Darwin Initiative Main & Extra Annual Report

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

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

Submission Deadline: 30th April 2025

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Darwin Initiative Project Information

Scheme (Main or Extra)	Main
Project reference	DIR29S2\1038
Project title	Incentive-based mechanisms for biodiversity and well-being in small-scale fisheries
Country/ies	Indonesia
Lead Organisation	University of Oxford
Project partner(s)	IPB University Yayasan Impak Laut Biru Yayasan Teman Laut Indonesia, Yayasan Konservasi dan Penelitian Pari Mobula
Darwin Initiative grant value	GBP 599,134
Start/end dates of project	Apr 2023 – Mar 2026
Reporting period (e.g. Apr 2024 – Mar 2025) and number (e.g. Annual Report 1, 2, 3)	Apr 2024 – Mar 2025 Annual Report 2
Project Leader name	Hollie Booth
Project website/blog/social media	https://mcem.web.ox.ac.uk/incentive-based-marine-conservation
Report author(s) and date	Hollie Booth, 2nd May 2025

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1. Project summary

Large, long-lived marine animals ('marine megafauna')—such as sharks and rays—are amongst the world's most threatened taxa, primarily due to overfishing. This threat is exacerbated by poverty in small-scale fisheries (SSFs). SSFs are ubiquitous throughout tropical coastal waters, and a significant source of marine megafauna mortality. However, SSFs in the most biodiverse ocean regions—such as Indonesia—are also characterised by high household reliance on fisheries, where all catches have economic or subsistence value. Therefore, efforts to conserve marine megafauna in SSFs create direct trade-offs between conservation and human well-being, with coastal communities often burdened with an inequitable share of the costs of conservation (Booth, Squires, et al., 2021). In parallel, wealthier, and more powerful ocean stakeholders (*e.g.*, tourism industry, commercial fisheries) may benefit from marine megafauna and/or cause harm (*e.g.*, bycatch, over-tourism), yet rarely contribute towards meeting the costs of conservation. This calls for socially-just marine conservation mechanisms, which can redistribute these costs and benefits and deliver positive outcomes for threatened and CITES-listed taxa, whilst ensuring local people are no worse off.

Applied research, practical experiences, stakeholder consultation, and existing pilot projects conducted by the project team—including with fishers, government, and businesses—indicate that social and economic rewards, financial compensation and/or alternatives represent workable solutions to these trade-offs (Booth 2022; Booth, Ramdlan, et al., 2023). However, these solutions remain under-explored and under-utilised in fisheries.

Our project fills this gap by investigating the underlying attitudes, behaviours, norms, and incentive structures relating to megafauna catch in a range of SSFs; and using this information to design and test a portfolio of locally-appropriate incentive-based interventions. We evaluate the biodiversity and human well-being outcomes of interventions across the portfolio of projects and establish sustainable revenue streams (*e.g.*, from dive industry and commercial fisheries), then consolidate learning across projects to provide a framework and guidelines for scaling to other SSFs and regions. Finally, we are working closely with local universities and grassroots NGOs to build human and institutional capacity for ethical and evidence-based marine conservation and interdisciplinary applied research.

2. Project stakeholders/ partners

There has been strong support and engagement between all formal project partners and key stakeholders during the second year of the project, continuing and building upon the foundations and successes of the first year.

The project was already founded on demand stemming from Indonesia, including for:

1. Capacity building and international collaboration for a social-ecological systems approach to marine conservation and research (this demand stemmed from IPB University and our local partner NGOs).
2. Trialling incentive-based approaches to marine conservation (this demand stemmed from project communities, based on pre-project research, and interest from local and national governments on evidence and case studies).

Academics and students at IPB University and early career researchers at our partner NGOs are actively involved in identifying the seminar and trainings topics that are most relevant for them, with monthly project coordination meetings between all partners to share lessons learned and plan next steps.

All project interventions within coastal communities are founded on participatory research and collective decision-making, with NGO partners and communities involved in planning activities that affect them and participating in monitoring and evaluation. For example, interventions are designed based on the results of surveys and focus group discussions (FGDs) to understand the perspectives and preferences of fisher households, and before any decisions are made the results of the research and proposed next steps are communicated to the target communities to allow for feedback and consensus, and secure free prior and informed consent (FPIC). In total, FGDs and community consultation workshops have been conducted in 12 target communities (7 during this past year, building on 5 during year 1). Our greatest achievement in this regard is widespread support for our incentive-based programs, with 100% of targeted households reporting positive attitudes towards the project and our approaches.

Outside of the official project partners we have also collaborated closely with local, provincial and national governments (e.g., the Ministry of Marine Affairs and Fisheries (MMAF), the governor of Aceh Jaya, the Departments of Marine Affairs and Fisheries in Aceh and West Nusa Tenggara, the National Park agency of Karimunjawa National Park), other local and international NGOs (e.g., Rekam Foundation, the Wildlife Conservation Society), and other national and international research institutions (e.g., James Cook University, Syiah Kuala University, the UK Centre for Environment, Fisheries and Aquaculture Science).

3. Project progress

3.1 Progress in carrying out project Activities

During April 2025 – March 2025, the following progress has been made in carrying out project activities:

Under **Output 1** (*understand and design*) the bulk of the activities under Output 1 were scheduled for and completed as planned in Year 1. However, during the past year, the four IPB PhD students together with local NGO partners continued to apply research instruments to conduct scoping research and understand behaviours, norms, incentives and baseline (by)catch rates and subjective wellbeing in new potential sites. Baseline data have now been collected across a total of 12 sites (Aceh Jaya, Aceh Barat Daya, Rembang, Karimunjawa, Muncar, Tuban, Lamongan, East Lombok, Sumbawa, Sumba, Alor, Banda), covering 745 households and 631 vessels since the start of the project. See Impact Statistics for FYR2 and evidence for Output 1.

Under **Output 2** (*implement*) during the past year we used findings from Output 1 to finalise evidence-based recommendations for new incentive schemes for 6 sites, taking the project total to 9 sites (2.1). We conducted consultations regarding proposed incentive schemes, incorporated feedback, obtained FPIC and recruited fishers (2.2, 2.3), with incentive schemes established, adapted or expanded across a total of 8 sites (Aceh Jaya, Aceh Barat Daya, Karimunjawa, Muncar, Tuban, East Lombok, Alor, Banda) reaching 476 households (2.3), with regular distribution of incentives based on evidence of (by)catch mitigation to these households (2.4). Successful incentive schemes will continue to be implemented and monitored in Year 3. See evidence for Output 2.

Under **Output 3** (*evaluate*) we continued to conduct social surveys and landings site surveys to monitor fisher behaviour, megafauna (by)catch and fisher wellbeing in all project sites (3.1). We have established mechanisms for causal inference and attribution, using randomized controlled trials (RCT) in Aceh Jaya, East Lombok, Aceh Barat Daya, Karimunjawa, Muncar and Tuban; and quasi-experimental and before-after designs in Alor and Banda (3.2). We monitored fisher behaviour, megafauna (by)catch and fisher wellbeing throughout the interventions—for treatment and control fishers—using daily landing site surveys and periodic TPB and wellbeing surveys, respectively. We also distributed waterproof cameras to 232 fishing vessels for fishers to record and report live releases (where relevant); and kept records of payments to monitor direct project costs (3.3, 3.4, 3.5). We conducted post-intervention interviews with fishers and female heads of households to understand narratives and perspectives (3.6), and we have combined qualitative and quantitative data into a robust impact assessment (3.7). The results from the first year of the pay-to-release scheme in East Lombok and Aceh Jaya have now been published in Science Advances (3.8), and we used the results and lessons learned to modify the incentive-based programs and continued to implement the programs as RCTs. The results from the livelihood-based intervention in Alor have now been published in Oryx (3.8). See Impact Statistics for FYR2 and evidence for Output 3.

