and enhance the overall level of protection. 1.3 By end of year 3, at least three government scientific papers (Naskah Akademik) have been produced Indonesian Institute of Science (LIPI, the CITES Scientific Authority) with input from WCS, the project partners and other NGOs, setting out the scientific case for trade regulation or enhanced protection measures for CITES-listed sharks and rays.	Published policy and regulatory review reports, meeting records, and copies of completed Naskah Academik.	WCS's support and advice on how to develop regulations for CITES-listed shark and ray species is sought and welcomed by MMAF and the other relevant government ministries. The letter of support from MMAF is evidence that they are willing to engage actively with this project and welcome the partnership with WCS.
2. Local government officials, traders and fishers have sufficient awareness	2.1 By end of year 1, training modules have been designed and produced by	2.1 Copies of training modules and awareness-raising materials. Records	Local government officials, traders and fishers actively engage with and are

and training in the new regulations governing shark and ray conservation and the applied management actions required to adequately manage shark and manta fisheries.	WCS and MMAF, and are being used for training programmes with government officials, village leaders, fisher institutions and fishers on CITES-listed manta/shark species and enforcement of trade or protection regulations. 2.2 Fisheries management agencies, community fisher institutions, fishers and traders at >5 key shark and ray landing sites are trained and updated annually by WCS and MMAF on knowledge and enforcement of regulations regarding CITES-listed manta/shark species. 2.3 By end of year 3, 50 personnel from Indonesian law enforcement agencies are trained on knowledge and enforcement of regulations regarding CITES-listed manta/shark species. 2.4 By end of year 3 there have been >250 news articles in Indonesian and international press based upon at least 10 individual incidences (arrests or prosecutions, press releases or events), against a baseline of one event in the period leading up to July 2014 (that event was the announcement of the MMAF Ministerial decree protecting mantas in February 2014).	of training and awareness-raising sessions with fisheries officers, traders and fishers. Copies of media reports.	able to learn from training and awareness-raising events. For these events to be useful they must be well designed and relevant in the local social and cultural context. The project will achieve this by integrating government training events into formal government training programs, and with local fishers by working through the customary fisher institutions which are partners on this proposal. There is sufficient interest by Indonesian, regional and international news agencies and media companies to promote the work the Indonesian government is doing to protect manta rays and introduce domestic regulations for CITES-listed shark species. The high level of press attention afforded to MMAF's first enforcement action (in October 2014) indicates that this will be forthcoming.
3. A new "Marine Wildlife Crime Unit", comprising representatives of the Indonesian National Police, Attorney General and Ministry of Marine Affairs and Fisheries, has been established and is focusing on high-profile prosecutions of major manta/shark traders.	3.1 By end of year 1, a Marine "Wildlife Crime Unit", facilitated by WCS in partnership with MMAF, Indonesian National Police and other law enforcement agencies, is operational and achieving arrests and prosecutions of major manta/shark traders. 3.2 By end of year 3, at least 30 investigations into traders or trade routes of CITES-listed sharks and rays	3.1 Documented and photographic evidence of the agency structure, roles, goals, operations and successful actions of the Marine Wildlife Crime Unit. Data on investigations conducted and the results, from the marine wildlife crimes tracking database.	Sufficient information can be obtained on the extent of the trade in mantas and CITES-listed sharks in Indonesia, and identity of the traders, to enable enforcement actions. Although the trade is known to be extensive, as soon as law enforcement efforts start it is expected to become clandestine and information may be hard to obtain. WCS has >10 years experience documenting illegal wildlife trade networks for highly

	species have been undertaken by the marine WCU. 3.3 By end of year 1, a marine "Wildlife Crimes" tracking database is established by WCS in partnership with MMAF, which is cataloguing cases of trafficking of CITES-listed or protected marine species, especially sharks and rays, and recording actions taken (arrests, prosecutions, fines, etc.).		protected species such as tigers, rhinos and elephants in Indonesia, hence this is not expected to be a particular problem. Traders in CITES-listed shark and rays stop trading protected species and focus on other fish species. This is not expected to be a particular problem, as the trade in CITES-listed mantas and sharks is reasonably small and represents very little of the traders' profits or traded volumes. Consequently, the expectation is that the traders, who operate legally-registered legitimate businesses, will simply stop carrying the risky (i.e. protected) products. This is quite different from the trade in highly endangered and valuable mammals (tigers, elephants, primates, etc.), which is entirely illegal and conducted by criminal syndicates that operate in secret.
4. At least 50 individuals in shark fishing communities have reduced barriers to entry for engaging in non-elasmobranch related economic opportunities, and support structures are in place to promote long-term sustainable fisheries management"	4.1 An assessment report on opportunities for shark and ray fishers to transition to sustainable fisheries, mariculture enterprises and other livelihoods is produced by WCS, MMAF and Imperial College in year 1, based upon updating existing research and consultations with local fishers, fisher institutions and other stakeholders. 4.2 One community financial institution is developed 4.3 One enterprise development institution is developed, with at least 20 members receiving training 4.3 One fisheries management committee is developed, and at least two meetings have been held with relevant government bodies to	Reports on livelihood options assessments. Survey data, photographs, and documentation of the manta/shark fishing fleet, fisher behaviour, and the interventions supported by the livelihood program.	The alternative livelihood opportunities that have been identified can be followed through into actual livelihood transitions that are poverty alleviating, risk reducing and sustainable, and that encourage further uptake by other fishers. The project will maximise the leveraged impact of the project by working with customary fisher institutions to ensure that results and approaches are widely known throughout the communities, and late adopters can also access support to achieve the transition.

