Darwin Initiative Main Project Annual Report

Important note: *To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be no more than 10 pages in length, excluding annexes*

Submission Deadline: 30 April

Darwin Project Information

Project Reference	23-011
Project Title	Transforming marine resource management in the Republic of Congo
Host Country/ies	Republic of Congo
Contract Holder Institution	University of Exeter (**UoE**)
Partner institutions	Wildlife Conservation Society (**WCS**) Association de Conservation de la Biodiversité (**Rénatura**) Ministère de l'Economie Forestière et du Développement Durable et de l'Environnement (**MEFDDE**) Parc National Conkouati-Douli (**PNCD**)
Darwin Grant Value	£299,435
Funder (DFID/Defra)	DFID
Start/end dates of project	1ST April 2016 – 30TH September 2018
Reporting period	1ST April 2016 – 31ST March 2017 (Annual Report 1)
Project Leader name	Professor Brendan Godley
Project website/blog/Twitter	@wcs_congo | @BrendanGodley | @_KMETCALFE
Report author(s) and date	B.J.Godley M.J. Witt and K.Metcalfe (**UoE**) / B.Curran (**WCS** / **PNCD**) / N.Bréheret and E.Chauvet (**Rénatura**) – 24TH April 2017

1. Project Rationale

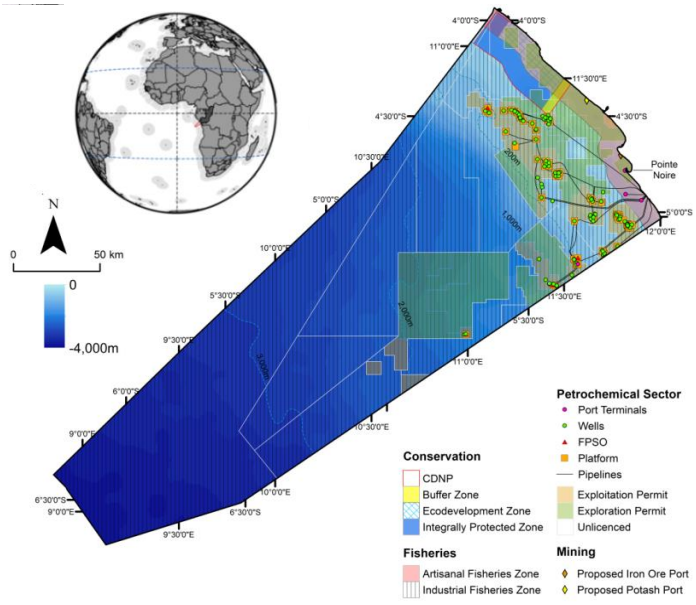


Fig. 1 Location of Congo-Brazzaville, and overlapping ocean uses within its exclusive economic zone.

The Problem: The Republic of Congo (**Fig. 1**) has significant resources with potential to contribute to food security and poverty alleviation in fisheries-dependent coastal communities where few alternative livelihood opportunities exist. This project seeks to improve marine resource governance by promoting the sustainable and legal extraction of marine resources, and the conservation of marine biodiversity through the development of an evidence based marine spatial plan that minimises impacts on, and conflicts between competing sectors.

Objectives: To address these aims there are clear needs to: (i) improve technical capacity and develop the existing knowledge and skills base in-country; (ii) characterise the socioeconomics of the small-scale artisanal fisheries sector due to their

essential role in food security, employment, and its potential role in poverty alleviation; (iii) fill key knowledge gaps related to marine biodiversity of regional importance; (iv) integrate available information on the spatial distribution of biodiversity and threats associated with different ocean user groups; and finally (v) identify priority areas for conservation zoning. More specifically, the overall aim of the project is to increase awareness among stakeholders to the importance of marine biodiversity and sustainable fisheries in the region; and support the development of a representative MPA network that meets national and international conservation targets, whilst minimising impacts on competing sectors (**Fig 1**).

2. Project Partnerships

Lead Partner and Partner Organisations: The lead partner (**UoE**) has engaged frequently with all partner organisations (**WCS** and **Rénatura**), with the Darwin Research Fellow (**DRF**) Dr Kristian Metcalfe spending a total of 16 weeks in country since the projects inception (May – June 2016, October – December 2016, and March 2017). **WCS** and **Rénatura** have provided substantial logistical and field support for in-country activities and as a result the partnerships are demonstrably strong with significant progress having been made towards the projects goals. During periods where the **DRF** has not been present in-country the relationship with project partners has been maintained through regular skype meetings and emails.

External Partners: A key objective of the project is to engage local stakeholders and government agencies in the project as well as to increase awareness of the projects findings and outputs. To this end the project was officially presented to representatives of the Ministère de l'economie forestiere et du developpement durable et de l'Environnement (**MEFDDE**), Ministère de l'Agriculture, de l'Elevage et de la Pêche (**MAEP**), Direction Generale de la Marine Marchande (**DIGEMAR**), Ministère des Mines et de la Géologie (**MMG**), as well as industrial fisheries organisations, most notably the Société Congolaise de Pêche (**SOCOPEC**) between May – June 2016 in Brazzaville and Pointe Noire. Evidence of support for the project is clear with the Ministère de la Recherche Scientifique et l'Innovation Technologique (**MRSIT**) providing an extension to the **UoE's** research permit to October 2019 – thereby allowing **UoE** staff to continue to support local partners beyond the duration of the Darwin project (**see annex 4 Fig. S1**). **MAEP**, in particular, has been deeply engaged in the project, which has led to several key developments associated with collating historical and present data on the spatiotemporal distribution of industrial fishing effort (**see section 3; annex 4 Fig. S2**). This relationship was facilitated by **Rénatura** who attend regular (weekly) meetings with the Director Departmental (Antoine Missamou) of **MAEP** in Pointe Noire. Dr Richard Parnell of **WCS,** who led the **Gabon Bleu** initiative (*see: WCS and National Geographic*) and now based in the United States, visited Congo for two weeks between November and December 2016 to: (1) describe the Gabon Bleu project to local stakeholders and government agencies; and (2) evaluate the project's current progress, and lead on the assessment of the current status of available data and identify key data gaps (in collaboration with the **DRF**, **WCS** and **Rénatura**). As a result of this exchange Dr Parnell will be supporting the progression of the project with visits scheduled to occur in each subsequent financial year.

3. Project Progress

3.1 Progress in carrying out project activities

The project partners have been exceptionally productive in analysing fine-scale spatial and socioeconomic data on different ocean user groups to support future marine spatial planning efforts over the last 12 months, with several project activities completed and/or commenced ahead of schedule. The project, however, has faced some challenges and delays relating to the delivery of the stakeholder workshop, and increasing enforcement efforts and capacity.

Output 1: Marine spatial planning: As a result of several introductory meetings with government agencies conducted in May – June 2016 (**see section 2**) it was requested to extend the scope of the stakeholder workshop to include a wider range of participants, across government and industry. Whilst there has been a delay in achieving this activity (**see section 9**) the stakeholder workshop

(**Activity 1.1**) has been scheduled for 7th – 8th April 2017 in Pointe Noire (**see annex 4 Fig S3**). Delays in delivery of the workshop meant that the compilation and analysis of new spatial data for inclusion in the national marine strategy document (**Activity 1.2**) commenced a year earlier than expected. Most notably this included analysis of: (1) satellite derived Automatic Identification System (AIS) data on maritime shipping movements for 11 sectors (i.e. unassigned, non-port service craft, port service craft, military and law enforcement, bulk carrier and cargo vessels, tankers, offshore/industry vessels, research vessels, fishing vessels, passenger vessels and recreation vessels); and (2) vessel monitoring system (VMS) data on industrial fishing (**see annex 4 Figs. S4 & S5**). As a result of these data analyses project partners are able to present more comprehensive data on each of the key ocean user-groups at the stakeholder workshop (i.e. conservation, fisheries, shipping and petrochemicals), highlighting the overlapping claims for marine space (**Fig. 1 and see annex 4 Fig. S6**). In terms of field data collection (**Activity 1.3**), 3 locally trained research assistants engaged in fisheries work as part of a previous Darwin Initiative project (20-009) received 3-days of additional training in socio-economic data collection and 3-days of evaluation by the **DRF** (May–June 2016). These 3 staff then supported the field based training of a new research assistant who was evaluated by the **DRF** in November 2016 (total trained = 4). The increase in locally trained staff meant that the project exceeded its minimum target of the number of individual fisher surveys and sites surveyed (e.g. 25%), with a total of 221 respondents surveyed from across 100% of landing sites (n = 30) (**see section 6 and annex 4 Fig. S7**). Additional training on conducting Basic Necessity Surveys was provided to local research staff (6 participants) at **PNCD in October 2016** by **WCS** staff Norbert Gami (**WCS**'s Socio-Economic Senior Technical Advisor) and Diane Detoeuf (**WCS'**s Socio-Economic Technical Assistant).

Output 2: Enforcement efforts and local capacity: With regard to increasing enforcement capacity (**Activity 2.1**), **WCS** identified the training partner in June 2016 – *'Maisha Consulting'*, who have provided a number of ecoguard training sessions elsewhere in Congo and Central Africa. Maisha will work in partnership with Colonel Aristide Botonga, the focal point for paramilitary training within **MEFDDE**, as well as two staff from the local military headquarters to deliver the training. However, as a result of cabinet reshuffle and changes in the park management, the delivery of this activity was cancelled in November 2016, leading to ongoing discussions with **MEFDDE** about possible future dates. The departure of Dr Vanleeuwe (**WCS**), the previous coordinator of **PNCD** and WCS cetacean expert Tim Collins, meant that **WCS** also had to recruit both a new coordinator and boat pilot (the latter was the only fully qualified and licenced boat pilot who provided previous training). As previously reported, Bryan Curran was recruited to replace Dr Vanleeuwe in June 2016, and a new boat pilot was identified as of December 2016 (start date is tbc. given the required documents, licences, visa's and permits that need to be in place). **Rénatura's** engagements with **MAEP**, however, have led to several at-sea patrols that have secured penalties for illegal fishing vessels (**see annex 4 Fig. S8)**. Given the increased willingness by **MAEP** to undertake future patrols the project submitted a change request to provide more funds to support such work (**see Section 3.2 and Annex 4**). As indicated above engagement with fishing communities has far exceeded targets with 100% of landing sites engaged in participatory data collection (**Activity 2.2 & 2.3**), providing detailed information on both the scale and spatial distribution of illegal, unregulated and unreported (IUU) fishing and its associated economic impact on fishers along Congo's coastline (**see section 6**).