Under **Output 4** (*scale and legacy*) we continued to train and mentor four PhD students at IPB University (4.1) and the local NGO project leaders (4.2). In-person structured workshops were conducted on socio-economic research methods, impact evaluation, engaging women and girls in ocean science (in Bali in July 2024), and in how to deploy Baited Remote Underwater Video Systems (BRUVS) for monitoring shark and ray populations, in partnership with Deakin University (in Lombok in February 2025). We conducted 7 community engagement and consultation workshops and 2 two workshops with local government agencies in East Java and Alor (4.3), which collectively reached 274 people (now 538 reached in total, building on 264 people reached in Year 1). We have established one financing partnership with Francesca Page's 200 Sharks project, which donates GBP 3 to for every purchase of art and merchandise towards the pay-to-release scheme in Aceh Jaya (4.4). We also applied for a Conservation Finance Alliance mentoring scheme, and began collaborating with Plan Vivo on their marine nature credits, and established a relationship with James Cook University for launching a revenue-generating shark conservation and community tourism and learning experience for their Masters students, which will be launched in Year 3 (4.4). We are also establishing a partnership with Bali Sustainable Seafood to improve market access for Sustainable Seafood Network in Muncar (4.4). We prepared two new policy briefings (building on 2 from Year 1, taking the project total to 4), specifically for the Department of Fisheries in West Nusa Tenggara in support of the evaluation of the provincial shark and ray management plan (4.5). The exchange visit for the IPB PhD students took place in June 2024 and provided a range of training and network opportunities, including demographic modelling, statistical analysis in R, social science research methods,

impact evaluation, scientific writing and presentation skills, field techniques and attendance at the Nature-based Solutions conference (4.6). The agenda for the exchange visit is available here (4.6). Project findings and lessons learned were presented at 10 international conferences and events this past year, for example at the Society for Conservation Biology's 7th International Marine Conservation Congress and first Conservation Social Sciences Conference, the Oxford Nature-based Solutions Conference, and Seattle Aquarium's lightning talks. This takes the project total to 16, building on 6 in Year 1 (4.7). In addition, a knowledge exchange workshop was conducted with several Pew Marine Fellows and the IPB students, to take advantage of the Pew Fellows annual meeting which took place in Bali in November 2024. Two socio-ecological systems research 'bootcamp' seminars were also conducted at the IPB marine and coastal research department in July 2024 and December 2024 (4.8). See evidence for Output 4.

3.2 Progress towards project Outputs

Under **Output 1** (*understand and design*) research outputs estimating how incentives could change fisher behaviour and impact biodiversity and human wellbeing have been developed across a total of 12 sites covering 623 households (Indicator 1.1; see evidence for output 1). Based on this research, research outputs and recommendations on interventions have been prepared for a total of 9 sites (3 this past year (Muncar, Tuban, Sumbawa), building on 3 in Year 1 (Karimunjawa, Banda, Aceh Barat Daya) and 3 before the BCF funding (East Lombok, Aceh Jaya, Alor) (Indicator 1.2; see evidence for output 1). Six open access papers using project time, data and lessons learned have now been published in total (5 this year, building on 1 in year 2): two from research in Karimunjawa published in Marine and Freshwater Research and Conservation Science and Practice; one from research in Alor published in Oryx; one from research in Banda published in Frontiers in Ocean Sustainability; one from research in East Lombok and Aceh Jaya published in Conservation Science and Practice; and one conceptual paper on fair allocation published in Trends in Ecology and Evolution). A further paper in Science Advances was in press by the end of Year 2 and published on April 23rd (Indicator 1.3; see evidence for output 1). A further seven papers are submitted or in prep.

Under **Output 2** (*implement*) full intervention plans have now been developed for a total of 9 sites, building on 3 that were developed prior to the BCF funding for East Lombok, Aceh Jaya and Alor (Indicator 2.1, evidence for output 2). Incentive-based interventions were implemented across these communities during March 2023 – April 2024, with a total of 476 households reached to date (Indicator 2.2; see evidence for output 2), as follows:

- We have implemented compensate-to-release programs in 5 project sites (East Lombok, Aceh Jaya, Aceh Barat Daya, Banda), in which fishers are offered compensation for releasing Endangered hammerheads, wedgefish, and thresher sharks that become entangled in their nets and lines. Compensation is conditional on fishers submitting video proof of live releases. In all but two project sites (Tuban and Banda), fishers are offered cash payments, while in Tuban and Banda, fishers are offered in-kind compensation in the form of rice, snacks, fuel and replacement fishing gear if they have to cut fishing lines to release sharks. So far, the compensate-to-release programs have collectively reached 359 households in total (272 new households engaged this past year, building on 87 in Year 1) with >1,300 sharks and rays safely released through our interventions (396 new releases this past year, building on 904 in Year 1) and >IDR 130 million in total disbursed directly to small-scale fisher households in compensatory payments (~GBP 5,700) for participating fishers. See evidence for output 2, Booth et al. (2025) and Impact Statistics for FYR2.
- We established a gear swap program with 8 households in Aceh Jaya, which so far has reduced bycatch of Critically Endangered wedgefish and hammerheads by 100% (relative to gillnets) whist maintaining average income per trip. See evidence for output 2 and Impact Statistics for FYR2.
- We established market-based price premiums for bycatch-free seafood with 50 fisher households in Muncar. So far, 2 mobula rays have been safely released and zero mobula rays have been retained and landed by fishers in the Impact Statistics for FYR2.
- We established a fisher-scientist program with 4 households in Karimunjawa, in which fishers are employed to carry out research and tagging activities for wedgefish and guitarfish ("rhinorays"). This intervention provides an alternative source of income that does not lead to

fishing mortality of rhinorays, and we anticipate that it will help to build positive attitudes and social norms towards rhinorays, so that the fishers continue to voluntarily protect and release rhinorays after the program is finished. This hypothesis will be tested in year 3 of the project.

- We continued to implement an on-going livelihood-based intervention (which started before the BCF funding, BCF has allowed continued implementation and evaluation) in two villages where fishers who were targeting thresher sharks are offered capital and training for several alternative livelihood options, which they chose and developed themselves, including: 1) tuna and red snapper fisheries, 2) small-scale chicken farms, and 3) kiosks. A total of 11 specialised thresher shark fisher households were targeted for the intervention, with 9 choosing to actively transition. These 9 fishers have almost entirely given up thresher shark fishing in favour of the new livelihoods, and our impact evaluation indicates a 91% reduction in total thresher shark catches among participating fishers relative to non-participants. In addition, nine women (some of whom are female heads of former shark fisher households) are being supported as part of a Small and Medium-sized Enterprise (SME) group for developing value-added fish and non-fish products. Participants in these livelihood-based interventions experience an increase in their income by up to 450% relative to before the intervention. See evidence for output 2, Shidqi et al. (2025) and Impact Statistics for FYR2.

Under **Output 3** (*evaluate*) Pre-and post-intervention data on marine megafauna catches; fisher attitudes, norms, behaviour and wellbeing; and project costs - to evaluate the impact and cost-effectiveness of the interventions - has been collected across all 8 sites in which interventions have been piloted (Indicators 3.1, 3.3 and 3.4). Three interventions which have been implemented as RCTs were also pre-registered as field experiments (Indicator 3.2). Data from the first 14 months of the pay-to-release scheme in East Lombok (two villages) and Aceh Jaya (three villages) have been analysed and compiled into a research output, published in Science Advances (Indicator 3.5). See evidence for output 3 and Booth et al. (2025). Data from the livelihood transition in Alor Archipelago have also been compiled into a research output, published in Oryx (Indicator 3.5). See evidence for output 3 and Shidqi et al. (2025). Research outputs on the other project sites will be compiled and published in Year 3, with preliminary summary data available in our Impact Statistics for FYR2 report.