	contribute to government development planning processes		
5. The conservation and social outcomes of the project are evaluated, based on ongoing monitoring of shark and ray landings and change in the wellbeing and behaviour of fishers.	5.1 By the end of quarter 1 of year 1, a fully functioning shark and ray fisheries catch monitoring program is established by WCS, MMAF and Imperial College, collecting monthly data on landings of CITES-listed sharks and rays, catch and product prices and fishing activities, and providing quarterly reports. Thereafter reports are produced and made available by WCS on a quarterly basis throughout the life of the project. 5.2 Assessment of fisher attitudes and behaviours, social norms around manta/shark fishing, and change in livelihoods and poverty. Surveys in year 1 and resurvey in year 3 of intervention and control households to determine the impact of the livelihood interventions, conducted by WCS and Imperial College. 5.3 By end of Year 3, a peer-reviewed paper is produced by WCS and Imperial documenting the results of the project. 5.4 By end of Year 3, at least 5 information exchange and lessons learned events have been held with customary fisher institutions or other organisations so that other groups can learn about the project approach and promote livelihood transitions in other sites.	Quarterly reports on the shark and rays fisheries catch monitoring program, including photographs and data on catch, prices and sales. Completed reports on fisher behaviour, household well-being and occupational status. Final draft of the submitted paper for publication by a peer-reviewed journal. Reports on information exchange events.	Sufficient capacity exists within the project team to design appropriate scientific monitoring programs to measure the effectiveness and impact of the project interventions. The project team includes substantial academic expertise and a track record of collaborative impact evaluation using similar monitoring design, published in the scientific literature, hence this is not expected to be a problem. Ongoing information can be collected on shark and ray catches, prices and sales, and the behaviour of shark and ray fishers. As soon as law enforcement efforts start, the trade is expected to move undercover and such information may be hard to obtain. During 2014, WCS data collectors and researchers have built a strong relationship with the shark and ray fishers, which means they should still be trusted even as the level of awareness about the illegality of the trade increases. As noted under the ethics statement, WCS will keep the data collection and enforcement parts of this project separate, so as to protect the identify of interviewed subjects and data collectors.

Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)
1.1 Assessment of existing government regulations and development of a strategy to strengthen regulations for CITES-listed sharks and rays.
1.2 Hold meetings to align MMAF's, MoEF's, and LIPI (Scientific Authority) policies on the protection of marine species and implementation of CITES for marine species.
1.3 Hold meetings to strengthen policies and establish the protection status of CITES-listed Indonesian sharks and rays.
1.4 Facilitate the development of species regulations and policies by MMAF, which identify management actions or changes to trade regulations (e.g. size restrictions).
1.5 Facilitate changes in the protection status of CITES-listed species, through changes to the national protected species list (PP.7/1999), Ministerial Decrees, or changes to regulations under the fisheries law.

2.1 Create awareness-raising materials and distribute regulations on CITES-listed shark and ray species in landing areas for sharks and rays.
2.2 Initiate regular joint meetings, workshops and training with MMAF local agencies, police, customs agencies to develop and implement regulations on CITES-listed shark and ray species.
2.3 Train fisheries middlemen and exporters to improve their knowledge on implementing regulations for CITES-listed shark and ray species.
2.4 Assess the impact of awareness-raising campaigns and training events using robust *Knowledge, Attitude, and Practice* surveys.
2.5 Publish and disseminate law enforcement achievements.

3.1 Create informant network to monitor shark and ray trafficking in key areas. Produce an assessment of the current trade networks.
3.2 Provide technical assistance and information for law enforcement officers in intelligence, surveillance, apprehension and processing of evidence.
3.3 Assist the law enforcement officers to complete legal documents for each trafficking case, and maintain strong communications with prosecutors and judges to ensure that all cases are processed and adjudicated promptly and in accordance with law.
3.4 Support MMAF and the Attorney General's Office to develop a tracking database, to record information on marine species crime cases, action taken by Indonesian law enforcement agencies, and the results (arrests, prosecutions, fines, etc.).
3.5 Produce an assessment of how trade networks have changed after three years of enforcement.

4.1 Produce an assessment report on the opportunities for manta/shark fishers to transition to sustainable fishing and other livelihoods.
4.2 Support the development of community institutions to promote livelihood diversification, community empowerment and sustainability
4.3 Facilitate the development and adoption of non-elasmobranch related economic opportunities through community institutions that help to reduce barriers to adaptation
4.4 Promote concepts of sustainability and environmental management through community institutions
4.5 Facilitate communication between communities and government to enable community participation in development planning processes
4.6 Information exchange and learning events to spread awareness about the project approach and encourage other manta/shark fishers to also begin to transition to other livelihoods.

5.1 Conduct monthly shark and manta fisheries catch surveys at target sites.
5.2 Undertake surveys, analyse and assess changes in shark and ray catch landings, prices and demand in response to changes in stakeholder knowledge and capacity, law enforcement and awareness raising activities.
5.3 Design socio-economic surveys to examine fisher behaviour, attitudes, social norms around fishing and other livelihoods, and household well-being and occupational status, in partnership with Imperial College.
5.4 Conduct socioeconomic surveys of fisher behaviour and household well-being and occupational status in years 1 and 3, for intervention and control households.
5.5 Analyse and assess changes in fisher behaviour and household well-being and occupational status in response to the livelihoods transition intervention.
5.6 At least one peer-reviewed paper produced in partnership with Imperial, by Indonesian scientists undertaking visiting research fellowships at Imperial.