Outputs 3 and 4: Fisheries Engagement and awareness raising: Work has commenced a year ahead of schedule to address knowledge gaps associated with the spatiotemporal distribution of industrial fishing effort (**Activity 3.1**), leading to several new data layers as detailed above in output 1 (**see annex 4 Fig. S5**). This was the result of increased engagement with **MAEP** who were able to provide project partners with a letter of support to access historical VMS data held by CLS (**see annex 4 Fig. S2**). To complement historical data, project partners have also been deploying GPS trackers on industrial fishing vessels to ascertain whether spatial patterns of legal and illegal fishing effort have remained the same. As a result, 4 of 7 industrial fisheries companies are engaged in participatory data collection being led by **Rénatura** and **MAEP** in Pointe Noire (**Activity 4.1 & 4.2**). Training in the configuration and deployment of these GPS trackers was provided by the **DRF** in

November 2016. As a result of more comprehensive and fine-scale spatial data on shipping and fisheries, project partners have also been able to commence threat mapping a year earlier than expected (**Activity 3.2**). These data have thus been used to identify which ecosystems and the characteristics of areas (e.g. distance offshore and depth) are the focus of substantial pressure, and thus negative impacts (**see annex 4 Fig. S9 & S10**).

3.2 Progress towards project outputs

Output 1:	**Marine spatial planning**			**Comments**
	Baseline	*Change recorded*	*Evidence*	
Indicator 1.1 - Policy relevant realistic targets and management scenarios identified through a 2-day stakeholder workshop. *N.B. all information is to be compiled into a single strategy document covering all sectors to support MSP in Congo.*	Baseline = 0 national scale marine planning workshops	Increased participation and engagement by key ministries as a result of regular meetings. Final confirmation of date for a 2-day stakeholder workshop.	See section 2 and 3 of the report and Annex 4 Fig S3 for evidence of the signed workshop invitation.	Official invitation has been signed and disseminated to participants from across fisheries, hydrocarbons, environment, and research sectors, as well as NGOs and private sector companies.
Indicator 1.2 - Enhanced capacity and technical expertise to deliver a scientifically evidenced marine spatial plan as a result of updated Darwin Marine Biodiversity Atlas (incorporating ≥ 20 new data layers). *N.B. All data will now be compiled into a single source national strategy document to support MSP (see annex 4 Fig S11).*	Baseline = 113 spatial data layers	33 new data layers on maritime shipping (i.e. intensity, occupancy and pressure maps for 11 sectors). 3 annual and 12 monthly data layers on the spatial distribution of industrial fisheries effort Total = 161	See sections 3, 4, 6 of the report and Annex 4 for detailed information and spatial maps on these new data layers.	Commenced ahead of schedule. Additional data layers will continue to be compiled as data is obtained and incorporated into the national strategy document.
Output 2:	**Enforcement efforts and local capacity**			**Comments**
	Baseline	*Change recorded*	*Evidence*	
Indicator 2.1 - Increase in the number of formally trained Congolese boat pilots to ≥ 2 by end of year 3, Q1.	Baseline = 1	As of 2017 a new boat pilot has been identified to assist with training.	See section 3 of the report	Indicator still valid. Increased focus in FY2 on identifying participants from **MAEP** who could attend training.
Indicator 2.2 - Increased capacity for marine surveillance and enforcement initiatives enhanced by marine teams attending study exchange with enforcement teams from WCS and ANPN in Mayumba National Park which borders CDNP in neighbouring Gabon (1 x 10 day training workshop).	Baseline = 0	0 *N.B. Delayed as a result of time required to recruit a qualified boat pilot to support training.*	See section 3 of the report	Indicator still valid. To address lack of training in YR1 two training sessions will be held in YR2.
Indicator 2.3 - Increase in the number of regular enforcement patrols at sea by 200% to a minimum of 3 per month in year 3.	0 – 1 per month	0 – 1 per month boat missions undertaken by **MAEP** and **Rénatura**	See section 3 of the report and Annex 4 Fig S8 for copies of mission reports.	Indicator still valid. Increase in boat missions projected following recruitment of new boat pilot and partnership

				with **MAEP**.
Indicator 2.4 - At least 25% of 28 fisheries dependent communities engaged in collecting IUU fishing data to inform targeted enforcement efforts based on participatory data collection by year 2 Q3 (2 x 2 day training workshops in year 1 Q2).	Baseline = 0	1 x 3 day training (May 2016) and 1 x 3 day evaluation (June 2016) of 3 local staff – Resulted in 221 fishers engaged in participatory data collection including IUU reporting from across 30 sites (100%)	See section 3, 4, 6 of the report and annex 4 for statistics.	Indictor still valid. Fisher surveys exceeded project targets resulting in the first national scale socioeconomic survey of fishers.
Indicator 2.5 - Effectiveness of increased enforcement and surveillance initiatives on marine biodiversity (ecological spill-overs) and fisheries livelihoods will be assessed in 25% of 28 fishing communities to identify positive or negative impacts on fisheries catches, and economic losses. Baseline generated year 1 and re-evaluated in years 2 and 3.	Baseline = 0	221 fishers from across 30 sites (100%) engaged in participatory data have generated detailed information on the demographics of fishers, value of assets, income derived from fishing/fisheries catches as well as perceptions of contribution of fisheries to livelihood as well as the scale and economic impact of IUU fisheries activity.	See section 3, 4, 6 of the report and annex 4 for statistics.	Indictor still valid.
Indicator 2.6 - Development of online spatial database (year 1 Q1-Q2) to host IUU data collected by focal fishing communities and surveillance patrols leading to increased knowledge of spatiotemporal trends of IUU fisheries activity. Results will lead to more informed and targeted enforcement efforts (and increased awareness at a national level) by year 1 Q4.	Baseline = 0	Increased understanding on the scale and distribution of IUU following fisher surveys along entire coast rather than in original 12 focal communities. *N.B. A change request has been submitted. Following data gained from the fisher surveys it was deemed essential by partners to reallocate funding to enforcement missions. Additional fisher surveys, however, will be repeated across all sites in YR3 to evaluate changes in IUU. A copy of the change request has been included in Annex 4.*	See section 3, 4, 6 of the report and annex 4 for copy of submitted change request.	Change request has been submitted. Data will still be compiled on spatiotemporal distribution of IUU but not in an online spatial database. Funding allocated to this activity will thus be allocated to support increased enforcement efforts (e.g. boat patrols).
Output 3:	**Industrial and IUU fisheries**			**Comments**
	Baseline	*Change recorded*	*Evidence*	
Indicator 3.1 - Baseline knowledge of spatiotemporal patterns of industrial fisheries activity and its conflict / overlap with artisanal fisheries quantified and described. Minimum 5 data layers incorporated into existing Marine Biodiversity Atlas for the Republic of Congo by year 2 Q1-Q4.	Baseline = 0	Analysis of historical VMS data resulted in 3 annual and 12 monthly data layers on the spatial distribution of industrial fisheries effort. Participatory data collection (GPS tracking) with 3 of 7 fishing companies resulted in 1 data layer on present spatial distribution of industrial fishing effort	See section 3 and 4 of the report and annex 4 for maps and spatial statistics.	Indicator still valid. Activity has commenced ahead of schedule
Indicator 3.2 - Baseline knowledge of magnitude and spatiotemporal patterns of IUU fisheries using data	Baseline = 0	Analysis of historical VMS data resulted in 3 annual and 12 monthly data layers on the spatial distribution of industrial fisheries effort.	See section 3 and 4 of the report and annex 4 for maps, spatial	Indicator still valid. Activity has commenced ahead of schedule

collected by fishers engaged in participatory research. Extent of area illegally exploited quantified and described. Minimum 5 data layers incorporated into existing Marine Biodiversity Atlas for the Republic of Congo by year 2 Q3-Q4.		Participatory data collection (GPS tracking) with 4 of 7 fishing companies resulted in 1 data layer on present spatial distribution of industrial fishing effort. Additionally, fisher surveys have revealed the scale of economic impact associated with IUU.	statistics and economic valuations.	
Output 4:	**Engagement and awareness raising**			**Comments**
	Baseline	*Change recorded*	*Evidence*	
Indicator 4.1 - Engagement with industrial fishing operators (n = 5 companies) underway by year 1 Q3 facilitating awareness raising initiatives and contribution to stakeholder-led marine spatial planning process (Output 1) with participatory research underway in year 1 Q4.	Baseline = 0	Participatory data collection (GPS tracking) with 4 of 7 fishing companies resulted in 1 data layer on current spatial distribution of industrial fishing effort	See section 3 and 4 of the report and annex 4 for maps.	Indicator still valid.
Indicator 4.2 - Representatives from each industrial fishing operator (n = 5 companies) attend 1-day workshop to establish current knowledge of rules and regulations and the perceived level of enforcement and risk to help understand the drivers behind IUU fisheries activity.	Baseline = 0	Meetings held with SOCOPEC to discuss data sharing. In addition, 4 of 7 companies are engaged in collaborative data collection and/or engagement with the project. *N.B. project partners are continuing to engage with additional companies.*	See section 3 and 4 of the report and annex 4 for maps.	As of 2017 2 of the original 9 companies have ceased operating in Congo – thus our original target to engage with 5 (55%) of the 9 companies is still being achieved – i.e. 4 (57%) of 7. A workshop with fishers is being planned for FY2.