Under **Output 4** (*scale and legacy*) progress has been made towards establishing institutions, capacity, long-term partnerships, and financing mechanisms, to maintain on-going investments in project communities, and share methods and lessons learned. The Four PhD students enrolled in Year 1 continued to conduct research under this project towards their PhD theses (Indicator 4.1). See evidence for output 4. Planned structured training for the PhD students and other early career researchers (ECRs) was completed in Year 1 (Indicator 4.2), however on-going capacity building and mentoring continued through co-supervision from Dr Booth, an exchange visit to Oxford (see 4.6), 1 project team planning and training workshop and 1 BRUVS training workshop in partnership with Deakin University. See evidence for output 4. Stakeholder engagement, consultation, and capacity building workshops continued to be conducted for fisher communities and government stakeholders. Key topics included: shark conservation and management and safe release protocols, which collectively reached 246 people (now 510 in total, building on 264 people reached in Year 1), including fishers, female heads of household and government agency staff (Indicator 4.3). See evidence for output 4. Two policy briefings were prepared for DKP West Nusa Tenggara ahead of a multi-stakeholder workshop on evaluating the 5-year provincial Shark and Ray Fisheries Management Action Plan, which will take place in Year 3 (Indicator 4.4). See evidence for output 4. One funding mechanism was established to support fisher households in Aceh Jaya via purchases of shark art and merchandise (Indicator 4.5). An exchange visit to the UK took place in June 2025 for the IPB PhD students and Prof Luky Adrianto and included a range of training and networking opportunities (Indicator 4.6). See evidence for output 4. In addition to the seminars and capacity building workshops with the IPB students and project partners, results and lessons learned from the project were presented at 10 international conferences and events, giving a project total of 16, building on 6 in Year 1) (Indicator 4.8). See evidence for output 4.

3.3 Progress towards the project Outcome

The intended outcome of our project is that catches of threatened marine megafauna are significantly reduced while maintaining or improving wellbeing of project-affected people (>200 households across four coastal communities), and methods and models are developed for scaling-up.

Data from interventions in 8 sites, which have so far reached 476 households, offer clear progress towards project outcomes related to threatened marine megafauna and wellbeing of project-affected people, as follows:

1. A 25% reduction in retained wedgefish catches in Year 1 attributed to the pay-to-release program (treatment vs control, Booth et al. 2025), followed by an estimated 40% reduction in retained wedgefish catches in Year 2 attributed to the modified pay-to-release program in Aceh Jaya (treatment vs control, see Impact Statistics for FYR2). At the same time, subjective well-being was maintained or improved for participating fishers. A total of 263 households across two project sites have been engaged in this intervention.
1. A 100% reduction in bycatch of wedgefish and hammerhead sharks under the gear swap scheme in Aceh Jaya (bubu trap vs gill net), while maintaining income per trip (see Impact Statistics for FYR2). So far, we have reached 4 households in 1 village through this intervention.
2. A 91% reduction in thresher shark catches in Alor Archipelago (participating fishers relative to non-participating fishers). These fishers also experienced an increase in their income, in some cases by up to more than 500% relative to before the intervention. A total of 9 households are directly engaged across 2 villages (see Impact Statistics for FYR2 and Shidqi et al. 2025).
3. 97% reduction in mobula ray mortality attributed to the Sustainable Seafood Network in Muncar (relative to non-participants, see Impact Statistics for FYR2).
4. A 83% reduction in wedgefish mortality attributed to the in-kind compensate-to-release program in Tuban (treatment vs. control, see Impact Statistics for FYR2)
5. A 47% reduction in mortality of thresher sharks due to the in-kind compensate-to-release program in Banda (before vs. after, see Impact Statistics for FYR2)
6. Four fishers are currently engaged in the fisher-scientist program in Karimunjawa, and therefore not participating in usual fishing activities. The impact of this program on fishing behaviour and wellbeing relative to control fishers will be assessed in Year 3.
7. The compensate-to-release programs in East Lombok and Aceh Barat Daya have so far received limited uptake, with only 2 releases reported in East Lombok and 1 release reported in Aceh Barat Daya, therefore there are no significant positive outcomes to report from these sites.

See Impact Statistics for FYR2) report for evidence and details.

In terms of sharing and scaling, the preliminary impact statistics are now being used to leverage long-term funding, and six open access papers on project results and lessons learned have already been published in high-impact journals (See Outcome evidence). A total of 22 workshops and 16 international conferences have already been conducted / attended with local and national community leaders, government agencies, grassroots NGOs, and relevant private sector companies and other donors to disseminate methods and models and build capacity for evidence-based and community-based conservation. See Outcome evidence).

Based on our experiences from Years 1 and 2, we conclude that the indicators are adequate for measuring the intended Outcome, and that the project is on-track to achieve the outcome.

3.4 Monitoring of assumptions

Our experiences from Year 2 suggest that most of our outcome and output level assumptions still hold true.

We had previously commented on the assumption that “Masters and PhD students are able to collect and analyse enough data for completing their theses” following mismatches in timing with the IPB official term dates, delays in funding disbursements, and various administrative requirements that had to be completed before the students were allowed to begin fieldwork. Despite these delays, the students are progressing well with their data collection, and we hope they will have enough to complete their theses by the end of Year 3.

“There are no perverse or unintended consequences of the incentive-based mechanisms, such as causing community distrust or indirectly increasing pressures on marine biodiversity” and “The interventions are successfully implemented and monitored, and deliver the anticipated biodiversity and human well-being outcomes as anticipated by all affected stakeholders, with support for continued implementation”. As indicated in our end of Year 1 report, we detected some unintended consequences and hidden actions from our pay-to-release scheme in Aceh Jaya, however our impact evaluation allowed us to detect these and we have since modified the intervention to address these issues, with promising preliminary results under the modified program.

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

The intended impact of our project is that incentive-based mechanisms for conservation in small-scale fisheries reduce overfishing of threatened CITES-listed marine megafauna and alleviate poverty, supporting long-term recovery of marine biodiversity, and its benefits to people and ecosystems. As already outlined and evidenced in Section 3.3, there is evidence that our project is reducing overfishing of threatened CITES-listed marine megafauna while improving the livelihoods and wellbeing of fishing communities (e.g., see Booth et al. 2025; Shidqi et al. 2025; Impact Statistics for FYR2). Through scaling and long-term implementation, we anticipate that incentive-based mechanisms can facilitate recovery of marine megafauna populations for the benefit of fisheries, tourism, and other marine ecosystem services in Indonesia.

4. Project support to the Conventions, Treaties or Agreements

We are engaging closely with local and national governments as part of this project. We have not yet interacted directly with the convention focal points for Indonesia; however our project supports Conventions, Treaties and Agreements are follows:

1. Data collected on shark and ray (by)catch will be fed into processes for CITES implementation for Appendix II listed sharks and rays, including helping MMAF conduct non-detriment finding (NDF) studies as well as informing independent reviews of significant trade.
2. Our interventions are providing practical models and lessons learned for CITES implementation for sharks and rays, particularly regarding which types of management measures work to reduce fishing mortality and trade of certain species.
3. Ecological data collected under this project is also feeding into the Important Shark and Ray Areas (ISRA) project, led by the IUCN Shark Specialist Group, which is identifying discrete, three-dimensional portions of habitat, important for one or more shark species, that are delineated and have the potential to be managed for conservation. This process in turn will inform marine protected area planning in Indonesia, and thus help the Indonesian government to implement their NBSAPs and 30 by 30 commitments.

5. Project support for multidimensional poverty reduction

Our project is directly and indirectly supporting multi-dimensional poverty reduction for coastal communities. The conditional cash transfers and livelihood transitions are both reducing destructive behaviours whilst providing alternative income. This offers a direct route to poverty reduction in the short-term (*i.e.*, either via cash transfers or alternative income sources), with fishers reporting that the income is spent on their children’s’ education and daily household needs, and participating households reporting improved objective and subjective measures of

wellbeing (Booth et al. 2025, Shidqi et al. 2025, Impact Statistics for FYR2). In the long-term, the project also reduces vulnerability to ecosystem shocks (e.g., due to stock collapses) and maintains the health of marine resources (e.g., providing food security and future options values for marine tourism). The interventions also provide a source of employment, and empowerment to participate in marine resource management during the intervention design process.

Other poverty reduction benefits of the project include providing employment opportunities for local staff, and training and scholarship opportunities for Indonesian researchers (e.g., see evidence for output 4).