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 Globally threatened elasmobranch populations in Indonesia are protected by simultaneously reducing trade through improved law enforcement, and diversifying livelihoods, demonstrating a replicable, scalable model for other highly threatened fisheries.		The project has had a major impact on regulation and trade of CITES-listed shark and ray species. The project has continued to work with MoEF and MMAF to achieve regulatory reform for shark and ray species and on the ground continues to successfully investigate, arrest and prosecute illegal exploitation and trade. Landings of protected species at key landing have significantly declined, providing evidence of the project's impact.
Outcome Enhanced law enforcement, alongside community empowerment and reduced barriers to livelihood adaptation, leads to a 50% reduction in catches of protected elasmobranch species whilst increasing community adaptive capacity and promoting sustainable fisheries management	1. By 2018, at least two new or revised government regulations have been approved that enhance the protected status of CITES-listed shark or ray species, against a baseline of one regulation approved up until 2014. 2. By 2018, surveys indicate that 50% of local government officials and manta/shark fishers understand regulations regarding CITES-listed manta/shark species, against a baseline of 5% in 2014, reflecting improved enforcement capacity and knowledge of shark and ray conservation measures.	Four new/revised Ministerial Regulations (MR) relating to the protection and management of CITES-listed sharks and rays have been developed, with processes initiated for developing/revising two further regulations: - Ministerial Regulation (MR) 5/2018 on export ban of oceanic whitetips and hammerheads - MR 49/2016 on status of protected fish - MR on limited protected of all shark species (not yet numbered at time of writing) - MR on export ban of devil rays (not yet released/numbered at time of writing) - Process to revise overarching conservation law (Law 5/1990) and associated protected species list Government Regulation (GR) 7/1999 is ongoing. - Processes to establish zero-quotas for silky sharks and thresher sharks were on going at time of writing Evidence (policy documents) available here. More than 500 government law enforcement officers have been trained in wildlife trade regulations and combatting illegal wildlife trade. More than 2,000 fishers, traders, government officials and local stakeholders have participated in public consultations, focus group discussions and socialisation events held across eight locations in four provinces. Evidence (schedule of training and socialisation events, and training reports and sign-in sheets) available here. Our surveys indicate that knowledge of regulations in shark fishing communities is at least 98% at the end of the project, representing an increase of 93% in comparison to 2015 baselines. Support for management also significantly increased from 36% in 2016 to 71% in 2018. Evidence (household survey results) available here.

	3. By 2018, government law enforcement agencies have successfully prosecuted 10 cases against major exporters or middlemen dealing in CITES-listed shark or ray species, from a baseline of 0 cases as of 2014.	Government law enforcement agencies conducted a total of 25 sting operations relating to illegal trade of shark and ray products, involving 28 suspects. These have led to 14 successful prosecutions, with more than US$ 30,000 levied in fines and 64 months of jail time. Eight others have received administrative sanctions, while the legal process for the other suspects are still ongoing. Evidence (case summary) available here.
	4. By 2018, at least 50 members of shark fisher communities have reduced barriers to entry for engaging in non-elasmobranch-related livelihoods and increased empowerment to participate in fisheries management decision-making.	Through livelihood-focused interventions in Tanjung Luar and Lamakera - Indonesia's two biggest known manta ray fisheries, prior to the manta ray regulation – 98 members of elasmobranch fisher communities have improved access to non-elasmobranch livelihoods through direct participation in cooperatives and microfinance. These benefits indirectly reach at least 600 community members, through supporting the households of cooperative members. This includes 22 'top manta hunters' and 13 female traders of manta ray products (*Papalele*) from Lamakera, and 11 shark fishers from Tanjung Luar. Evidence (cooperative legal documentation) available here. Fisher communities have also benefited from improved participation in fisheries management decision-making through WCS playing a bridging role between communities and government, and facilitating public consultations and focus group discussions. Evidence (schedule of training and socialisation events) available here.
	5. By 2018, landings of CITES-listed shark and ray species at key sites in Aceh and West Nusa Tenggara provinces (which together comprise 20% of Indonesia's total catch) have been reduced by at least 50%, against a baseline of 924 in 2013 (or 731 in 2014 in Nusa Tenggara Barat only).	Lamakera: 7 targeted manta ray landings and 16 caught incidentally in gillnets during 2017-2018 (a total mortality of 23 individuals) vs. estimated 250 in 2015-16 = decline of 91%. Tanjung Luar: 0 recorded manta ray landings in 2017-2018 vs. 8 recorded in 2015-16 = decline of 100%. Evidence (assessment of trends in catch and trade of CITES-listed species) available here.
Output 1. Regulations for CITES-listed sharks and mantas have been developed or revised to ensure enhanced legal protection for at least four species	1.1 In year 1, MMAF and WCS produce a report in consultation with other key government agencies, which identifies policy and regulatory gaps, options to introduce regulation of trade in CITES-listed sharks and rays and increase the level of species protection.	Report developed in Year 1 entitled *Wildlife Trade, Wildlife Crimes and Species Protection in Indonesia: Policy and Legal Context*. Available here**.**

	1.2 During the life of the project, at least 5 government-civil society meetings are held with the support of WCS to review the status of CITES-listed sharks and rays and identify mechanisms to regulate the trade and enhance the overall level of protection.	16 public consultations completed with government and civil society on shark and ray regulatory reforms in relevant fishing communities across Aceh, West Nusa Tenggara, East Nusa Tenggara, Bali and Java, alongside more than 30 formal and informal meetings and focus group discussions relating to NDFs, traceability and export controls for CITES-listed species.
	1.3 By end of year 3, at least three government scientific papers (Naskah Akademik) have been produced Indonesian Institute of Science (LIPI, the CITES Scientific Authority) with input from WCS, the project partners and other NGOs, setting out the scientific case for trade regulation or enhanced protection measures for CITES-listed sharks and rays.	Four government scientific papers produced: - "Policy Analysis: Species Protection Legislation in Indonesia and A Rapid Assessment Methodology for Species Protection Designation" - "Policy Analysis: The Needs of Regulation to Establish Limited Protection Status for Sharks" - "Policy Analysis: Legal Draft of Ministerial Regulation on Export Prohibition of *Mobula* spp. from Indonesia to Overseas" - "Policy Analysis: Revision of Law No. 5/1990 for Conserving Natural Resources and the Ecosystem" Evidence (policy documents) available here.
Activity 1.1 Examine the effectiveness of existing government regulations to protect shark and ray species, identify the gaps of government regulations to implement shark and ray protection, specifically the constraints of government regulations to create strong law enforcement efforts and deterrent effects, and set up a strategy to increase the profile of shark and ray species protection through revision of government regulations.		Review conducted and report on findings developed in year 1 (available here**).** Founded on this initial report, with financial support from the Walton Family Foundation, a comprehensive 5-year strategy for shark and ray conservation and management in Indonesia was developed (available here).
Activity 1.2 Hold meetings to align MMAF's, MoEF's, and LIPI (Scientific Authority) policies on the protection of marine species and implementation of CITES for marine species.		6 formal coordination meetings on shark and ray regulatory reform conducted with MMAF, MoEF, LIPI and other NGOs, along with several informal meetings and on-going consultation through WCS staff seconded to the ministry. WCS is involved in the process to transfer the CITIES authority for aquatic species management to from MoEF to MMAF. Bilateral discussion and meetings have been on-going between MoEF and MMAF, with a draft of the official document (titled, *Berita Acara Serah Terima*) for the delegation of authority for management of aquatic species to MMAF, and a list of protected aquatic species that MMAF will then manage prepared.
Activity 1.3 Hold meetings to strengthen policies and establish the protection status of CITES-listed Indonesian sharks and rays.		More than 40 public consultations, focus group discussions and formal and informal meetings conducted between government, industry and fishing communities on revision of the protected species list, and trade controls for CITES-listed sharks.
Activity 1.4 Facilitate the development of species regulations and policies by MMAF, which identify management actions or changes to trade regulations (e.g. size restrictions).		Development of three new/revised regulations on management actions and trade restrictions: - MMAF MR 49/2016 on status of protected fish - MMAF MR on limited protected of all shark species (not yet numbered at time of writing)