3.3 Progress towards the project Outcome

Outcome:	Baseline	Change recorded	Evidence	Comments
Indicator 0.1 - Marine protected area network that covers at least 10% of Republic of Congo's EEZ, including community and industrial fishing zones based on robust research and participatory design.	Baseline = 3%	Increased knowledge to support MSP with data available for all key ocean user-groups. In addition, government has committed to implementing a special marine conservation zone in the Bay of Loango, with ministers also discussing a possible extension to **PNCD**.	See section 3.4 of the report and annex 4 for maps and spatial statistics.	Indicator still valid. If new marine conservation zone and extension to PNCD is implemented > 10% of EEZ will be protected.
Indicator 0.2 - Increased knowledge of the spatial distribution of industrial and IUU fisheries activity, based on participatory research leading to increased effectiveness and targeted enforcement initiatives to support fisheries regulations.	Baseline = 0	Analysis of historical VMS data and GPS tracking of vessels operated by 3 of 7 fishing companies in combination with fisher surveys has revealed the spatial distribution and scale of economic impact associated with IUU.	See section 3, 4 and 6 of the report and annex 4 for maps, spatial statistics and economic valuations.	Indicator still valid. Data will be used to inform targeted enforcement efforts.
Indicator 0.3 - Increased knowledge of drivers behind IUU fisheries	Baseline = 0	Project has engaged with 4 of 7 fishing companies operating fishing vessels.	See section 3 of the report and annex 4	Indicator still valid. Given the prevalence of

activity based on participatory research will provide decision makers with data to promote more effective governance of marine resources and reduce illegal fishing.			for maps, spatial statistics.	IUU fishing this aspect of the project will require extensive engagement.
Indicator 0.4 - Economic losses for fishers associated with loss of equipment by industrial and IUU fisheries activity (e.g. nets and buoys) reduced by 50% in focal fishing communities.	Baseline = 0	Fisher surveys have revealed the spatial distribution and scale of economic impact associated with IUU.	See section 3, 4 and 6 of the report and annex 4 for maps, spatial statistics and economic valuations.	Indicator still valid. Data will form baseline from which subsequent years will be evaluated.
Indicator 0.5 - Number of IUU fisheries infractions reduced by 50%.	Baseline = 0	Spatial distribution and scale of economic impact associated with IUU.	See section 3, 4 and 6 of the report.	Indicator still valid. Still too early to assess

3.4 Monitoring of assumptions

All outcome risks and assumptions remain valid:

Assumption 1: *"Host country remains politically stable, and government remains committed to establishing MPA network, as well as improving fisheries enforcement, and developing a national management plan to support the sustainable use of marine resources".* To date Congo remains peaceful, and there were no economic changes/disasters following the results of the national election in April 2016. Whilst delays occurred to the delivery of the stakeholder workshop (**see section 3 & 9**), evidence of the government's commitment to protect marine resources are demonstrated by: (1) provision of a valid research permit (**see annex 4 Fig. S1**); (2) support for access to data from external agencies (**see section 3 & annex 4 Fig S2**); and (3) the recent announcement at the 'Our Ocean' conference in Washington, DC (September 2016) where they committed to creating a *"special marine conservation zone of 1,970 km^2 in Loango Bay..."*, based on monitoring data analysed by project partners and increasing the amount of Congo's EEZ under formal protection from 3% to 8% (project target is 10%). There is also evidence that government would like to extend **PNCD** with a talk being presented on this topic by government at the stakeholder workshop.

Assumption 2: *"Fisheries sectors continue to engage in participatory research and IUU fisheries reporting to inform targeted enforcement efforts"*. This project has succeeded in engaging with individuals from 100% of fisheries dependent communities as part of a program to evaluate the socioeconomic contribution of the artisanal fisheries sector (project target was 25%; **see section 3 & 6**). **Rénatura** and **MAEP** have also succeeded in engaging 4 of 7 industrial fishing companies currently registered in Congo in participatory data collection on vessel movements (**see section 3**).

Assumption 3: *"Partners retain key staff and/or have the ability to appoint replacements, and continue to collect, share and disseminate data"* **Comments:** Local research assistants trained as part of Darwin Initiative project (20-009) were retrained to collect a range of new socioeconomic data from individual fishers, and supported the field based training of a new individual (total trained n = 4). All project partners continue to work well together to collate and analyse data that will support more effective marine spatial planning, as evidenced by communication between partners to obtain access to government procured data (s**ee annex 4 Fig. S2**).

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

The overall aim of the project is to improve marine resource governance, through participatory research that leads to the development of a marine spatial plan that meets biodiversity objectives; whilst contributing to food security and poverty alleviation in coastal communities. The latter will be achieved through the establishment of community and industrial fishing zones that reflect actual patterns of resource use rather than arbitrary delineations. In terms of biodiversity developments,

significant efforts have been made to identify ecologically important areas through the collation of spatial data on species/habitat distributions. To address a lack of biodiversity data in offshore areas, marine mammal surveys were conducted by Tim Collins (**WCS**) and 2 local research assistants from **PNCD** in October-November 2016 (**see annex 4 Fig S12**). These data in combination with data on the modes of operation and spatial distribution and patterns of maritime vessels and fishing effort by small-scale artisanal and industrial fisheries (**see section 3; annex 4 Figs. S4 & S5**) ensures that all key ocean-user groups will now be incorporated into future decision making processes. The value of these new data on vessel movements is clear from a biodiversity perspective, and can be used to identify which ecosystems and the characteristics of areas (e.g. distance offshore and depth) are focus of substantial pressure(**see annex 4 Fig. S9 & S10**). More importantly, socioeconomic surveys of the artisanal fisheries sector have for the first time highlighted the economic contribution of this sector to the local economy at a national scale (**see section 3 and 6**) – which will be used to minimise opportunity costs when designing marine protected areas closed to fisheries.

4. Contribution to SDGs

This project aims to **alleviate pressure** on fisheries-dependent communities, and contribute to multiple **Sustainable Development Goals** by **reducing poverty** (**Goal 1**), **increasing food security** (**Goal 2**) and **promoting sustainable use** (**Goal 14**) through: (1) the implementation of a network of MPAs, that will increase the size and abundance of target species; (2) improving management effectiveness by **securing access rights** for fishers by creating community fishing zones which will be off-limits to the industrial fleet; (3) **increasing enforcement capacity,** thereby **reducing competition and economic losses** associated with gear loss by illegal mechanised trawling in waters reserved exclusively for artisanal fisheries. In this context, the project has mapped the spatial footprint of artisanal and industrial fisheries sectors, and identified the size and attributes (i.e. distance offshore and depth) of important fishing grounds which fisheries dependent communities are reliant upon for their livelihoods. Additionally, increased engagement with **MAEP** and industrial fisheries companies through analysis of historical VMS data and recent GPS tracking has in combination with socioeconomic survey data led to increased awareness about the scale and economic impact associated with IUU (**see section 3 & 6**). For example, the footprint occupied by the industrial fisheries sector is equivalent to 22.3% of Congo's EEZ (8,189 km^2), of which 12% (1,080 km^2) is found within **PNCD** and 14% (1,203 km^2) within the artisanal fisheries zone, equivalent to 77% and 65% of their respective areas (**see annex 4 Fig. S4**).

5. Project support to the Conventions, Treaties or Agreements

The overall aim of the project is to improve marine resource governance (**CBD Articles 5**, **12**, **17**), thereby assisting Congo in fulfilling its commitments to the **CBD** and **CITES**. In this context, the project has focused on analysing fine-scale spatial and socioeconomic data in YR1 (**see annex 4 Fig. S4 & S5**) to inform the development of a national strategy document (**CBD Article 6**). This will be achieved in YR2 through the establishment of a marine spatial plan that identifies a network of marine protected areas (**CBD Article 8**) that protect a minimum of **10%** of Congo's coastal and marine **key biodiversity areas** (**Aichi Target 11**), and **integrates resource-users** and **participatory data** (**see annex 4 Fig. S6**) into the decision-making process (**CBD Article 10**). Moreover, through increased engagement (**Aichi Targets 14**, **18**) the project is focused on **increasing food security** and **poverty alleviation,** by **securing access rights** through the creation of community and industrial fishing zones that reflect actual patterns of resource use, rather than arbitrary delineations (**Aichi Targets 1**, **6**, **12**, **14**). Furthermore, increased engagement with government agencies (e.g. **MAEP**) and the industrial fishing sector is aimed at arresting the causes and drivers behind illegal behaviour to **reduce conflict** (**see section 4 & 6**).

6. Project support to poverty alleviation

The artisanal fisheries sector in Congo employs an estimated 2,600 fishers. However, data on the socioeconomic contribution of this sector has until recently been based on historical data from a handful of surveys and/or sites. To address this knowledge gap the project conducted the first

national scale fisher survey to provide estimates of annual revenue generation, operating costs, net income, profitability and dependency that can be used to: (A) better understand the social and economic status of communities; and (B) understand the socioeconomic contribution, and vulnerability of small-scale fisheries to illegal unreported and unregulated (IUU**)** fishing effort; thereby allowing fisheries governance and the national strategy (i.e. marine spatial plan) to be shaped according to the specificities and vulnerability context of those operating in this sector. From a total of 221 respondents (equivalent to ~9% of estimated fishers operating in this sector) across 30 (100%) sites, we estimated that small-scale fisheries generate an estimated $3,141,581 USD per year (excluding downstream benefits), and that the average net income was $3,633 USD per fisher per annum, and the average losses associated with IUU are $1,082 USD per fisher per annum, which is equivalent to 29.8% of fishers estimated net income (**see section 3; annex 4 Fig S7**). As the project progresses these data will be used to: (A) inform targeted enforcement efforts (at-sea patrols) – reducing conflict; (B) work with government agencies to reduce IUU – leading to increased compliance; and (C) monitor and evaluate changes in economic impact associated with increased enforcement (through follow up surveys).