6. Gender Equality and Social Inclusion (GESI)

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

We have considered the GESI context in building our project team and implementing our projects within communities. The project team is female-led, and all NGO project partners are co-led by a male-female duo, ensuring equal gender representation. We also ensured an equal gender split for the four IPB PhD students and took socio-economic background into account during the selection process; and all trainings for students and early career researchers seek to attain at least 50% female participation. In the communities in which we work, the GESI context is more challenging since our interventions seek to change fisher behaviour, and in Indonesia fishers are almost always male. As a result, when we are conducting engagement or trainings specifically focused on fishing activities and bycatch mitigation practices, these will always be male dominated. However, to counterbalance this we are also directly engaging and empowering female heads of household in several ways:

1. Where males are the direct beneficiaries, we have conducted FGDs and interviews with female heads of household to gain their perspectives on design and impact. To date, all responses have been positive with, for example, female heads of fisher households in Aceh Jaya stating that the payments from the pay-to-release scheme are used to support their daily household needs.
2. We have designed and implemented several female-specific interventions alongside those which seek to directly incentivise (by)catch mitigation in fisheries. For example, we are supporting female-led SMEs in Alor and East Lombok, and our partner NGOs are also supporting women's and youth participation in conservation (e.g., via internships and youth events) in Alor, Karimunjawa and Muncar.

3. We conducted a specific training and planning exercise on engaging women and girls in conservation and ocean science for our project partners and students in July 2024.

Our main lesson learned is that even when the target resources users are male dominated, it is still possible to design interventions such that women and other marginalised groups can benefit.

7. Monitoring and evaluation

Monitoring and evaluation (M&E) are embedded throughout our project design, especially under **Output 3**. We are using experimental or quasi-experimental approaches to demonstrate positive outcomes for marine megafauna and people, by monitoring conservation actions (e.g., releases), retained catches (a proxy for mortality) and subjective well-being for treatment and control fishers, which allows us to robustly demonstrate the impact of the interventions. We also conduct interviews with fishers and their families to understand qualitative narratives (see Booth et al. 2025, Shidqi et al. 2025, Impact Statistics for FYR2 for details). All interventions are also informed by pre-intervention research and a logical theory of change which demonstrates how the activities and outputs lead to the anticipated outcomes.

This M&E work is shared across project partners, with the IPB PhD students and NGO project leaders all playing a role in collecting and analysing data. Information on progress is shared with fisher communities and local governments on a regular basis e.g., we have so far conducted annual appraisals of the programs, sharing results and lessons learned with local stakeholders, and agreeing on adaptations.

8. Lessons learnt

Our main lessons learnt from the first two years of our project are:

1. Genuine partnership and engagement is critical for success: the positive progress of our project has only been possible thanks to commitment and buy-in from NGO project partners, coastal communities and government agencies. These partnerships and engagements have been built over several years, with many of the relationships underpinning this project established before the project started, and this has really helped us to 'hit the ground running'. Moreover, the project is built on a principle of genuine exchange and capacity building - acknowledging that institutions and researchers in UK can learn from partners and colleagues in Indonesia, and vice versa – rather than extractive or 'parachute' science. This supports genuine partnership and continuous learning since all parties benefit from the project and related engagements.
2. Allow enough lead time for administrative processes: we faced a challenge regarding establishing all the agreements and payment processes between Oxford University and the partners in a timely manner, and there were long delays in getting the first payments made to our project partners, as well as some additional delays due to administrative processed at IPB University. Based on this, we learned that administrative processes could take more time than expected. It is important to be fully aware of the different administrative tasks that need to be completed and allow enough lead time (plus additional buffer time) to have these complete before planning to start project activities.
3. Human behaviour is complicated, and incentives need to be adapted to fit the context in which they are used and can lead to unanticipated or hidden consequences: we have found that our compensate-to-release interventions have led to heterogenous outcomes for different sites and fishers. In East Lombok and Aceh Barat Daya, despite fishers reporting positive attitudes towards the program, uptake of the scheme (*i.e.*, fishers submitting live release videos to receive payments) has been low. Some fishers stated that the payments weren't high enough, while others stated that the sharks and rays were always dead by the time they were brought on the vessel, others mentioned that bad weather reduced their fishing activities. In Aceh Jaya, the pay-to-release scheme was highly successful, however we also found evidence of hidden action amongst some vessels, where it appears they increased their shark-relevant fishing efforts to get more individuals to release (Booth et al. 2025). Based on these findings, we adapted the incentive design in Aceh Jaya: we implemented three different price brackets for different sizes of released individuals and placed a cap on the number of releases that could be reported in any one week, to guard against perverse incentives. We also piloted a gear

swap scheme, to avoid catches of hammerheads and wedgefish in the first place, and are continuing to run the programs as RCTs with initial promising results (see Impact Statistics for FYR2). In East Lombok, we added additional endangered species to the list for compensation, and applied a new rule wherein the payments for larger individuals were higher (as per market rates), however we received limited uptake and paused the program.

4. Robust monitoring and evaluation are crucial for understanding the true impact of an intervention: Our RCT (Booth et al. 2025) was critical for identifying the hidden action and potential perverse incentives outlined in point 3. If we had used a more traditional monitoring approach—for example, just monitoring conservation actions in terms of numbers of releases, rather than comparing retained catches between treatment and control groups—the estimated positive effect of the intervention would have been much larger. We are therefore eager to continue using experimental evaluations as far as possible in Year 3.

We do not plan to submit a change request.

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

There were two reviewer comments/queries to be addressed in our next annual report:

1. Please make sure that all files with links in the report are available to the reviewer without the need to receive permissions: this has now been resolved, with permissions granted to anyone with the links.
2. Review and revise the approach for hammerhead and adjust the logframe as appropriate: after observing unintended spillover effects from our pay-to-release intervention, we have adjusted the approach for hammerheads in two ways, 1) we adjusted the compensation prices and put a cap on the number of compensated live releases per week, to prevent fishers from purposefully increasing their catches of wedgefish and hammerheads to gain more payments. 2) since hammerheads have lower survivability, such that a pay-to-release scheme is less effective, we also established a gear swap scheme in Aceh Jaya to avoid catches of hammerheads occurring in the first place, with preliminary positive results (see Impact Statistics for FYR2).

10. Risk Management

No new risks have arisen. We made some adaptations to the design of our pay-to-release program in Aceh Jaya in response to detecting some perverse consequences. An updated risk register has been submitted along with this report.

11. Scalability and durability

Our project is highly scalable within and beyond Indonesia. We have developed a generalisable process for co-designing locally appropriate incentive-based programs, along with a customisable bundle of incentives, which can be adapted to local ecological, economic, and social conditions. Our proof-of-concept interventions also demonstrate that well designed incentive-based interventions can lead to measurable reductions in overfishing while maintaining or improving fisher livelihoods. As such, successful models can be replicated in other tropical SSFs facing similar challenges. The compensate-to-release approach has particularly high scaling potential, due to the relative advantage (there are no costs in participating), simplicity (conferring high learnability) and efficiencies associated with cash transfers.

Increasing interest and capacity resulting from the project is evidenced by fishers' participation in the interventions (which are entirely voluntary), positive perceptions of fishers and female heads of household towards the project, and interest from local and national government stakeholders in the project and its results (*e.g.*, MMAF and the Governor of Aceh Jaya). Part of this interest includes requests for support from provincial fisheries agencies in East Java, West Nusa Tenggara and Aceh for developing their spatial and fisheries management plans, which we anticipate will also lead to scalable, durable policy changes.

The project is also increasingly generating interest from other organisations and institutions, as evidenced by invitations to speak about the project at various events and seminars. I have also been contacted by several organisations who are interesting in applying the process and methods we have developed under this project to design their own locally-appropriate conservation incentives and experimentally evaluate impacts in other contexts. For example, conversations are ongoing with potential collaborators in Mozambique, Tanzania, Uganda, Sierra Leone (African Parks, Wildlife Conservation Society, Innovations for Poverty Action); Brazil (Universidade de São Paulo); and Bangladesh (via the International Institute for Environment and Development), who are interested to use the same predictive design and experimental evaluation methods from our project in their own programs.