		- NDF, catch quota and zero export quota for CITES-listed hammerhead sharks (*Sphyrna lewini*, *S. mokarran*, *S. zygaena*) developed under MoEF, and published in 2018 *Kuota Pengambilan Tumbuhan Alam Dan Penangkapan Satwa Liar* (Quota for the harvesting of wild plant and animal resources) released by the MoEF Directorate General of Conservation of Nature Resources and Ecosystem as Management Authority CITES Indonesia.
Activity 1.5 Facilitate changes in the protection status of CITES-listed species, through changes to the national protected species list (PP.7/1999), Ministerial Decrees, or changes to regulations under the fisheries law.		Development of Ministerial Decrees re. the protection status of CITES-listed species: - MMAF MR in place on partial protection (export ban) of oceanic whitetip sharks and hammerhead sharks – first released in 2016, and updated in 2017 and 2018 (currently through MR 5/2018). - MMAF MR on partial protection (export ban) of devil rays developed (not yet released/numbered at time of writing) - Process to establish zero-quotas for silky sharks and thresher sharks is ongoing The process to revise Law No. 5/1990 relating to the biodiversity and species conservation, and associated protected species list (GR 7/1999) are on-going. An academic paper with formal recommendations has been developed (see Output Indicator 1.3), and a bill was formally approved by parliament on 5th December for deliberation. The government has appointed their representative ministers to sit with parliament to discuss revisions to the law.
Output 2. Local government officials, traders and fishers have sufficient awareness and training in the new regulations governing shark and ray conservation and the applied management actions required to adequately manage shark and manta fisheries.	2.1 By end of year 1, training modules have been designed and produced by WCS and MMAF, and are being used for training programmes with government officials, village leaders, fisher institutions and fishers on CITES-listed manta/shark species and enforcement of trade or protection regulations.	Development of five new training modules for government officials: - Basic Skills in Intelligence & Wildlife Law Enforcement - In House Training to Increase Prosecutors Capacity in Handling Wildlife Crime Cases - Wildlife smuggling prevention at the airport from aviation security - Capacity Enhancement of Customs Officers in Prevention of Wildlife Trading and Smuggling in the Entrance and Exit of Indonesia - Capacity building materials for conducting NDFs for CITES Appendix II Sharks and Rays See WCU training outputs for examples of training materials. Communications materials developed and distributed in priority communities, and to local marine rangers/ocean ambassadors (POKMASWAS). - Posters and leaflets on new manta ray regulation produced and distributed in 2015 - Banner and leaflets on all elasmobranch regulations developed in 2017 at the specific request of Lombok shark fishers. Materials were designed with fishers' input, and distributed in the harbours in Tanjung Luar and Gili Maringkik, and on-board fishing vessels See comms materials for examples.

		Website developed to communicate information about shark and ray conservation and regulations, and build national-level pride in and support for shark conservation, with a particular focus on targeting young people (https://www.hiupari.info/). To date the website and associated social media content on Facebook and Instagram has reached an audience of almost 1 million people across ten provinces (campaign impact report available here). An event to launch the website in Jakarta on 25th February 2018 was attended by more than 250 people including three national media outlets who provided coverage of the event.
	2.2 Fisheries management agencies, community fisher institutions, fishers and traders at >5 key shark and ray landing sites are trained and updated annually by WCS and MMAF on knowledge and enforcement of regulations regarding CITES-listed manta/shark species.	Throughout the project more than 20 official events, including socialisations, community engagement events, public consultations and focus group discussions, were conducted to train and update stakeholders on regulations for CITES-listed species. There were conducted in Lamakera and Adonara (East Nusa Tenggara); Tanjung Luar and Lunyuk (West Nusa Tenggara) Meulaboh, Aceh Jaya and Bandah Aceh (Aceh) and Sorong (West Papua) and included fishers, traders, middlemen and local government agencies. Several specialised trainings were also conducted for MMAF on detecting and investigating illegal trade in sharks and rays (see 2.3 and Output 3), conducting non-detriment finding (NDF) studies for CITES appendix II sharks and rays, and developing traceability systems for CITES appendix II sharks and rays (which was conducted in partnership with several major shark and ray traders/exporters).
	2.3 By end of year 3, 50 personnel from Indonesian law enforcement agencies are trained on knowledge and enforcement of regulations regarding CITES-listed manta/shark species.	During the lifetime of the project, a total of 463 law enforcement personnel, including MMAF, police, customs, aviation security and public prosecutors, attended capacity building workshops in techniques for handling and successfully prosecuting marine wildlife crimes. Trainings included basic skills in intelligence and wildlife law enforcement, smuggling prevention, and case handling (see Output 3).
	2.4 By end of year 3 there have been >250 news articles in Indonesian and international press based upon at least 10 individual incidences (arrests or prosecutions, press releases or events), against a baseline of one event in the period leading up to July 2014 (that event was the announcement of the MMAF Ministerial	During the lifetime of the project 345 media articles publicising the Indonesian government's response to marine wildlife crimes were published in the national and international media (See comms materials for some examples)