7. Project support to Gender equality issues

This project is primarily focused on transforming marine resource governance with respect to fisheries and marine management practices. Whilst significant aspects of this work are focused on working with fishers whom are male, the implementation of community fishing zones and increased enforcement efforts will likely long-term a benefits on resource availability, which will have positive impact on traders which are predominantly female. Please also note that the project was, designed to provide a broad range of technical, field-based and analytical skills to local staff (both male and female) at a range of levels from locally trained research assistants to senior programme officers, and government officials.

8. Monitoring and evaluation

Please see section 3.2 and 3.3 for details about monitoring and evaluation of project outputs. Please also note that Dr Richard Parnell (**see section 2**) has been drafted in to evaluate the project's progress, and lead on the assessment of the current status of available data and identify key data/policy gaps (based on experiences in Gabon). Evaluation of project activities is also compiled in a reporting database that details progress, changes and timeframes for delivery of project activities (**see annex 4 Fig S13**).

9. Lessons learnt

As highlighted there have been delays in arranging a national scale marine spatial planning workshop with representatives from each of the relevant ministries (**see section 3**). This was largely because of a cabinet reshuffle following the national election in April 2016. Whilst this has not impacted overall engagement with **MAEP** and **MEFDDE**, or on the delivery of certain activities (**see section 2 & 3**), the project had to wait for the new ministers to nominate their new technical teams and take a direct role in inviting participants to the workshop. The importance of ministers inviting participants is key to the success of workshops in Congo as it is essential to have buy-in for the project at all levels before Departmental Directors from different agencies will attend. We therefore suggest that future projects look at the political timetable in more detail, and consider what impact this may have on the delivery of project outputs. As a result the project will liaise earlier than planned with **MAEP** and **MEFDDE** (YR2 Q3-Q4) to identify an appropriate date for future stakeholder workshops (YR3 Q2).

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

n/a

11. Other comments on progress not covered elsewhere

Please see section 9.

12. Sustainability and legacy

With respect to the long-term sustainability, the Darwin Initiative project is focussed on transforming marine resource governance with respect to fisheries and marine management practices through the delivery of a national marine spatial planning strategy document (**see annex 4 Fig S11**). Such a strategy ultimately requires fine-scale spatial information on different ocean user groups as well as detailed socioeconomic data, something that until recently was lacking for several sectors (i.e. shipping and industrial fisheries). Thus, the national-scale shipping and industrial fishing data collated in YR1 demonstrates the increase in available knowledge to support an evidence based marine spatial plan. Moreover, the capacity of project partners and government agencies to understand the spatial patterns and impact of IUU have been increased through a combination of historical spatial data analyses derived from VMS and recent GPS tracking, as well as socioeconomic surveys conducted in local communities (**see section 4 and 6; annex 4 Fig. S5 & S7**). These data thus provide a wealth of information to inform targeted enforcement strategies as a result of an increased understanding of vessel behaviours.

13. Darwin Identity

All project presentations, maps, training materials and survey instruments include the Darwin Initiative logo and acknowledge the financial support provided through DFID/DEFRA, with links and/or logos' to their respective websites. Given that a previous Darwin Initiative funded project covered the Republic of Congo (Ref: 20-009), Darwin Initiative is already recognised at a ministerial level as a distinct project where it comprises the key funding partner in an action (e.g. socio-economic and participatory data collection), and as a collaborative partner in larger programmes where actions cover established efforts such as marine mammal and sea turtle monitoring (e.g. training / enforcement / awareness raising and outreach). Research, awareness and outreach activities undertaken by all partners are publicised through a variety of social media including twitter (using #DarwinInitiative or @Darwin_Defra). **WCS** Congo and country program director Mark Gately as well as Professor Brendan Godley and Dr Kristian Metcalfe (**UoE)** periodically promote project activities and outputs in-country using twitter @wcs_congo (1,684 followers) @GatelyMark (22.8K followers) @BrendanGodley (10.3K followers) @_KMETCALFE (673 followers). An example of the value of social media to disseminate project outputs is highlighted by a recent project publication, in which a graphical abstract (**see annex 3 Table 2 & Fig. S14**) was tweeted 161 times with an upper bound of 348K followers (see Altmetric score).

14. Project Expenditure

Table 1 Project expenditure during the reporting period (1 April 2016 – 31 March 2017)

Project spend (indicative) since last annual report	2016/17 Grant (£)	2016/17 Total Darwin Costs (£)	Variance %	Comments (explain significant variances)
Staff costs (see below)			-2.51	
Consultancy costs	0	0	-	Agreed to transfer £5,000 to operating costs in Y2
Overhead Costs			-	
Travel and subsistence			4.12	
Operating Costs			-0.10	
Capital items (see below)			10	
Monitoring & evaluation			-0.29	
Others (see below)			-8.40	
TOTAL				

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2016-2017

Project summary	Measurable Indicators	Progress and Achievements April 2016 - March 2017	Actions required/planned for next period
Impact: Poverty alleviation, increased food security and sustainable use of marine biodiversity through improved governance and regulation of fisheries resources and the implementation of an effectively managed marine protected area network.		▪ In terms of improving national capacity the project has been exceptionally productive in analysing fine-scale spatial and socioeconomic data to fill gaps in ocean observation data to support future marine spatial planning efforts. Increased data availability has also led to government commitments to establish a marine conservation zone in Loango Bay.	[redacted]
Outcome: Improved food security, poverty reduction and biodiversity conservation in coastal communities through effective governance of fisheries resources and implementation of evidence-based marine spatial plan that integrates MPAs and fisheries zones.	▪ Marine protected area network that covers at least **10%** of Republic of Congo's EEZ, including community and industrial fishing zones based on robust research and participatory design. ▪ Increased knowledge of the spatial distribution of industrial and IUU fisheries activity based on participatory research leading to increased effectiveness and targeted enforcement initiatives to support fisheries regulations. ▪ Increased knowledge of drivers behind IUU fisheries activity based on participatory research will provide decision makers with data to promote more effective governance of marine resources and reduce illegal fishing.	▪ At the *'Our Ocean'* conference in Washington, DC (September 2016) the government of Congo committed to creating a *"special marine conservation zone of 1,970 km2 in Loango Bay . . .",* based on monitoring data analysed by project partners. Thereby, increasing the amount of Congo's EEZ under formal protection from 3% to 8%. Government ministers are also discussing a possible extension to PNCD which would likely see marine protection exceed 10% target. ▪ In terms of improving national capacity the project has been exceptionally productive in analysing fine-scale spatial and socioeconomic data (e.g. industrial	▪ Develop National Marine Spatial Planning document incorporating data on all biological features, ecological processes and ocean user-groups. ▪ Produce species action plans based on threat mapping to support MSP efforts. ▪ Produce marine spatial planning scenarios and hold stakeholder meetings. ▪ Deliver enforcement training workshops and boat based skills training

	▪ Economic losses for fishers associated with loss of equipment by industrial and IUU fisheries activity (e.g. nets and buoys) reduced by **50%** in focal fishing communities. ▪ Number of IUU fisheries infractions reduced by **50%**.	and artisanal fisheries and shipping) to fill gaps in ocean observation data and support more effective marine spatial planning efforts. ▪ Engagement with fisheries dependent communities has also resulted in increased understanding on the spatial distribution and scale of economic impact associated with IUU along the coast.	
Output 1. Marine Spatial Planning: Evidence-based stakeholder-led process resulting in the implementation of a marine spatial plan that includes marine protected areas that protect at least **10%** of the Republic of Congo's EEZ as well as **community and industrial fishing zones** based on realistic goals identified by stakeholder groups, research and participatory design.	▪ Policy relevant realistic targets and management scenarios identified through stakeholder workshop in with findings disseminated to local and national organisations. Dissemination workshop will contribute to local and national awareness of project results and outcomes. ▪ Enhanced capacity and technical expertise to deliver a scientifically evidenced marine spatial plan as a result of updated Darwin Marine Biodiversity Atlas supported by training of biodiversity/fisheries professionals within government agencies to use data for marine spatial planning. ▪ Participatory planning workshop implemented to develop marine spatial plan using available information on marine biodiversity, resource extraction, artisanal and industrial fisheries data and supported by	▪ Evidence of the government's commitment to protect marine resources is demonstrated by: (1) provision of a valid research permit (see annex 4 Fig. S1); (2) support for access to data from external agencies (see section 3 & annex 4 Fig S2); and (3) the recent announcement at the 'Our Ocean' conference in Washington, DC (September 2016) to create a "special marine conservation zone in Loango Bay, as well as discussions around a possible extension to PNCD. The project has also led to increase in fine-scale spatial and socioeconomic data that can be used to support more effective marine spatial planning efforts.	