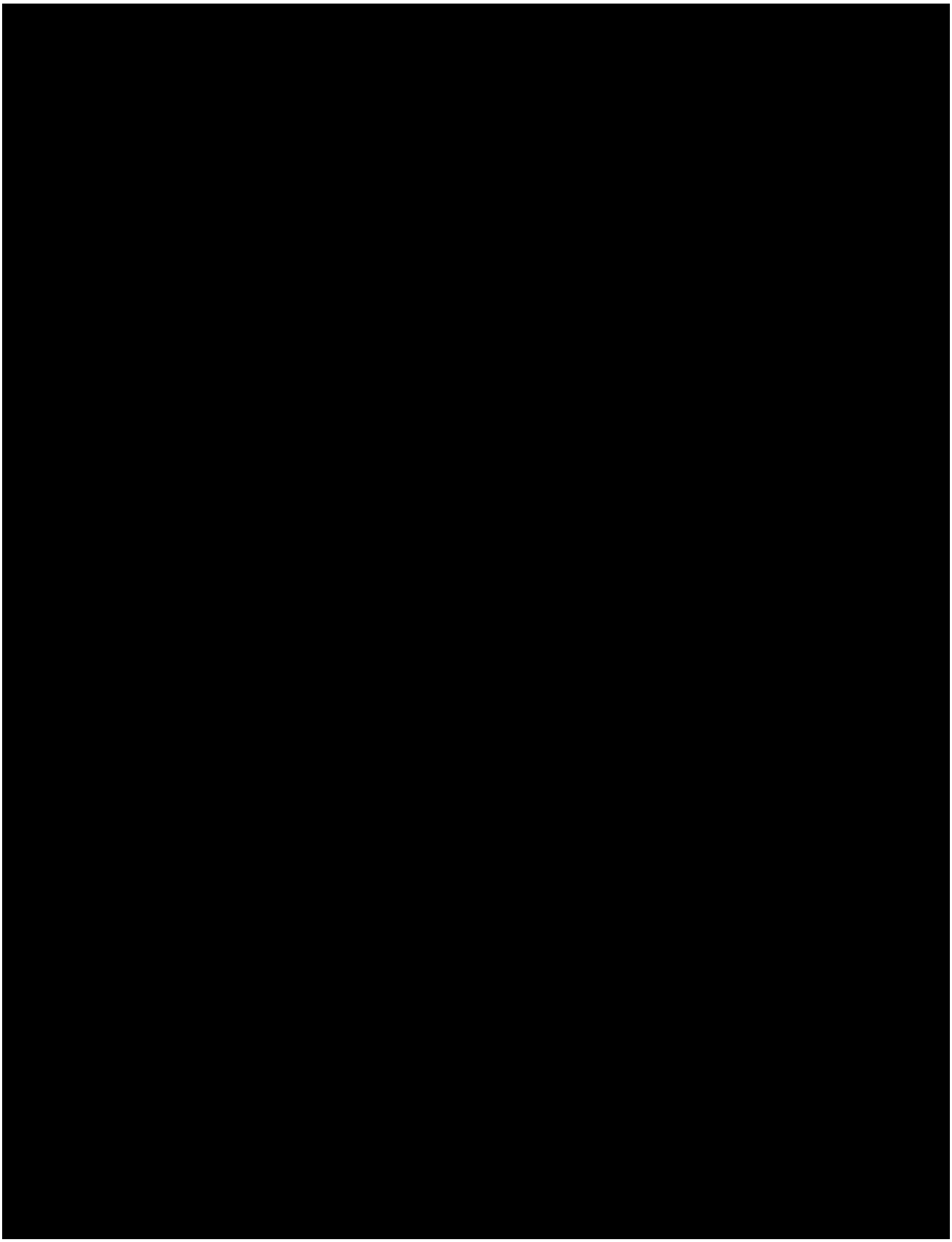
The data generated under the project will be made available alongside relevant publications as part of the open access plan. For example, the data underlying the RCT of our pay-to-release scheme has been made publicly available on publication (see Booth et al. 2025).

The other post-project intended sustainable benefits are still valid based on how the project is now running, and we intend to conduct a more in depth scaling assessment in the final year of the project to empirically explore how we can scale examples of success.

12. Darwin Initiative identity

The Darwin Initiative logo has been used on all relevant project outputs and communications materials, including on presentations during webinars, workshops, and conferences. We have also acknowledged Darwin as a funder in all of our research outputs (see Outcome evidence: workshops and conferences). The Darwin Initiative project has been recognised as a distinct project as part of a longer-term program of work, and there is a strong understanding of the Darwin Initiative within Indonesia—particularly amongst environmental NGOs and the national government. We have Twitter, LinkedIn and Instagram accounts associated with various organisations and individuals involved in the project, and we regularly tag the Biodiversity Challenge Funds in relevant social media posts and updates. See evidence: social media / Darwin Identity.

13. Safeguarding



14. Project expenditure

Table 1: DRAFT project expenditure during the reporting period (1 April 2024 – 31 March 2025)

Project spend (indicative) since last Annual Report	2024/25 Grant	2024/25	Variance %	Comments (please explain

	(£)	Total Darwin Costs (£)		significant variances)
Staff costs (see below)	[redacted]			
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	253,254	253,254		

The variances of greater than 10% have not yet been discussed with Darwin staff. We note that these are draft figures as we are still waiting on final receipts and invoices from project partners.

Table 2: Project mobilised or matched funding during the reporting period (1 April 2024 – 31 March 2025)

	Secured to date	Expected by end of project	Sources
Matched funding leveraged by the partners to deliver the project (£)	[redacted]	[redacted]	Marine Conservation Action Fund; Save Our Seas Foundation; Shark Conservation Fund; Cyclone; Rumah Foundation; Ocean Blue Tree, CLP, private sector donors
Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project (£)			

15. Other comments on progress not covered elsewhere

NA

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

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

- This project has allowed us to conduct and published the world's first randomized controlled trial of an incentive-based marine conservation program.
- >1,300 Endangered hammerhead sharks, wedgefish and thresher sharks have been safely released by small-scale fishers because of our pay-to-release programs.
- Thresher shark fishing mortality was reduced by 91% in Alor because of the livelihood transition program supported by this project.
- Hammerhead shark and wedgefish catches were reduced by 100% because of a gear swap pilot program supported by this project.

File Type (Image / Video / Graphic)	File Name or File Location	Caption including description, country and credit	Social media accounts and websites to be tagged (leave blank if none)	Consent of subjects received (delete as necessary)
[redacted]				

Annex 1: Report of progress and achievements against logframe for Financial Year 2024-2025

Project summary	Progress and Achievements April 2024 - March 2025	Actions required/planned for next period
Impact Incentive-based mechanisms for conservation in small-scale fisheries reduce overfishing of threatened CITES-listed marine megafauna and alleviate poverty, supporting long-term recovery of marine biodiversity, and its benefits to people and ecosystems.	By reducing retained catches of wedgefish and thresher sharks in 3 project sites while maintaining or improving subjective and objective indicators of well-being, our project is already providing evidence of positive impact on biodiversity and poverty alleviation, and methods and models for scaling up elsewhere.	[redacted]
Outcome Catches of threatened marine megafauna are significantly reduced while maintaining or improving wellbeing of project-affected people (>200 households across 4 coastal communities), and methods and models are developed for scaling-up.		
0.1 At least 15% reduction in catch of threatened marine megafauna (wedgefish, guitarfish, hammerheads, mobula rays, thresher sharks) amongst participating fisher households by December 2025, compared to pre-intervention baselines and/or (matched) control fishers.	- 40% reduction in retained wedgefish catches attributed to the pay-to-release program in Aceh Jaya (treatment vs. control) - 100% reduction in wedgefish and hammerhead shark mortality attributed to gear swap program in Aceh Jaya (bubu trap vs gill net) - 91% reduction in thresher shark catches attributed to the livelihood-based intervention in Alor Archipelago (participants vs. non-participants) - 97% reduction in mobula ray mortality attributed to the Sustainable Seafood Network in Muncar (treatment vs. control) - 83% reduction in wedgefish mortality attributed to the in-kind compensate-to-release program in Tuban treatment vs. control) - 47% reduction in thresher shark mortality in Banda - 1 wedgefish safely released in Aceh Barat Daya - 2 wedgefish safely released in East Lombok	Successful pilot interventions and formal impact evaluations will continue in Year 3.
0.2 Indicators of material and social well-being (e.g., household income, self-reported life satisfaction, social connections) are maintained or improved in the short-term (despite decreases in their catches of valuable threatened	- Subjective well-being (self-reported life satisfaction) the same or higher for fishers in pay-to-release	Successful pilot interventions and formal impact evaluations will continue in Year 3.