	decree protecting mantas in February 2014).	
Activity 2.1 Create awareness-raising materials and distribute regulations on CITES-listed shark and ray species in landing areas for sharks and rays. Identify key persons including traditional leaders, village chiefs, and local MMAF officers as frontline leaders to disseminate the materials to fishers, fisheries middlemen, and exporters.		Various communications materials developed and distributed for different stakeholder groups, including government training modules; banners, posters and leaflets for fisher communities (See comms materials and training and events); and a website and social media content (https://www.hiupari.info/).
Activity 2.2 Initiate regular joint meetings, workshops and training with MMAF local agencies, police, customs agencies to develop and implement regulations on CITES-listed shark and ray species.		More than 20 joint meetings, workshops, consultations and trainings were conducted across in several locations in Aceh, West Nusa Tenggara, East Nusa Tenggara and West Papua to communicate information on regulations and CITES-listed shark and ray species to key stakeholders, including fishers, traders, middlemen and local government agencies (see training and events). Informal meetings with relevant stakeholders were also conducted throughout, as well as presentations of our landings data and recommendations to relevant community and government stakeholders.
Activity 2.3 Train fisheries middlemen and exporters to improve their knowledge on implementing regulations for CITES-listed shark and ray species.		
Activity 2.4 Assess the impact of awareness-raising campaigns and training events using robust Knowledge, Attitude, and Practice surveys.		Baseline KAP surveys were not conducted in Year 1. However, we assessed attitudes and practice of fishers and traders in Tanjung Luar through the Year 1 and Year 3 socioeconomic surveys, and direct behavioural indicators, such as fishing behaviour, trading behaviour, and arrests to assess practice (see socioeconomics impact).
Activity 2.5 Publish and disseminate law enforcement achievements, to promote the importance of abiding by shark and ray regulations among the wider community, and to create a deterrence effect. Emphasis will be placed on Indonesian websites, newspapers, TV or radio and social media, as well as regional and international press.		During the project, WCS collaborated with journalists and media organisations to publish a total of 345 articles (27 international media, 182 national media, and 136 local media) highlighting the Indonesian government response to combat trade in protected marine species. These articles communicate regulations and management measures, as well as publicising government achievements to protect sharks and rays. A major whale shark operation received particularly significant attention, including an Instagram post by Leonardo DiCaprio about our work, which received more than 250,000 likes (https://www.instagram.com/p/BHKwFtjDsWY/?taken-by=leonardodicaprio) (also see comms materials for further examples).
Output 3. A new "Marine Wildlife Crime Unit", comprising representatives of the Indonesian National Police, Attorney General and Ministry of Marine Affairs and Fisheries, has been established and is focusing on high-profile prosecutions of major manta/shark traders.	3.1 By end of year 1, a Marine "Wildlife Crime Unit", facilitated by WCS in partnership with MMAF, Indonesian National Police and other law enforcement agencies, is operational and achieving arrests and prosecutions of major manta/shark traders.	Marine WCU established and operational.

	3.2 By end of year 3, at least 30 investigations into traders or trade routes of CITES-listed sharks and rays species have been undertaken by the marine WCU. 3.3 By end of year 1, a marine "Wildlife Crimes" tracking database is established by WCS in partnership with MMAF, which is cataloguing cases of trafficking of CITES-listed or protected marine species, especially sharks and rays, and recording actions taken (arrests, prosecutions, fines, etc.).	More than 100 suspects of illegal shark and ray trade have been investigated throughout the project with support from the marine WCU. This has resulted in the successful apprehension of 28 suspects in 25 sting operations of illegal shark and ray trade, with 14 cases leading to fines and jail time (See case summary and WCU impact report). i2 intelligence database and case tracking databases installed in February 2016, with data used to inform proactive law enforcement actions and monitor impact (see WCU impact report).
Activity 3.1 Create informant network to monitor shark and ray trafficking in key areas, specifically in Java, Aceh, Bali, West and East Nusa Tenggara. Investigate key middlemen and exporters at hotspot locations for trade and export at Cilacap, Indramayu, Surabaya, Bali, Lombok, and Sidoarjo. Produce an assessment of the current trade networks.		The informant network, established in Year 1, is actively gathering intelligence on exploitation and trade of protected elasmobranchs in more than 30 locations across 14 provinces, including: Banten (Binuangeun), West Java (Pangandaran), Central Java (Cilacap), Yogjakarta, East Java (Jember, Sidoarjo, Surabaya, Banyuwangi), DKI Jakarta, Bali (Tanjung Benoa, Negara), East Nust Tenggara (Kupang, Solor, Adonara), West Nusa Tenggara (Lombok), South Sulawesi, North Sulawesi, Papua, Maluku and Aceh. This is evidenced through the i2 intelligence database, with information on nine major geographically-clustered illegal trading syndicates (see WCU impact report)
Activity 3.2 Provide technical assistance and information for law enforcement officers (Police, MMAF civil service investigators, Customs, Quarantine) in intelligence, surveillance, apprehension and processing of evidence.		The WCU provided technical assistant and information for law enforcement officers throughout the entire legal process, from monitoring and intelligence analysis to arrests and processing of evidence. This assistance included formal training, with 16 workshops conducted during the project in techniques for detection, investigations and wildlife law enforcement, training a total of 463 enforcement officers (see training and events)., and on-going technical support throughout cases, including assisting the confiscation/evidence collection process. The success of these efforts is shown by the i2 intelligence database with information on more than 100 suspected illegal shark and ray traders, and the successful apprehension of 28 of these suspects in 25 sting operations (See case summary and WCU impact report).
Activity 3.3 Assist the Police, MMAF civil service investigators, Customs, and Quarantine officers to complete legal documents for each trafficking case, and maintain strong communications with prosecutors and judges to ensure that all cases are processed and adjudicated promptly and in accordance with law.		The WCU continued to support processing of marine cases, through formal training and technical support to law enforcement officers, judges and prosecutors. As well as the trainings detailed in Activity 3.2, we supported the development of an in-house training module on *Capacity Building of Public Prosecutors in Handling Illegal Protected Wildlife Trade Cases* for AGO, and a training module for environmental judges. During the project WCU supported 4 workshops for Capacity Building of Public Prosecutors in Handling Illegal Protected Wildlife Trade Cases, training more than 100 public prosecutors from across Indonesia. The WCU also provided on-going legal advise throughout