	Marxan with Zones analyses of priority areas, community and industrial fishing zones.	
Activity 1.1 Workshops: Project launch (stakeholder workshop).		▪ **Completed Activities FY1:** The date for a 2-day stakeholder workshop has been finalised for 7th – 8th April 2017 in Pointe Noire. ▪ **Planned Activities FY2:** Work with partners to identify priority areas for marine biodiversity to feed into the design of the new marine conservation zone proposed in Loango Bay and the possible extension of PNCD. Conduct marine spatial planning analyses with partners and work with stakeholders to evaluate designs. As a result of delays in the stakeholder workshop in YR1 the project will liaise earlier than planned with project partners, **MAEP** and **MEFDDE** (YR2 Q3-Q4) to identify an appropriate date for future stakeholder workshops, most notably those based on scenario planning/evaluation (YR3 Q2).
Activity 1.2. Darwin Marine Biodiversity Atlas: Spatial data analysis leading to updated atlas.		▪ **Completed Activities FY1:** Following several meetings with government agencies and key stakeholders, the project will now produce a single strategy document, which will include spatial data on marine biodiversity, ecological processes and all ocean user-groups, as well alternative planning scenarios. The structure of this document has been outlined with project partners. Fine scale analysis of shipping and industrial fishing data derived from AIS and VMS, respectively has addressed key knowledge gaps, with > 48 new data layers developed. N.B. A publication on the application of satellite AIS data to support marine spatial planning was completed by project partners in February 2017 and submitted to Journal of Applied Ecology in March 2017 (see Annex 3 Table 2). Please also see Annex 4 Fig S11 for extracts of the strategy document that is currently under development. ▪ **Planned Activities FY2:** Completion of phase 1 and 2 of the marine spatial planning strategy document and commencement of phase 3 the identification and evaluation of different planning scenarios using data gathered in FY1 will be the focus in the forthcoming year.
Activity 1.3 Training: Field data collection techniques.		▪ **Completed Activities FY1:** To address knowledge gaps on the socioeconomic contribution of artisanal fisheries sector as well as scale and

		distribution of IUU, 3 local research assistants were trained in May – June 2016 and a further assistant in November 2016. This research team worked independently across 30 (100%) fishing communities to deliver the first national scale fisher survey (exceeding project target of 25% of fishing communities) with a total of 221 respondents (~9% of estimated fishers). **Planned Activities FY2:** Additional surveys have been proposed in FY2 (April 2017) to increase sample size for some of the larger sites based in the city of Pointe Noire. Detailed analysis of fisher survey data to derive information on the social and economic status of fishers is planned for May/June 2017 (in collaboration with of Dr Ana Nuno (**UoE**) Darwin Research Fellow working in Principe), leading to submission of publication/policy paper on fisheries. In addition, FY2 will involve the development of GIS material to support the MSP training workshops in FY3.
Output 2. Enforcement Capacity: Increased number and effectiveness of IUU fisheries monitoring, surveillance and enforcement initiatives as a result of increased capacity and technical expertise, leading to increased protection, reduced conflict and fishing pressure in coastal and nearshore waters legally reserved for artisanal fishers.	▪ Increase in the number of formally trained Congolese boat pilots. ▪ Increased capacity for marine surveillance and enforcement initiatives enhanced by marine teams attending exchange with enforcement teams from **WCS** and **ANPN** in Mayumba National Park, which borders **CDNP** in neighbouring Gabon. ▪ Increase in the number of regular enforcement patrols at sea by **200%** to a minimum of **3 per month**. ▪ At least **25%** of 28 fisheries dependent communities engaged in collecting IUU fishing data to inform targeted enforcement efforts based on participatory data collection. ▪ Effectiveness of increased enforcement and surveillance initiatives on marine biodiversity (**ecological spill-overs**) and fisheries	▪ Whilst there have been delays in the delivery of training to improve enforcement capacity as a result of cabinet reshuffle and changes in the park management the project has increased knowledge base on the spatial distribution and scale of economic impact associated with IUU fishing – resulting from nationwide fisher surveys and fine-scale analysis of historical and present fishing data. This information will ensure that project partners will have access to more detailed data to support more informed targeted enforcement efforts. **Rénatura** continue to support **MAEP** to undertake fisheries enforcement missions from Pointe Noire, given the success of this partnership funding has been proposed to be reallocated to maintain momentum and build on recent successes.

	livelihoods will be assessed in **25%** of 28 fishing communities to identify positive or negative impacts on fisheries catches, and economic losses. ▪ Development of a database to host **IUU** data collected by focal fishing communities and surveillance patrols leading to increased knowledge of spatiotemporal trends of IUU fisheries activity.	
Activity 2.1. Training: Boat handling, maintenance, surveillance and enforcement techniques, data collection.		▪ **Completed Activities FY1:** Fisher surveys were conducted across 30 (100%) landing sites along the coast, which included questions to better understand the spatial distribution and economic impact of IUU (see Activity 1.3 above). Training was provided to **Rénatura** to support participatory data collection on present distribution of industrial fishing effort through GPS tracking. **WCS** identified training partner in June 2016 – *'Maisha Consulting'* who will work in partnership with Colonel Aristide Botonga, the focal point for paramilitary training within **MEFDDE**, as well as two staff from the local military headquarters to deliver training workshops (the date of the training is still to be confirmed). ▪ **Planned Activities FY2:** Project partners will focus on delivering two training workshops to improve local enforcement capacity in YR2 to address the delay in training scheduled for YR1. This training will focus on types of information that should be collected and recorded during patrols and the development of reporting data sheets and document templates for mission reporting.
Activity 2.2 and 2.3 Engagement with fishers and data collection: Fishing communities engaged in participatory data collection providing information on livelihoods, IUU fisheries activity, and fisheries catches. ≥		▪ **Completed Activities FY1:** Fisher surveys have generated detailed information on the demographics of fishers, value of assets, income derived from fishing/fisheries catches as well as perceptions of contribution of fisheries to livelihood as well as the scale and economic impact of IUU fisheries activity. ▪ **Planned Activities FY2:** Project partners will continue to engage with industrial fishing companies to collect data, through: (1) GPS tracking; (2) engagement with company owners (such as SOCOPEC) to ascertain the

		drivers behind IUU fishing effort in Congo.
Activity 2.4 IUU fisheries reporting: IUU reporting.		▪ **Completed Activities FY1:** Maps have been produced on the spatial distribution of industrial fishing effort to support patrols and enforcement efforts. Please note a change request has been submitted to reallocate funding for the online reporting database to enforcement missions following the collation of the above data. ▪ **Planned Activities FY2:** Socio-economic data on scale and impact of IUU will be used to help target enforcement patrols around the most vulnerable communities. Project partners will focus on increasing enforcement missions in FY2. Baseline data on economic losses associated with IUU in FY1 will be re-evaluated in FY3 (to evaluate impacts of changing patrol effort).
Output 3. Industrial and IUU fisheries: More effective governance and management of fisheries through increased knowledge of the operating behaviour, spatiotemporal patterns of industrial and IUU fisheries activity, leading to a more effective understanding of the scale of conflict with artisanal fishers and overlap with key biodiversity areas and species of conservation concern.	▪ Baseline knowledge of spatiotemporal patterns of industrial fisheries activity and its conflict / overlap with artisanal fisheries quantified and described. ▪ Baseline knowledge of magnitude and spatiotemporal patterns of IUU fisheries using data collected by fishers engaged in participatory research. Extent of area illegally exploited quantified and described. ▪ Distribution maps for at least 10 species of conservation concern (i.e. sharks, turtles and cetaceans) developed through analysis of existing available field data (e.g. satellite tracking / boat surveys) and overlap with industrial and IUU fisheries quantified by year 2, Q4 (current zero baseline). ▪ Potential interventions to reduce bycatch in each fishery sector identified, costed, and species action plans developed for marine mammals,	▪ This activity has commenced a year ahead of schedule. To address current knowledge gaps on the scale, impact and spatial distribution of IUU the project partners have focused on: (1) fisher surveys; (2) analysis of historical data on industrial fishing through VMS data (from 2012); and (3) participatory data collection on present distribution of industrial fishing effort through GPS tracking. These data have led to the development of several fine-scale spatial data layers that will be used to support more effective/targeted enforcement efforts. N.B. A publication on combining community engagement with GPS tracking technologies to address knowledge gaps in marine resource management was accepted in open access journal Conservation Letters in August 2016 and published online in September 2016 (see Annex 3 Table 2).

	sharks, and sea turtles.	
Activity 3.1 Data analysis: Spatiotemporal patterns of industrial and IUU fisheries activity analysed.		▪ **Completed Activities FY1:** To address current knowledge gaps on the scale, impact and spatial distribution of IUU the project partners have focused on: (1) fisher surveys; (2) analysis of historical data on industrial fishing through VMS data (from 2012); and (3) participatory data collection on present distribution of industrial fishing effort through GPS tracking. Fisher surveys were conducted across 30 (100%) landing sites along the coast, which included questions to better understand the spatial distribution and economic impact of IUU (see Activity 1.3 above). Analysis of VMS data revealed detailed information on key fishing grounds, the spatial extent of industrial fisheries effort which was used to quantify the scale of illegal fishing. Participatory data collection has led to 4 of 7 industrial fishing companies providing GPS tracking data on present distribution of fishing effort, which largely matches historical data – further reinforcing that IUU fishing is highly prevalent. ▪ **Planned Activities FY2:** Project partners will continue to engage with industrial fishing companies to collect further participatory data to support targeted enforcement efforts and highlight to government the scale of IUU. In addition, these data will be complemented by more detailed species distribution models to support threat mapping and the development of specific species action plans (Activity 3.2 and 3.3) in YR2 Q3-Q4 (led by Dr Stephen Pikesely - **UoE** for sea turtles and Tim Collins – **WCS** for cetaceans).
Output 4. Engagement & Awareness Raising: More effective governance and management of the fisheries resources as a result of increased knowledge and understanding of the drivers behind IUU fisheries (based on participatory research), that can be used to assess behaviour change resulting from increased surveillance and enforcement efforts.	▪ Engagement with industrial fishing operator's underway, facilitating awareness raising initiatives and contribution to stakeholder-led marine spatial planning process using participatory research. ▪ Representatives from each industrial fishing operator attend workshop to establish current knowledge of rules and regulations and the perceived level of enforcement and risk to help understand the drivers behind IUU	▪ To support more effective marine spatial planning efforts, address current knowledge gaps and increase awareness on the scale, impact and spatial distribution of IUU, the project partners have worked closely with **MAEP** to obtain access to historical data on industrial fishing through VMS data (from 2012); and have commenced participatory data collection (i.e. GPS tracking) on present distribution of industrial fishing effort. These data have led to the development of several fine-scale spatial data layers which will be used to support more effective/targeted enforcement efforts that will be undertaken during FY2 and FY3.

	fisheries activity**.**	
Activity 4.1. and 4.2 Workshops and engagement with industrial fishing sector: industrial fishing companies engaged in participatory research and awareness raising initiatives.		▪ **Completed Activities FY1:** To address current knowledge gaps on the scale, impact and spatial distribution of IUU the project partners have focused on analysing historical data on industrial fishing through VMS data (from 2012); and participatory data collection (i.e. GPS tracking) on present distribution of industrial fishing effort. Analysis of VMS data revealed detailed information on key fishing grounds, the spatial extent of industrial fisheries effort which was used to quantify the scale of illegal fishing. Participatory data collection has led to 4 of 7 industrial fishing companies providing GPS tracking data on present distribution of fishing effort, which largely matches historical data – indicating that IUU fishing is highly prevalent. ▪ **Planned Activities FY2:** Project partners will continue to engage with industrial fishing companies to collect further participatory data to support targeted enforcement efforts and highlight to government the scale of IUU. Project partners will work with MAEP and industrial fishing companies to increase compliance through a planned fisheries meetings and awareness raising materials. These workshops will focus on fisheries law, location of fisheries zones and will attempt to ascertain the current knowledge of rules and regulations and the perceived level of enforcement.