species) for >200 fisher households across 4 coastal communities by December 2025, compared to pre-intervention baselines and matched controls.	programs in Aceh Jaya, East Lombok, Aceh Barat Daya, Banda and Tuban (331 households) - Income per trip maintained for fishers in bubu gear swap program in Aceh Jaya and fishers in Sustainable Seafood Network in Muncar (54 vessels ~ 108 households) - Stable or increased household income for fishers participating in alternative livelihoods in Alor (9 households)	
0.3 Long-term partnerships, agreements, institutions, and funding sources established for >200 participating fisher households across 4 coastal communities by April 2026 (relative to a pre-project baseline of 0).	- Agreements with participating fishers/vessels established for a total of 476 households across 8 sites) - One funding mechanism secured through Francesca Page's 200 Sharks Initiative, and one revenue generating activity in progress through developing a shark conservation and community experience with students from JCU university (to be launched in Year 3). Conversations on-going with other private sector donors.	Evidence of positive impacts will be used to establish long-term agreements and funding sources in Year 2 and 3.
0.4 At least 2 high-impact papers and associated policy briefings published on methods, findings and lessons learned by April 2026.	- 5 x open access papers published in Oryx, Conservation Science and Practice, Frontiers in Ocean Sustainability, Trends in Ecology and Evolution; 1 x open access paper in press in Science Advances (published on April 23rd 2025) (building on 1 paper in Year 1 = 6 in total) - 4 x local-level policy briefings prepared for the Departments of Marine Affairs and Fisheries (DKP) in West Nusa Tenggara, Alor and Maluku (building on 1 x national-level policy briefing and 1 x local-level policy briefing for Aceh in Year 1 = 4 in total)	Additional research will be published in open access journals, and policy briefings will be prepared based on published papers.
0.5 At least 6 workshops conducted with local and national community leaders, government agencies, grassroots NGOs, and relevant private sector companies to disseminate methods and models and build capacity for evidence-based and community-based conservation by April 2026.	- 7 x community workshops conducted to establish interventions and explore interim results. - 2 x government agency workshops conducted in East Java and Alor	Additional workshops will be conducted with relevant stakeholders as the interventions proceed, to

	- Results, methods and lessons learned from the project were presented at 10 x international conferences and events, and an additional exchange workshop was conducted with Pew Marine Fellows. - 2 x structured capacity building workshops were conducted for students and grassroots NGOs and 2 x seminars were conducted at IPB.	communicate findings, methods, and models.
Output 1 Understand and design: research outputs estimating how incentives could change fisher behaviour and impact biodiversity and human wellbeing compiled for 6 project sites (covering >300 households) by March 2024		
1.1 New behaviour/behaviour change research outputs from 3 fisher communities (>150 household) by September 2024 (building on pre-project research in 3 communities (~150 households) = 6 communities (>300 households in total)	- Baseline social research on behaviours, attitudes norms and incentives conducted in 4 new sites in Year 2. Baseline data have now been collected across a total of 12 sites (Aceh Jaya, Aceh Barat Daya, Rembang, Karimunjawa, Muncar, Tuban, Lamongan, East Lombok, Sumbawa, Sumba, Alor, Banda), covering 743 households.	Research outputs, interventions and evaluations to be finalised for all sites.
1.2 Recommendations on impactful, equitable and cost-effective interventions for 3 new sites/communities by September 2024 (building on pre-project research in 3 sites = 6 in total)	- Evidence-based recommendations for incentive schemes finalised for 6 new sites, taking the project total to 9 sites (Aceh Jaya, Aceh Barat Daya, Karimunjawa, Muncar, Tuban, East Lombok, Sumbawa, Alor, Banda),	Research outputs, interventions and evaluations to be finalised for all sites.
1.3 Open access research paper detailing methods, results and recommendations submitted for publication by September 2024, and published by March 2025.	- Baseline from sites published in 3 x new open access papers in Oryx, Conservation Science and Practice, Frontiers in Ocean Sustainability.	Multi-site analysis to be conducted, additional site-specific analyses to be completed and published.
Output 2. Implement: incentive-based interventions are implemented in 4 coastal communities, with >200 participating fisher households, by March 2025.		
2.1 Full intervention plans developed based on research outputs, and agreements established with >200 fisher households across 4 coastal communities by September 2024	- Full intervention plans developed for 9 sites, and agreements established with 476 fisher households.	Pilot interventions to continue.
2.2 Pilot interventions are implemented with >200 fisher households across 4 coastal communities by December 2025, with monitoring data collected throughout	- Intervention plans implemented across 8 sites with 476 fisher households.	Intervention to be implemented in Sumbawa.

Output 3. Evaluate: research outputs compiled detailing the impact and cost-effectiveness of the interventions - on marine biodiversity and human well-being - by August 2025.		
3.1 Pre-intervention baselines for fisher attitudes, norms behaviour; marine megafauna catches; and fisher well-being established for >200 fisher households across 4 coastal communities (with (matched) controls where feasible) by September 2024	- Baseline social research on behaviours, attitudes norms and incentives conducted in for 745 households across 12 sites.	NA
3.2 Interventions pre-registered as field experiments by September 2024	- Pay-to-release interventions in Aceh Jaya, East Lombok and Aceh Barat Daya registered as field experiment. - Fisher-scientist intervention in Karimunjawa registered as field experiment.	Intervention in Sumbawa to be pre-registered as field experiment.
3.3 Fisher attitudes, norms, and behaviour; marine megafauna catches; and project costs are monitored throughout the interventions for >200 fisher households across 4 coastal communities (through to December 2025)	- Fisher attitudes, norms, and behaviour; marine megafauna catches; and project costs monitored throughout the interventions with 476 fisher households across 8 sites.	Data collection to continue.
3.4 Post intervention well-being surveys and qualitative interviews conducted for >200 fisher households across 4 coastal communities by December 2025	- Post-intervention income and wellbeing surveys and interviews conducted for 476 fisher households across 8 sites.	Data collection to continue.
3.5 Qualitative and quantitative data on impact and cost-effectiveness analyzed and synthesised, with open access research paper detailing submitted for publication by March 2026 and published by June 2026	- Data on pay-to-release RCT in Aceh Jaya and East Lombok in press in Science Advances (published on April 23rd). - Data on statistical and theory-based impact assessment for Alor published in Oryx.	Formal impact assessments to be conducted for other interventions/sites.
Output 4. Scale and legacy: institutions, capacity, long-term partnerships, and financing mechanisms are established, to maintain on-going investments in project sites, and share methods and lessons learned for scaling up by March 2026.		
4.1 Four PhD Students recruited at IPB University to participate in the project by September 2023, and use research from the project towards PhD theses by July 2026	- Four PhD students recruited (in year 1), and conducting research	Students to continue research under the project to complete their PhDs
4.2 A seminar/workshop series conducted for local students and NGO project leaders on socio-economic research methods, project management and fundraising, and impact assessment by September 2023	- 2 x structured workshops series conducted for local students and NGO project leaders covering socio-economic research methods, impact evaluation and engaging women and girls in ocean science, BRUVS.	Additional mentoring and training to be conducted for students and NGO project leaders as needed/requested.