		cases. The success of these efforts is shown by the ~60% prosecution rate, with more than US$ 30,000 levied in fines and over 60 months of jail time, and a significant increase in average fines and prosecutions over the lifetime of the project, which is a signal of improved motivation and capacity of prosecutors and judges to punish cases of illegal shark and ray trade (See WCU impact report).
Activity 3.4 Support MMAF and the Attorney General's Office to develop a tracking database, to record information on marine species crime cases, action taken by Indonesian law enforcement agencies, and the results (arrests, prosecutions, fines, etc.).		The WCU collated intelligence data in i2 and tracked all shark and ray cases in a law enforcement database, which is shared with MMAF and AGO.
Activity 3.5 In the last year of the project, produce an assessment of how trade networks have changed after three years of enforcement.		A monitoring framework for assessing changes in manta ray exploitation and trade was developed, with a preliminary assessment of the impacts of the manta ray regulation in two case study sites, Tanjung Luar and Lamakera, conducted in 2016. Available here. Two technical reports were produced on *Assessing the impact of the Wildlife Crimes Unit on Shark and Ray Trade in Indonesia* and *Trends in catch and trade of CITES-listed sharks and rays*. We built collaborations with Oxford University's Oxford Martin Program on the Illegal Wildlife Trade and the University of Canterbury (DICE) to use capture recapture methods for improving estimates of the size of illegal trade networks, and detecting changes over time. A draft manuscript of these results has been developed entitled *Estimating the size of illegal sharks and rays trafficking network using a Capture Recapture - Multistate Model approach*.
Output 4. At least 50 individuals in shark fishing communities have reduced barriers to entry for engaging in non-elasmobranch related economic opportunities, and support structures are in place to promote long-term sustainable fisheries management.	4.1 An assessment report on opportunities for shark and ray fishers to transition to sustainable fisheries, mariculture enterprises and other livelihoods is produced by WCS, MMAF and Imperial College in year 1, based upon updating existing research and consultations with local fishers, fisher institutions and other stakeholders. 4.2 One community financial institution is developed 4.3 One enterprise development institution is developed, with at least 20 members receiving training	Socioeconomic survey of 433 households completed in Year 1, and assessment report(s) completed (see socioeconomics impact). Supported the development of two cooperatives: *Koperasi Usaha Wisata Bahari* (Cooperation for Marine Tourism, KUWB), which focuses on the development of small-scale tourism products in Tanjung Luar, and a system for savings and loans for cooperative members to build their businesses, and *Koperasi Kera Murin* (KKM), which focuses on the development of non-manta ray fisheries in Lamakera, also with associated microfinance support. To date a total of 98 community members are participating in these cooperatives. KUWB has 35 members, including 5 women and 11 ex-shark fishermen, and KKM has 63

		members, 22 of which are ex-manta ray hunters and 13 of which are female ex manta ray processors/traders (*Papalele*) (see cooperative documents) Through three formal trainings and on-going informal support from WCS staff 35 members of KUWB have received training in cooperative/micro-finance management (from Credit Union Bahtera Sejahtera), accounting and book-keeping, English language (from Institut Keguruan dan Ilmu Pendidikan Mataram) and tourism management (from the Ministry of Cooperatives).
	4.3 One fisheries management committee is developed, and at least two meetings have been held with relevant government bodies to contribute to government development planning processes	Facilitated and participated in communication between provincial and national-level government and Tanjung Luar fisher community to design fisheries management regulations.
Activity 4.1 Produce an assessment report on the opportunities for manta/shark fishers to transition to sustainable fishing and other livelihoods.		Household surveys conducted and socioeconomic report completed in Year 1. Rapid assessment of options for sustainable fisheries also completed for Tanjung Luar and Lamakera in Year 2 (see socioeconomics impact).
Activity 4.2 Support the development of community institutions to promote livelihood diversification, community empowerment and sustainability **Activity 4.3** Facilitate the development and adoption of non-elasmobranch related economic opportunities through community institutions that help to reduce barriers to adaptation **Activity 4.4** Promote concepts of sustainability and environmental management through community institutions		Supported the development of KUWB in Tanjung Luar and KKM in Lamakera, which together have a total of 98 members, including 46 ex-elasmobranch fishers/traders, who now have access to capital, resources and training/skill development. KUWB is in support of protecting the marine environment and WCS has suggested making access to capital conditional on members adopting a sustainability code of conduct, which would include no shark fishing. Membership in and benefits from KKM are contingent on complying to manta ray conservation regulations. Through several formal and informal meetings, presented results from landings data collection in Tanjung Luar to communities members to discuss observed trends in catch, and sustainability and management concerns. Conducted *Laut Sahabat Kita* (The Sea is our Friend) event in Tanjung Luar to promote concepts of sustainability and build local pride in the marine environment. The event included beach cleaning, during which 1.3 ton of marine debris was cleared from the beach, a drawing competition for local children, entertainment and traditional story-telling. Provided training and resources for 30 local marine rangers/ocean ambassadors (POKMASWAS) to communication marine conservation messages and regulations to their local communities and report cases of accidental by-catch and/or illegal fishing of protected elasmobranchs. In East Flores in 2017-18 more than 23 cases of accidental by-catch and/or illegal fishing were reported by community members leading to the successful live release of four whale sharks,