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

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: Poverty alleviation, increased food security and sustainable use of marine biodiversity through improved governance and regulation of fisheries resources and the implementation of an effectively managed marine protected area network.			
Outcome: Improved food security, poverty reduction and biodiversity conservation in coastal communities through effective governance of fisheries resources and implementation of evidence-based marine spatial plan that integrates MPAs and fisheries zones.	**0.1** Marine protected area network that covers at least **10%** of Republic of Congo's EEZ, including community and industrial fishing zones based on robust research and participatory design identified by **year 3 Q2** (current **baseline 3%**). **0.2** Increased knowledge of the spatial distribution of industrial and IUU fisheries activity, based on participatory research by **year 3 Q2** leading to increased effectiveness and targeted enforcement initiatives to support fisheries regulations (current **zero baseline**). **0.3** Increased knowledge of drivers behind IUU fisheries activity based on participatory research leading will provide decision makers with data to promote more effective governance of marine resources and reduce illegal fishing by **year 3 Q2** (current **zero baseline**). **0.4** Economic losses for fishers associated with loss of equipment by industrial and IUU fisheries activity (e.g. nets and buoys) reduced by **50%** in focal fishing communities by **year 3 Q2**, based on more effective surveillance and	**0.1** Maps of candidate MPAs and fisheries zones (GIS data layers). Submission of reports and maps to Government agencies. Announcements, new legislation relating to designation of MPAs and community/industrial fishing zones. Press releases. **0.2** Data collection. Distribution maps (GIS data layers). Government /partner reports relating to creation of community and industrial fishing zones. Peer reviewed publication on fisheries. National Fisheries Management Plan – covering all fisheries sectors (artisanal, semi-industrial, industrial and illegal). **0.3** Data collection (IUU status report) Government /partner reports. Peer reviewed publication on IUU fisheries activity/behaviour. **0.4** Socio-economic data collection (household surveys, focus groups /fisher surveys to generate baseline data) to monitor effectiveness of interventions, and assess positive or negative impact on economic losses associated with gear loss.	Government remains committed to establishing MPA network, as well as improving fisheries enforcement and developing national fisheries management plan to support the sustainable use of marine resources. **Note 1: MEFDDE is a project partner, and was involved in identifying priorities, will benefit from capacity building and expansion of staff and will remain fully involved throughout the project**. Host country remains politically stable. **Note 2: Congo is generally peaceful and has been stable for several decades as stated by Foreign & Commonwealth Office (FCO).** Fisheries sectors continue to engage in participatory research, and IUU reporting to inform targeted enforcement efforts. **Note 3: Project 20-009 engaged with 82% of 28 fishing communities, the majority of which highlighted threat from IUU fishing that led to development of this project.**

	enforcement efforts (**Baseline** established during Project 20-009 and re-examined in **years 1, 2 and 3**). **0.5** Number of IUU fisheries infractions reduced by **50%** by end of year **3 Q2**. (**Baseline** to be elaborated **year 1** and re-examined in **year 2 and 3**).	**0.5** Data collection (IUU reporting data to monitor effectiveness of improved enforcement efforts and increased engagement with industrial fisheries). **Note: To support achievement of sustainable development goals all data and reports will be disseminated to project partners for future management.**	**These communities will thus be engaged to contribute to research to address this threat.** Retention of key staff / ability to appoint replacements. **Note 4: All partner staff involved in Project 20-009 will be engaged in this new project enhancing legacy and capacity of new Darwin Field Officers.** No major economic changes / disasters that could affect fisheries management.
Output 1. Marine Spatial Planning: Evidence-based stakeholder-led process resulting in the implementation of a marine spatial plan that includes marine protected areas that protect at least **10%** of the Republic of Congo's EEZ as well as **community and industrial fishing zones** based on realistic goals identified by stakeholder groups, research and participatory design.	**1.1** Policy relevant realistic targets and management scenarios identified through a **2-day** stakeholder (opening) workshop in **year 1 Q1,** with findings disseminated to local and national organisations by the end of **year 1 Q4.** Dissemination (closing) workshop **year 3 Q2** will contribute to local and national awareness of project results and outcomes. **1.2** Enhanced capacity and technical expertise to deliver a marine spatial plan as a result updated Darwin Marine Biodiversity Atlas (incorporating ≥ 20 new data layers; **year 2 Q4**) supported by training of **10 new** biodiversity/fisheries professionals within government agencies to use data for marine spatial planning by **year 3 Q1** (current **baseline is 10**). **1.3** Participatory planning workshop	**1.1** Workshops delivered (materials, number of attendees, certificates). Number of local, national and government agencies present. List of gaps/needs and key criteria to underpin marine spatial planning process disseminated to partners and government agencies. **1.2** Number of practical training days. Number of government staff trained. **1.3** Workshops delivered (number of attendees). Number of local, national and government agencies present. Marine spatial plan, candidate maps for the designation of marine protected areas, and community and industrial fisheries zones.	Partners remain committed to hosting training workshops. Trained individuals remain in employment with partner organisations. Retention of key staff / ability to appoint replacements.

	implemented to develop marine spatial plan using available information on marine biodiversity, resource extraction (e.g. petrochemical extraction) artisanal and industrial fisheries data and supported by Marxan with Zones analyses of priority areas, community and industrial fishing zones (2 x **2 day** participatory workshop in **year 3 Q1**). Workshop supported by GIS training in **year 1 Q3-Q4** and **year 3 Q1**.		
Output 2. Enforcement Capacity: Increased number and effectiveness of IUU fisheries monitoring, surveillance and enforcement initiatives as a result of increased capacity and technical expertise, leading to increased protection, reduced conflict and fishing pressure in coastal and nearshore waters legally reserved for artisanal fishers.	**2.1** Increase in the number of formally trained Congolese boat pilots to ≥ **2** by end of year **3, Q1** (Current number of pilots is **1** and lack of this capacity is a key factor impeding adequate marine enforcement efforts). **2.2** Increased capacity for marine surveillance and enforcement initiatives enhanced by marine teams attending study exchange with enforcement teams from **WCS** and **ANPN** in Mayumba National Park, which borders **CDNP** in neighbouring Gabon (1 x 10 day training workshop in **years 1 and 2 Q2**). Training will focus on boat handling, safety, maintenance, surveillance, enforcement techniques and data collection and recording. **2.3** Increase in the number of regular enforcement patrols at sea by **200%** to a minimum of **3 per month** in **year 3** (baseline **0-1 per month**). **2.4** At least **25%** of 28 fisheries dependent	**2.1** Training course (attendance numbers and certificates), and number of practical training days. **2.2** Workshops delivered. Training course (attendance numbers and certificates), and number of practical training days. **2.3** Number of day's boat operating at sea on surveillance/enforcement patrols (confirmed by GPS logs). Interim reports/maps on distribution of effort, and outcome of boat missions. **2.4** Workshops delivered (attendance numbers). Surveillance underway in focal fishing communities (number of fishers contributing data). Fisher engagement facilitates participatory research. **2.5** Fisheries landing surveys (catch-per-unit effort, size, length, weight, species composition). Socio-economic surveys targeted at identifying economic losses (protocol established in project **20-009**)	Partners remain committed to hosting training workshops and study exchanges to improve fisheries management and reduce IUU fishing effort (**Note 5: See supporting letters D and G from WCS-GAB and ANPN**). Fishing communities continue to engage in participatory research and data collection.

	communities engaged in collecting IUU fishing data to inform targeted enforcement efforts based on participatory data collection by **year 2 Q3** (2 x **2 day** training workshops in **year 1 Q2**, current **zero baseline**). **2.5** Effectiveness of increased enforcement and surveillance initiatives on marine biodiversity (**ecological spill-overs**) and fisheries livelihoods will be assessed in **25%** of 28 fishing communities to identify positive or negative impacts on fisheries catches, and economic losses. Baseline generated **year 1** and re-evaluated in **years 2 and 3**. Catch surveys will focus on catch-per-unit-effort, size, length, weight and community composition, which will contribute to monitoring and evaluation towards project outcomes. **2.6** Development of online spatial database (**year 1 Q1-Q2**) to host **IUU** data collected by focal fishing communities and surveillance patrols leading to increased knowledge of spatiotemporal trends of IUU fisheries activity. Results will lead to more informed and targeted enforcement efforts (and increased awareness at a national level) by **year 1 Q4** (current **zero baseline**).	Fisher engagement facilitates participatory research. **2.6** Training manual. Darwin Project website and analytics of IUU data. Number of partners/government agencies contributing data and accessing database.	
Output 3. Industrial and IUU fisheries: More effective governance and management of fisheries through increased knowledge of the operating behaviour, spatio-temporal patterns	**3.1** Baseline knowledge of spatiotemporal patterns of industrial fisheries activity and its conflict / overlap with artisanal fisheries quantified and described. Minimum **5 data layers** incorporated into existing Marine Biodiversity Atlas for the	**3.1** National fisheries action plan. Maps, updated GIS database and Marine Biodiversity Atlas. Deposited with relevant government agencies. **3.2** IUU status report, seasonal trends and	Partners continue to collect and share data. Fishing communities continue to engage in participatory research and data collection.