4.3 At least 4 consultation and capacity building workshops conducted for communities and local government agencies by April 2026, which collectively reach more than 250 people.	- 7 x community workshops and 2 x government agency workshops (Alor, East Java) which collectively reached 274 people.	Additional consultation and capacity building workshops to be conducted for communities and government agencies as needed/requested.
4.4 Four site-specific and one generic policy briefing document prepared based on project results by December 2025, and disseminated via at least two policy-focused workshops with local and national government by April 2026	- 2 x policy briefings prepared for DKP West Nusa Tenggara, 1 x policy briefing prepared for DKP Alor, 1 x policy briefing prepared for DKP Maluku.	Additional policy briefings to be prepared as new research outputs are finalised.
4.5 Long-term agreements and funding mechanisms established for >200 fisher households across 4 coastal communities by March 2026	- One financing partnership secured with Francesca Page's 200 Sharks project.	To be established after pilot interventions are completed.
4.6 Exchange visits to UK conducted for at least four Indonesian project leaders/students by June 2026	- Exchange visit took place in June 2024 with IPB PhD students visiting University of Oxford.	NA
4.7 One guidance document developed and disseminated on how to apply the project process and methods to develop locally-appropriate incentive-based interventions for marine conservation in other contexts by June 2026	NA	Guidance document to be developed in Year 3 based on outputs and lessons learned from the project
4.8 Project research outputs and lessons learned are presented national and international conferences (at least 3 in total) by March 2026	- Preliminary methods, results and lessons learned from the project were presented at 10 x international conferences and events (building on 6 in year 1 = 16 in total) - 1 x exchange workshop conducting with Pew Marine Fellows	Additional conferences to be attended in Y3, including a symposium at ICCB 2025 in Brisbane on Designing & experimentally testing incentive-based approaches for biodiversity & wellbeing outcomes, which will showcase project methods and outputs.
4.9 Materials and learnings from the project are used to inform the development of a curriculum within IPB for an interdisciplinary / socio-ecological systems 'bootcamp' for marine conservation practitioners in Indonesia by March 2026	- Two 'bootcamp' seminars conducted for marine and coastal department at IPB University in July 2024 and December 2024.	Bootcamp curriculum and seminars to continue in Year 3.

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

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
Impact: Incentive-based mechanisms for conservation in small-scale fisheries reduce overfishing of threatened CITES-listed marine megafauna and alleviate poverty, supporting long-term recovery of marine biodiversity, and its benefits to people and ecosystems. (Max 30 words)			
Outcome: Catches of threatened marine megafauna are significantly reduced while maintaining or improving wellbeing of project-affected people (>200 households across 4 coastal communities), and methods and models are developed for scaling-up. (Max 30 words)	0.1 At least 15% reduction in catch of threatened marine megafauna (wedgefish, guitarfish, hammerheads, mobula rays, thresher sharks) amongst participating fisher households by December 2025, compared to pre-intervention baselines and/or (matched) control fishers. 0.2 Indicators of material and social well-being (e.g., household income, self-reported life satisfaction, social connections) are maintained or improved in the short-term (despite decreases in their catches of valuable threatened species) for >200 fisher households across 4 coastal communities by December 2025, compared to pre-intervention baselines and matched controls. 0.3 Long-term partnerships, agreements, institutions, and funding sources established for >200 participating fisher households across 4 coastal communities by April 2026 (relative to a pre-project baseline of 0). 0.4 At least 2 high-impact papers and associated policy briefings published on methods, findings and lessons learned by April 2026.	0.1 Catch monitoring conducted before and during interventions for intervention and (matched) control fishers 0.2 Socio-economic surveys conducted before and during the interventions for intervention and (matched) control fishers 0.3 Signed agreement and/or incorporation documents 0.4 Published papers 0.5 Workshop attendance sheets	- We are able to develop suitable cost-effective interventions in at least 4 communities, which can effectively incentivise pro-conservation behaviour. This assumption holds based on research conducted to date by the project team, and discussions with stakeholders. - There are no major micro- or macro-economic fluctuations outside of the control of the project, which shift market values and incentives towards increasing catches of marine megafauna relative to pre-intervention baselines. This assumption holds based on our current knowledge of markets, though numbers of small-scale fishers may have increased during the pandemic as a safety-net livelihood. - There are no major micro- or macro-economic shocks outside the control of the project (such as earthquakes, tsunamis or political instability) which destabilise local economies and/or significantly reduce human well-being relative to pre-intervention baselines. Natural disasters are difficult to

	0.5 At least 6 workshops conducted with local and national community leaders, government agencies, grassroots NGOs, and relevant private sector companies to disseminate methods and models and build capacity for evidence-based and community-based conservation by April 2026.		predict, though Indonesia has been increasingly politically stable since the fall of the Suharto in 1998. The pandemic has significantly impacted tourism-based economies, although efforts are already being made to slowly re-open. - There are no perverse or unintended consequences of the incentive-based mechanisms, such as causing community distrust or indirectly increasing pressures on marine biodiversity. Our rigorous intervention design will ensure this assumption holds. - The pilot interventions are successful in at least 4 communities, and communities and local stakeholders support their continuation. Our participatory process and rigorous intervention design will ensure this assumption holds. - The threatened marine megafauna are extirpated from Indonesia due to other external fishing pressures (e.g. from commercial fisheries). This assumption holds based on previous research – while other fisheries also add external pressures on these taxa, SSFs typically operate in isolate coastal areas of important habitat (e.g., nursery grounds) which can be effectively protected in isolation to support

			long-term health of the populations. - Suitable long-term revenue sources can be identified through collaboration with governments, philanthropists and private sector. This assumption holds based on research and consultations by the project team (e.g. with dive operators and fishing companies) – we have already identified some potential long-term funders. - The peer-review process proceeds in a timely manner. We have built in ample time for peer review based on our past experiences of publication.
Outputs: 1 Understand and design: research outputs estimating how incentives could change fisher behaviour and impact biodiversity and human wellbeing compiled for 6 project sites (covering >300 households) by March 2024	1.1 New behaviour/behaviour change research outputs from 3 fisher communities (>150 household) by September 2024 (building on pre-project research in 3 communities (~150 households) = 6 communities (>300 households in total) 1.2 Recommendations on impactful, equitable and cost-effective interventions for 3 new sites/communities by September 2024 (building on pre-project research in 3 sites = 6 in total) 1.3 Open access research paper detailing methods, results and recommendations submitted for publication by September 2024, and published by March 2025.	1.1 A brief report and slide deck which summarises findings and recommendations for project partners 1.2 A brief report and slide deck which summarises findings and recommendations for project partners 1.3 Proofs of submitted paper, published article	- The Project Leader is able to secure a foreign research permit for Indonesia. This assumption is supported by an existing research permit for the PL (which will need to be renewed during the life time of the project) supported by an on-going MoU between Oxford and IPB. - Four project communities give their free, prior and informed consent for the research to take place. This is consistent with experiences during pre-project research and existing local NGO relationships. - Field work is able to take place, and there are no major events which disrupt the field work

			plans (e.g., natural disasters, on-going pandemic restrictions). Natural disasters are difficult to predict, however field work in Indonesia has been able to continue during the COVID-19 pandemic, albeit with strict health and safety procedures in place. - The research is able to identify suitable, cost-effective incentive-based interventions. This assumption is consistent with pre-project research and local NGO activities. - The peer-review process proceeds in a timely manner. We have included ample time for the peer-review process, based on previous experiences with publishing.
2 Implement: incentive-based interventions are implemented in 4 coastal communities, with >200 participating fisher households, by March 2025.	2.1 Full intervention plans developed based on research outputs, and agreements established with >200 fisher households across 4 coastal communities by September 2024 2.2 Pilot interventions are implemented with >200 fisher households across 4 coastal communities by December 2025, with monitoring data collected throughout	2.3 Photographs and minutes from community meetings, signed agreements 2.4 Photographs and videos of project communities implementing catch reduction practices, photographs and receipts for any bycatch reduction technologies purchased, monitoring data	- Three project communities give their free, prior and informed consent for the interventions to take place. This is consistent with experiences during pre-project research and existing local NGO relationships. - We are able to co-design three cost-effective incentive-based interventions which are within the total budget of the project. This is consistent with pre-project research, which we have used to inform the budget available for community interventions. One community has already been identified as a promising and cost-effective

			intervention site, with initial support from local government. Livelihood-based incentives have already been introduced in a further two communities, which could be scaled-up/built upon under this project. - Field work is able to take place, and there are no major events which disrupt the field work plans (e.g. natural disasters, on-going pandemic restrictions). Natural disasters are difficult to predict, however field work in Indonesia has been able to continue during the COVID-19 pandemic, albeit with strict health and safety procedures in place.
3 Evaluate: research outputs compiled detailing the impact and cost-effectiveness of the interventions - on marine biodiversity and human well-being - by August 2025.	3.1 Pre-intervention baselines for fisher attitudes, norms behaviour; marine megafauna catches; and fisher well-being established for >200 fisher households across 4 coastal communities (with (matched) controls where feasible) by September 2024 3.2 Interventions pre-registered as field experiments by September 2024 3.3 Fisher attitudes, norms, and behaviour; marine megafauna catches; and project costs are monitored throughout the interventions for >200 fisher households across 4 coastal communities (through to December 2025) 3.4 Post intervention well-being surveys and qualitative interviews conducted for >200	3.1 Databases of pre-intervention baseline data 3.2 Certificate of pre-registration from Wharton Credibility Lab's AsPredicted pre-registration platform 3.3 Databases of monitoring data 3.4 Databases of monitoring data 3.5 Proofs of submitted paper, published article	- The Project Leader is able to secure a foreign research permit for Indonesia. This assumption is supported by an existing research permit for the PL (which will need to be renewed during the life time of the project) supported by an on-going MoU between Oxford and IPB. - Four project communities give their free, prior and informed consent for the research to take place. This is consistent with experiences during pre-project research and existing local NGO relationships (S1, S2). - All field work is able to take place, and there are no major events which disrupt the field