		nine turtles, one dugong, and one ocean sunfish, which were caught as accidental by-catch.
Activity 4.5 Facilitate communication between communities and government to enable community participation in development planning processes		Played a key bridging role between community and government. As well as engaging the community in fisheries management decisions, we sought to build community participation in broader development planning processes, particularly through engagement with District planning and district tourism offices for development of tourism infrastructure for KUWB.
Activity 4.6 Information exchange and learning events to spread awareness about the project approach and encourage other manta/shark fishers to also begin to transition to other livelihoods.		Regular meetings and events to share of lessons learned between WCS and other NGOs working on sharks and rays and sustainable fisheries. Exchange visit from a member of Kooperasi Pade Mele, an established microfinance cooperative in Gili Air. Informal meetings with Bank Sampah to discuss community engagement approaches.
Output 5. The conservation and social outcomes of the project are evaluated, based on ongoing monitoring of shark and ray landings and change in the wellbeing and behaviour of fishers.	5.1 By the end of quarter 1 of year 1, a fully functioning shark and ray fisheries catch monitoring program is established by WCS, MMAF and Imperial College, collecting monthly data on landings of CITES-listed sharks and rays, catch and product prices and fishing activities, and providing quarterly reports. Thereafter reports are produced and made available by WCS on a quarterly basis throughout the life of the project. 5.2 Assessment of fisher attitudes and behaviours, social norms around manta/shark fishing, and change in livelihoods and poverty. Surveys in year 1 and resurvey in year 3 of intervention and control households to determine the impact of the livelihood interventions, conducted by WCS and Imperial College.	Daily shark and ray landings monitoring was conducted in Tanjung Luar throughout the project, with the development of a website summarising landings data (http://data-ikan.org/hiu/), a report synthesising our findings, and recommendations given to government and the community on fisheries management. Daily mobulid landings monitoring was conducted in Lamakera, through WCU informants and our partnership with Misool Foundation. In 2017, shark landings monitoring was established in Aceh Jaya, Aceh and Lunyuk, West Nusa Tenggara as part of efforts to conduct critical habitat mapping of nursery grounds for scalloped hammerhead sharks (outputs available here). Reports have been developed assessing trends in catch and trade of CITES-listed species. Assessment of 433 households completed in Year 1 and 358 households completed in Year 3 (see 2016 socioeconomic survey report, and report on changes in community awareness and poverty).

	5.3 By end of Year 3, a peer-reviewed paper is produced by WCS and Imperial documenting the results of the project.	One manuscript published in PeerJ with WCS co-authorship - *Assessing Indonesian manta and devil ray populations through historical landings and fishing community interviews* (available here) One manuscript accepted with revisions to PLOS1 - *Practical measures for sustainable shark fisheries: lessons learned from an Indonesian targeted shark fishery* Six additional manuscripts are in draft: - *Finding unlikely allies: The prospect of shark fishers role in sustainable management of sharks and rays fishery* - *Estimating the size of illegal sharks and rays trafficking network using a Capture Recapture - Multistate Model approach* - *Towards a monitoring framework for illegal manta ray catch and trade* - *Combining law enforcement and livelihoods to deliver measurable conservation outcomes in the world's largest targeted manta ray fishery* - *The economic value of shark and ray tourism in Indonesia, and its role in delivering conservation outcomes* - *Assessing trends in catch and trade of CITES-listed species in Indonesia* One book chapter is in draft, on social methods in conservation, using this project as a case study - *Research to understand local resource users' behaviour, perspectives and priorities, to underpin conservation practice* in *Conservation Research, Policy and Practice (British Ecological Society, Ecological Reviews Series, published by Cambridge University Press)*
	5.4 By end of Year 3, at least 5 information exchange and lessons learned events have been held with customary fisher institutions or other organisations so that other groups can learn about the project approach and promote livelihood transitions in other sites.	Several information exchange and lessons learned meetings between organisations working on sharks and rays fisher transitions and sustainable fisheries/community engagement were held throughout the project period, including 2 meetings with Masyarakat Dan Perikanan Indonesia (MDPI), 2 infomral meetings with Bank Sampah, 4 meetings with Misool Foundation, and attendance at the 2nd Indonesia Sharks and Rays Symposium to share the results of our research and conservation program. Two information exchange and lessons learned events for fisher/community groups was conducted in Year 2 - Exchange between KUWB and Kooperasi Pade Mele. Exchange/training for KUWB from Credit Union Bahtera Sejahtera
Activity 5.1 Conduct monthly shark and manta fisheries catch surveys at target sites. The program will build upon and be consistent with baseline data collected by WCS and others during 2012-2014.		Shark and ray landings monitoring was established in Tanjung Luar and Lunyuk (West Nusa Tenggara), Lampulo, Melabouh and Aceh Jaya (Aceh) and Lamakera (East Nusa Tenggara) via the WCU and our partnership with Misool Foundation.
Activity 5.2 Undertake surveys, analyse and assess changes in shark and ray catch landings, prices and demand in response to changes in stakeholder knowledge and capacity, law enforcement and awareness raising activities.		Landings and price data was collected at key sites. A qualitative and quantitative assessment of changes in manta ray exploitation and trade was conducted in 2016 (See Booth 2016), and trends in catch and trade of CITES-listed species were assessed in 2017.

Activity 5.3 Design socio-economic surveys to examine fisher behaviour, attitudes, socal norms around fishing and other livelihoods, and household well-being and occupational status, in partnership with Imperial College. These surveys will expand upon the existing baseline data collected by WCS in 2014, to be able to provide consistent information on trends. Identify both intervention and control households.	Survey designed in Year 1 (report available here)
Activity 5.4 Conduct socioeconomic surveys of fisher behaviour and household well-being and occupational status in years 1 and 3, for intervention and control households.	Baseline survey conducted in Year 1 and follow-on survey conducted in Year 3 (see socioeconomics impact).
Activity 5.5 Analyse and assess changes in fisher behaviour and household well-being and occupational status in response to the livelihoods transition intervention.	Reports produced assessing changes in fisher knowledge and support for management, behaviour, trade and human well-being (see socioeconomics impact).
Activity 5.6 At least one peer-reviewed paper produced in partnership with Imperial, by Indonesian scientists undertaking visiting research fellowships at Imperial.	One manuscript accepted for publication with revisions and five others still in progress (see Indicator 5.3).