of industrial and IUU fisheries activity, leading to a more effective understanding of the scale of conflict with artisanal fishers and overlap with key biodiversity areas and species of conservation concern.	Republic of Congo by **year 2 Q1-Q4** (current **zero baseline**). **3.2** Baseline knowledge of magnitude and spatiotemporal patterns of IUU fisheries using data collected by fishers engaged in participatory research. Extent of area illegally exploited quantified and described. Minimum **5 data layers** incorporated into existing Marine Biodiversity Atlas for the Republic of Congo by **year 2 Q3-Q4** (current **zero baseline**). **3.3** Distribution maps for at least **10 species** of conservation concern (i.e. sharks, turtles and cetaceans) developed through analysis of existing available field data (e.g. satellite tracking / boat surveys) and overlap with industrial and IUU fisheries quantified by **year 2, Q4** (current **zero baseline**). **3.4** Potential interventions to reduce bycatch in each fishery sector identified, costed, and species action plans developed for marine mammals, sharks, and turtles (**year 2 Q3-Q4**). Current number of **interventions** and action plans **is zero**.	patterns. Maps, updated GIS database and Marine Biodiversity Atlas. **3.3** Species distribution maps, threat layers. Updated GIS database and Marine Biodiversity Atlas for the Republic of Congo. **3.4** Partner reports. National species action plans.	Government remains supportive of providing access to industrial fisheries data. Effective / appropriate measures can be identified for both fisheries and bycatch species.
Output 4. Engagement & Awareness Raising: More effective governance and management of the fisheries resources as a result of increased knowledge and understanding of the drivers behind IUU fisheries (based on participatory research), that can be used to	**4.6** Engagement with industrial fishing operators (n = **5** companies) underway by **year 1 Q3** facilitating awareness raising initiatives and contribution to stakeholder-led marine spatial planning process (Output 1) with participatory research underway in **year 1 Q4**.	**4.1** Fisher engagement / focus groups / workshops participatory data collection. **4.2** Workshops delivered (attendance numbers, training materials). Report on the drivers behind IUU. Evaluation report on level of information retained each year by boat operators to assess	Representatives / owners of industrial boats willing to engage with partner organisations, and explore role of fisheries management. Fishers continue to engage in participatory research and data

assess behaviour change resulting from increased surveillance and enforcement efforts.	**4.2** Representatives from each industrial fishing operator (n = **5** companies) attend **1-day** workshop to establish current knowledge of rules and regulations and the perceived level of enforcement and risk to help understand the drivers behind IUU fisheries activity (1 x **1-day** assessment workshop in **year 1 Q3**). Evaluation workshop in **year 2 Q4** following increased awareness raising and enforcement initiatives, current **zero baseline**).	behaviour change (e.g. trends in number of recorded infractions elaborated in year 1 and re-examined in year 2 and year 3).	collection.
Output 5. Project monitoring and evaluation:	**5.1** Minimum of **2** steering group / committee meetings with partners each year to evaluate progress. **Feedback** to Outputs & Activities 1-4. **5.2** Submission of half year and annual Darwin Reports**. Feedback** to Outputs and Activities 1-4.	**5.1** Steering group / committee meetings and minutes. Interim partner reports on annual progress towards agreed goals. **5.2** Darwin Reports. Darwin project website updated.	

Activities:

Output 1

1.1 Workshops: Project launch (opening workshop YR1 Q1) and dissemination of outputs (YR1 Q4), closing workshop & dissemination of project results (YR3 Q2).

1.2 Darwin Marine Biodiversity Atlas: Data analysis (YR2 Q1-Q3), leading to updated atlas incorporating ≥ 20 new data layers (YR2 Q4).

1.3 GIS Training: Field data collection techniques (YR1 Q3-Q4), introduction to biodiversity atlas, GIS data manipulation & tools for ≥ 10 national staff (YR3 Q1).

1.4 Marine spatial planning: Spatial prioritisation analysis (YR2 Q3-Q4) and participatory planning workshops with stakeholders (YR1 Q3).

1.5 Peer-reviewed paper: Preparation of peer-reviewed paper on stakeholder-led marine spatial planning outputs from participatory workshops (YR3 Q2)

Output 2

2.1 Training: Boat handling, maintenance, surveillance and enforcement techniques, data collection (reporting database), & international exchange (YR1 Q2, YR2 Q2).

2.2 Engagement with fishers: ≥ 25% of 28 fishing communities engaged, workshop to identify focal representative at each site established (YR1 Q2).

2.3 Field data collection: ≥ 25% of fishing communities engaged in participatory data collection, providing information on livelihoods, IUU fisheries activity, and fisheries catches (YR1-YR3).

2.4 IUU fisheries reporting database: Development of online reporting database to manage IUU data (YR1 Q1-Q2.)

2.5 Peer-reviewed paper: Preparation of peer-reviewed paper to demonstrate cost-benefits of stakeholder-led IUU reporting (YR3 Q2)

Output 3

3.1 Data analysis: Spatio-temporal patterns of industrial and IUU fisheries activity analysed leading to ≥ 5 new data layers on fisheries sector (YR2 Q1-Q4).

3.2 Threat mapping: Increased knowledge of scale conflict/overlap with small-scale fisheries sector, & marine biodiversity, leading to ≥ 10 new data layers (YR2 Q3-Q4).

3.3 Biodiversity (species) action plans: Preparation of species action plans for marine mammals, sharks, turtles, with interventions identified & costed (YR2 Q3-Q4).

3.4 Policy paper: Preparation of policy paper to government on the fisheries sector, and the socio-economic and ecological impact of IUU fishing activity (YR3 Q1-Q2).

Output 4

4.1 Workshops: ≥ 5 industrial fishing companies engaged to assess baseline levels of rules governing fisheries sector (YR1 Q3) re-evaluated (YR 2 Q4).

4.2 Engagement with industrial fishing sector: ≥ 5 industrial fishing companies engaged with participatory research and awareness raising initiatives (YR1 Q4).

Output 5

5.1 Steering committee: Project launch & annual progress meetings (monitoring and evaluation).

5.2 Progress reporting: Half year, annual & final reports.

Annex 3 Standard Measures

Table 1: Project Standard Output Measures

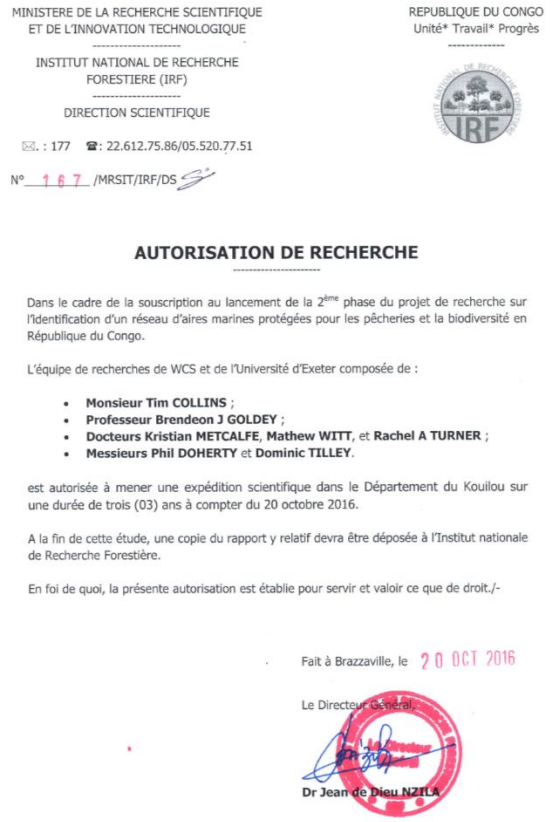
Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
6A	Number of people to receive other forms of education/training	Male	Congolese / French	6			6	30
6B	Number of training weeks to be provided – ***socioeconomic surveys, gps tracking, enforcement/surveillance***	n/a	Congolese / French	8			7	25
7	Number of training materials to be produced for use by host country – ***fisher surveys, gps tracking***	n/a	n/a	2			2	4
9	Number of species/habitat management plans (or action plans) to be produced for Governments, public authorities, or other implementing agencies in the host country ***- policy paper on fisheries and IUU, species action plans (x 4), national marine spatial planning guide (inc. marine atlas data).***	n/a	n/a	0			0	6
11A	Number of papers to be published in peer reviewed journals	n/a	n/a	1			1	2
11B	Number of papers to be submitted to peer reviewed journals	n/a	n/a	1			1	2
12B	Number of computer based databases to be enhanced and handed over to the host country ***– GIS atlas of spatial data***	n/a	n/a	0			0	1
14A	Number of conferences/seminars/ workshops to be organised to present/disseminate findings ***–stakeholder, planning and/or closing workshops***	n/a	n/a	1			1	2