	fisher households across 4 coastal communities by December 2025 3.5 Qualitative and quantitative data on impact and cost-effectiveness analyzed and synthesised, with open access research paper detailing submitted for publication by March 2026 and published by June 2026		work plans (e.g. natural disasters, on-going pandemic restrictions). Natural disasters are difficult to predict, however field work in Indonesia has been able to continue during the COVID-19 pandemic, albeit with strict health and safety procedures in place. - The peer-review process proceeds in a timely manner. We have included ample time for the peer-review process, based on previous experiences with publishing.
4 Scale and legacy: institutions, capacity, long-term partnerships, and financing mechanisms are established, to maintain on-going investments in project sites, and share methods and lessons learned for scaling up by March 2026.	4.1 Four PhD Students recruited at IPB University to participate in the project by September 2023, and use research from the project towards PhD theses by July 2026 4.2 A seminar/workshop series conducted for local students and NGO project leaders on socio-economic research methods, project management and fundraising, and impact assessment by September 2023 4.3 At least 4 consultation and capacity building workshops conducted for communities and local government agencies by April 2026, which collectively reach more than 250 people 4.4 Four site-specific and one generic policy briefing document prepared based on project results by December 2025, and disseminated via at least two policy-focused workshops with local and national government by April 2026	4.1 Enrolment documents, copies of PhD chapters 4.2 Training agenda, attendance list, polling results 4.3 Meeting agenda, minutes, photos, agreement documents 4.4 Briefing, guidance documents, meeting agenda, minutes, attendance sheets 4.5 Signed agreement and/or incorporation documents 4.6 Exchange visit reports, blogs on the ICCS Biodiversity Fellows website 4.7 Guidance document 4.8 Conference proceedings and copies of presentations	- Three project communities and other relevant stakeholders give their free, prior and informed consent for the research and interventions to take place. This is consistent with pre-project research and NGO partner experiences. - The interventions are successfully implemented and monitored, and deliver the anticipated biodiversity and human well-being outcomes as anticipated by all affected stakeholders, with support for continued implementation. Our robust design phase will ensure the interventions are designed for success. - Potential long-term funders support the interventions, and are willing to commit long-term sustainable revenue streams. This assumption holds based on

	4.5 Long-term agreements and funding mechanisms established for >200 fisher households across 4 coastal communities by March 2026 4.6 Exchange visits to UK conducted for at least four Indonesian project leaders/students by June 2026 4.7 One guidance document developed and disseminated on how to apply the project process and methods to develop locally-appropriate incentive-based interventions for marine conservation in other contexts by June 2026 4.8 Project research outputs and lessons learned are presented national and international conferences (at least 3 in total) by March 2026 4.9 Materials and learnings from the project are used to inform the development of a curriculum within IPB for an interdisciplinary / socio-ecological systems 'bootcamp' for marine conservation practitioners in Indonesia by March 2026	4.9 Bootcamp curriculum	pre-project research and consultations (e.g., with dive operators and fishing companies) which has enabled us to already identify potential long-term funders (e.g. via tourism levies, S1), though this also depends on Indonesia's tourism market recovering after the pandemic by 2025. Indonesia is already beginning a multi-stage plan to re-open to international travellers, and we are confident that the tourism market will recover once travel resumes to normal. - Masters and PhD students are able to collect and analyse enough data for completing their theses. This assumption is consistent with the PL's previous experience of working with IPB Masters students during her PhD.

Annex 3: Standard Indicators

Table 1 Project Standard Indicators

Please see the Standard Indicator guidance for more information on how to report in this section, including appropriate disaggregation.

DI Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-A01	Number of people in eligible countries who have completed structured and relevant training	People	Men	278	301		579	>250 people in total
DI-A01	Number of people in eligible countries who have completed structured and relevant training	People	Women	45	128		173	>250 people in total
DI-A03	Number of local/national organisations with improved capability and capacity as a result of project.	Number of organisations	Civil society	7	7		7	7
DI-B04	Number of new/improved sustainable livelihoods/ poverty reduction management plans available and endorsed.	Number	New	2	6		8	>4
DI-B07	Number of people participating in community-based management groups and/or Payment for Ecosystem Service schemes.	Number	People	183	269		476	>200
DI-C01	Number of best practice guides and knowledge products published and endorsed	Number	-	2	3		5	3
DID02	Number of people whose disaster/climate resilience has been improved.	Households	-	183	269		476	>200
DI-D16	Number of households reporting improved livelihoods.	Households	-	31	9		40	NA

DI Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-D17	Income derived by local communities from new/enhanced Payment for Ecosystem Services.	GBP Sterling/ Household / Year		GBP 100-500	GBP 100-1,000		NA	NA

Table 2 Publications

Title	Type (e.g. journals, best practice manual, blog post, online videos, podcasts, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
Conservation impacts and hidden actions in a randomized controlled trial of a marine pay-to-release program	Journal	Booth, H., Pienkowski, T., Said Ramdlan, M., Banda Naira, K., Milner-Gulland, E. J., Adrianto, L., & Ferraro, P. J. (2025). Sci. Adv (Vol. 11). https://www.science.org	Female	British	Science Advances	https://www.science.org/doi/10.1126/sciadv.adr1000
Fishers' interactions with endangered “rhinorays” in Karimunjawa	Journal	Akbar Alghozali, F., Hanifah, A., Wiralaga Dwi Gustianto, M., Nadia, M., Qur, T., Amalia Niloperbowo, K., Suyanto, D. P.,	Male	Indonesian	Conservation Science and Practice	https://doi.org/10.1111/csp2.70038

Title	Type (e.g. journals, best practice manual, blog post, online videos, podcasts, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
National Park, and factors influencing willingness to engage in pro-conservation behavior		Ichsan, M., Prasetyo, A., Rizqi Himawan, M., & Booth, H. (2025).				
Designing and evaluating alternative livelihoods for shark conservation: a case study on thresher sharks in Alor Island, Indonesia	Journal	Shidqi, R. A., Sari, D. R., Alopen, J., Bang, Y. M., Arianto, I., Kopong, P. N. S., TD, V. G., Smulders, E., & Booth, H. (2025).	Male	Indonesian	*Oryx*	https://doi.org/10.1017/S0030605324001376
RCTs in the wild: Designing and implementing conservation	Journal	Pynegar, E., Booth, H., Doulton, H., Ferraro, P. J., Mohamed, M., Rakotonarivo, O. S., & Jones, J. P. G. (2025).	Male	British	Conservation Science and Practice	https://doi.org/10.1111/csp2.70029

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programs as randomized control trials						
Fair division for avoidance of biodiversity impacts	Journal	Booth, H., Milner-Gulland, E. J., Bang, A., Bull, J., Moreno-Ternero, J. D., Squires, D., & Booth, H. (2024).	Female	British	Trends in Ecology and Evolution	https://doi.org/10.1016/j.tree.2024.09.002
Exploring practical conservation measures for pelagic thresher sharks using local knowledge in Sunda Banda seascape	Journal	Shidqi, R. A., Bang, Y. M., Basrun, S., Sari, D. R., Tukan, M. B. Y., & Booth, H. (2025).	Male	Indonesian	Frontiers in Ocean Sustainability	https://doi.org/10.3389/focsu.2025.1533340
Togetherness for the Ocean	Short documentary	Liam Webb, 2024	Male	British	Available on YouTube	https://www.youtube.com/watch?v=WczLIVOEWV0

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