Annex 3 Standard Measures

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
1a	Number of people to submit PhD thesis	1	Indonesian	Male	Fisheries management in Tanjung Luar	Bahasa Indonesia	Bogor Agricultural University (IPB)
1b	Number of PhD qualifications obtained	0					
2	Number of Masters qualifications obtained	1	UK	Female	Conservation Science	English	
3	Number of other qualifications obtained	3	Indonesian	Male, Female	Biology	Bahasa Indonesia	IPB, Syiah Kuala University – Aceh.
4a	Number of undergraduate students receiving training	2	Indonesian	Male, Female	Fisheries data and MPAs	Bahasa Indonesia	Brawijaya University - Malang
4b	Number of training weeks provided to undergraduate students	0					
4c	Number of postgraduate students receiving training (not 1-3 above)	0					
4d	Number of training weeks for postgraduate students	0					
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification (e.g., not categories 1-4 above)	0					
6a	Number of people receiving other forms of short-term education/training (e.g., not categories 1-5 above)	~500	Indonesian	Male Female	Law enforcement, CITES implementation	English Indonesian	WCU training and CITES implementation

							training for MMAF
6b	Number of training weeks not leading to formal qualification	6	Indonesian	Male Female	Law enforcement	Indonesian	Total of training weeks from WCU training
		36	Indonesian	Female	Research techniques for conservation science	English	Total of training weeks from WCS-IP staff placements
7	Number of types of training materials produced for use by host country(s) (describe training materials)						

Research Measures		**Total**	**Nationality**	**Gender**	**Title**	**Language**	**Comments/ Weblink if available**
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	Indonesian	Female Male	National action plan for conservation and management of sharks and rays	Indonesian	
10	Number of formal documents produced to assist work related to species identification, classification and recording.	1	UK, Indonesian	Female Male	Landings data collection guidelines	Indonesian	
11a	Number of papers published or accepted for publication in peer reviewed journals	2	Indonesian, UK, Australian, German	Female Male	*Assessing Indonesian manta and devil ray populations through historical landings and*		(available here)

					fishing community interviews; *Practical measures for sustainable shark fisheries: lessons learned from an Indonesian targeted shark fishery*		
11b	Number of papers published or accepted for publication elsewhere	0					
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	3	Indonesian		Shark landings database, i2 Intelligence database, law enforcement cases database	English, Indonesian	
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	0					
13a	Number of species reference collections established and handed over to host country(s)	0					
13b	Number of species reference collections enhanced and handed over to host country(s)	0					

Dissemination Measures		**Total**	**Nationality**	**Gender**	**Theme**	**Language**	**Comments**
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	1	UK, Indonesian	Male, Female	Practical measures for shark and	English	IMCC5

Dissemination Measures		Total	Nationality	Gender	Theme	Language	Comments
					ray conservation		
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	6	UK, Indonesian	Male, Female	IWT, marine conservation, community approaches	English, Indonesian	

Physical Measures		Total	Comments
20	Estimated value (£s) of physical assets handed over to host country(s)	£10,000	One boat purchased (covered with matched funding from Vulcan/Paul G Allen Family Foundation)
21	Number of permanent educational, training, research facilities or organisation established	0	
22	Number of permanent field plots established	0	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	£1,457,000					Includes both matched funding during the lifetime of the grant, and additional funding after the grant.

Annex 4 Aichi Targets

Please note which of the Aichi targets your project has contributed to.

Please record only the **main targets** to which your project has contributed. It is recognised that most Darwin projects make a smaller contribution to many other targets in their work. You will not be evaluated more favourably if you tick multiple boxes.

	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.	x

13	The genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	
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.	
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

Provide full details of all publications and material that can be publicly accessed, e.g. title, name of publisher, contact details. Mark (*) all publications and other material that you have included with this report

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. web link, contact address etc)
Journal	Lewis SA, Setiasih N, Fahmi , Dharmadi , O'Malley MP, Campbell SJ, Yusuf M, Sianipar AB. (2015) Assessing Indonesian manta and devil ray populations through historical landings and fishing community interviews.	UK		Female	PeerJ	https://doi.org/10.7287/peerj.preprints.1334v1
MSc thesis	Booth, H. (2016) Evaluating the impact of wildlife trade policy: the case of illegal manta ray catch and trade in Indonesia	UK	UK/Indonesia	Female		
Journal	Yulianto, I (accepted with	Indonesian	Indonesian	Male	PLOS1	

	revisions). Practical measures for sustainable shark fisheries: lessons learned from an Indonesian targeted shark fishery					

Annex 6 Darwin Contacts

To assist us with future evaluation work and feedback on your report, please provide details for the main project contacts below. Please add new sections to the table if you are able to provide contact information for more people than there are sections below.

Ref No	22-008
Project Title	Diversifying Indonesian fisheries to protect elasmobranchs and alleviate poverty
Project Leader Details	
Name	Ken Kassem
Role within Darwin Project	Project Leader
Address	
Phone	
Fax/Skype	
Email	
Project Leader Details	
Name	Hollie Booth
Role within Darwin Project	Project Leader
Address	
Phone	
Fax/Skype	
Email	
Partner 1	
Name	Andi Rusandi
Organisation	MMAF (Director of Marine Conservation and Biodiversity)
Role within Darwin Project	Partner for management/regulation
Address	
Fax/Skype	
Email	
Partner 2	
Name	Toni Ruchimat
Organisation	MMAF (Fisheries Research Centre)
Role within Darwin Project	Partner for scientific research
Address	
Fax/Skype	
Email	
Partner 3	
Name	Iim Naimah
Organisation	MMAF (Directorate for Aquatic Conservation Surveillance)

Role within Darwin Project	Partner for surveillance and law enforcement
Address	
Fax/Skype	
Email	
Partner 4	
Name	EJ Milner-Gulland
Organisation	University of Oxford
Role within Darwin Project	Academic research partner
Address	
Fax/Skype	
Email	