Table 2: Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g.weblink or publisher if not available online)
Improving the lives of coastal communities in Central Africa	Project Announcement	2016 – Broderick, A., Nuno, A., Godley, B.J., Metcalfe, K., Witt, M.J., Turner, R.A.	Female (Total authors: 6 - 3 female and 3 male)	British	University of Exeter	http://www.exeter.ac.uk/business/news/stories/title_505658_en.html
Addressing Uncertainty in Marine Resource Management; Combining Community Engagement and Tracking Technology to Characterize Human Behavior	Journal	2016 – Metcalfe, K. Collins, T., Abernethy, K.E., Dengui, J.C., Boumba, R., Miyalou, R., Parnell, R., Plummer, K.E., Russell, D., Safou, G.K., Tilley, D., Turner, R.A., VanLeeuwe, H., Witt, M.J., Godley, B.J.	Male (Total authors: 15 - 10 male and 5 female) Total Congolese authors: 4	British	Conservation Letters (Wiley)	Open Access: http://onlinelibrary.wiley.com/doi/10.1111/conl.12293/abstract and pdf available from: http://onlinelibrary.wiley.com/doi/10.1111/conl.12293/epdf
Addressing knowledge gaps on the spatiotemporal distribution of shipping to support marine spatial planning at national scales*	Journal	2017 – Metcalfe, K. Bréheret, N., Chauvet, E., Collins, T., Curran, B.K., Parnell, R.J., Turner, R.A., Witt, M.J. Godley, B.J.	Male (Total authors: 9 - 6 male and 3 female)	British	Journal of Applied Ecology*	*** Under Review**

*** Please note that this paper is under review.**

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



MINISTERE DE LA RECHERCHE SCIENTIFIQUE
ET DE L'INNOVATION TECHNOLOGIQUE

INSTITUT NATIONAL DE RECHERCHE FORESTIERE (IRF)

DIRECTION SCIENTIFIQUE

✉. : 177 ☎: 22.612.75.86/05.520.77.51

REPUBLIQUE DU CONGO
Unité* Travail* Progrès

N° 167 /MRSIT/IRF/DS

AUTORISATION DE RECHERCHE

Dans le cadre de la souscription au lancement de la 2ème phase du projet de recherche sur l'identification d'un réseau d'aires marines protégées pour les pêcheries et la biodiversité en République du Congo.

L'équipe de recherches de WCS et de l'Université d'Exeter composée de :

- **Monsieur Tim COLLINS** ;
- **Professeur Brendeon J GOLDEY** ;
- **Docteurs Kristian METCALFE, Mathew WITT**, et **Rachel A TURNER** ;
- **Messieurs Phil DOHERTY** et **Dominic TILLEY**.

est autorisée à mener une expédition scientifique dans le Département du Kouilou sur une durée de trois (03) ans à compter du 20 octobre 2016.

A la fin de cette étude, une copie du rapport y relatif devra être déposée à l'Institut nationale de Recherche Forestière.

En foi de quoi, la présente autorisation est établie pour servir et valoir ce que de droit./-

Fait à Brazzaville, le 20 OCT 2016

Le Directeur Général

Dr Jean de Dieu NZILA

Fig S1: Research permit issued to the **UoE** (lead partner) granted by the Ministère de la Recherche Scientifique et l'Innovation Technologique (**MRSIT**) and valid for 3 years from October 2016. N.B. previous 3 year permit expired September 2016.

MINISTERE DE L'AGRICULTURE
DE L'ELEVAGE ET DE LA PECHE

DIRECTION GENERALE DE LA
PECHE ET DE L'AQUACULTURE

REPUBLIQUE DU CONGO
Unité * Travail * Progrès

Brazzaville, le 17 OCT 2016

N° 056 /MAEP/DGPA

Le Directeur Général

A

L'attention de CLS-Collecte
Localisation Satellites Parc
Technologique du Canal,
8-10 rue Hermès
31520 Ramonville Saint-Agne

FRANCE

Madame, Monsieur,

Le gouvernement de la République du Congo, à travers son Ministère de la Pêche et de l'Aquaculture, a bénéficié de vos services au cours de l'année 2011 afin d'assurer un contrôle de sa flotte de pêche.

Le contrat a malheureusement pris fin de façon précoce et nous n'avons à ce jour pas reconduit ce projet. Néanmoins, nous souhaitons aujourd'hui mettre en valeur les données qui ont été collectées pendant la période effective de notre contrat.

Je vous prie donc de bien vouloir nous envoyer la version informatique de ces données afin que nous puissions les analyser. Veuillez s'il vous plait les adresser à moi-même, mais aussi à l'association Rénatura Congo qui souhaite nous appuyer dans ce projet : Renatura.asso@gmail.com.

Vous remerciant par avance pour cette démarche, je vous prie d'agréer, Madame, Monsieur, l'expression de mes salutations distinguées.

LE DIRECTEUR GENERAL

Appolinaire NGOUEMBE

Fig S2: Letter of support from the Le Directeur General (Appolinaire Ngouembe) of the Ministère de l'Agriculture, de l'Elevage et de la Pêche (**MAEP**) requesting CLS provide **Rénatura** access to VMS data from 2012.

MINISTERE DE L'ECONOMIE FORESTIERE,
DU DEVELOPPEMENT DURABLE
ET DE L'ENVIRONNEMENT

CABINET

REPUBLIQUE DU CONGO
Unité * Travail * Progrès

N° 0488 /MEFDDE/CAB-CFAP

INVITATION

Le Directeur de Cabinet du Ministre de l'Economie Forestière, du Développement Durable et de l'Environnement, Invite Mr, Mme.....
à bien vouloir prendre part à l'atelier de lancement du projet d'appui à la gestion intégrée de la zone marine congolaise qui aura lieu à Pointe Noire, du 7 au 8 avril 2017 à partir de 8 heures, dans la salle de réunion de l'hôtel Azur.
Présence vivement souhaitée.

Fait à Brazzaville, le 04 AR. 2017

Le Directeur de Cabinet

Pierre TATY

NB: Les frais de séjours et de transport sont à la charge des Organisateurs.

Personnes à contacter:

Valentin YAKO
Tel: 05531 4121 / 06 664 2160
e-mail: yvalentin@wcs.org

Jérôme MOKOKO IKONGA
Tel: 05 572 5303/06 685 6878
e-mail: jrmokoko@gmail.com

Fig S3: Official invitation letter and supporting documents for the stakeholder workshop to be held in Pointe Noire 7-8 April 2017 signed by Directeur de Cabinet Pierre Taty on behalf of Madame le Ministre Rosalie Matondo of the Ministère de l'economie forestiere et du developpement durable et de l'Environnement (**MEFDDE**)

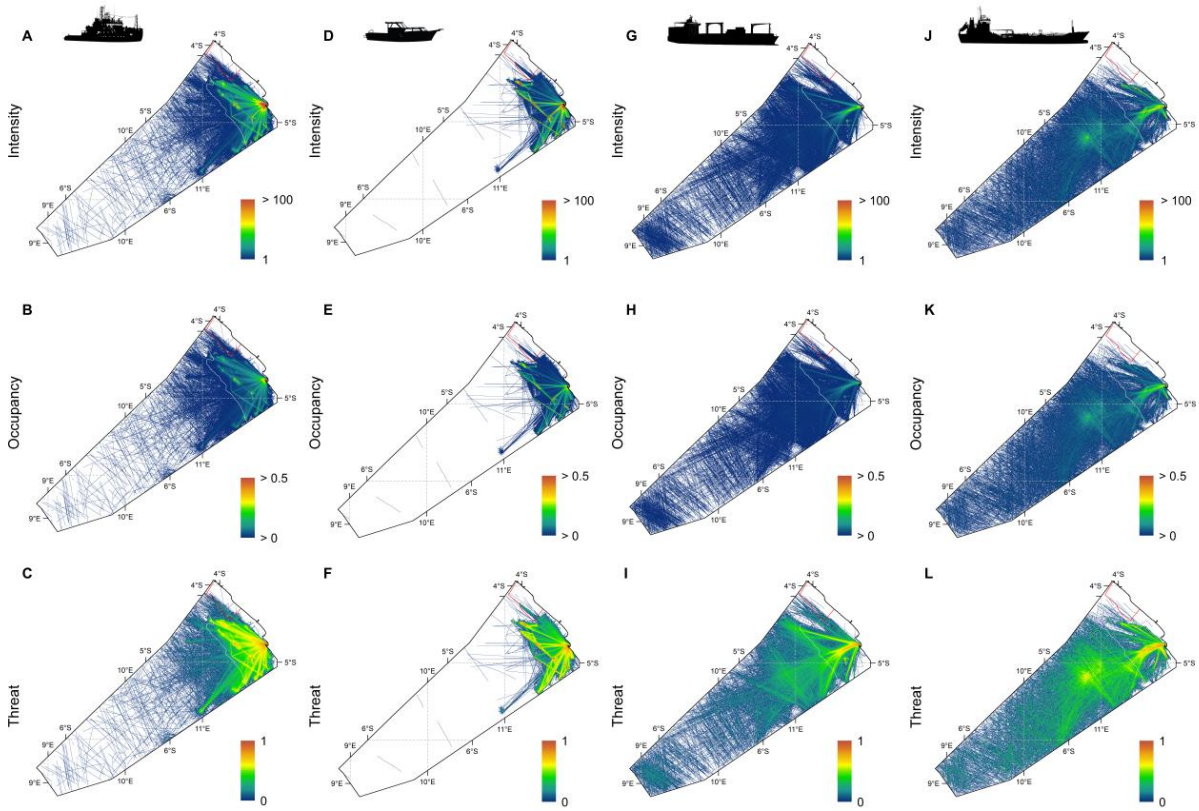


Fig. S4 The spatial distribution of vessel intensity, occupancy and threat at a 0.002 degree longitude and latitude cell resolution for: (A – C) offshore vessels; (D – F) passenger vessels; (G – I) bulk carrier and cargo vessels; and (J – L) tankers operating within Congo-Brazzaville's exclusive economic zone. The red outline depicts the boundary of the marine component of Parc National Conkouati-Douli (Congo-Brazzaville's only marine protected area).

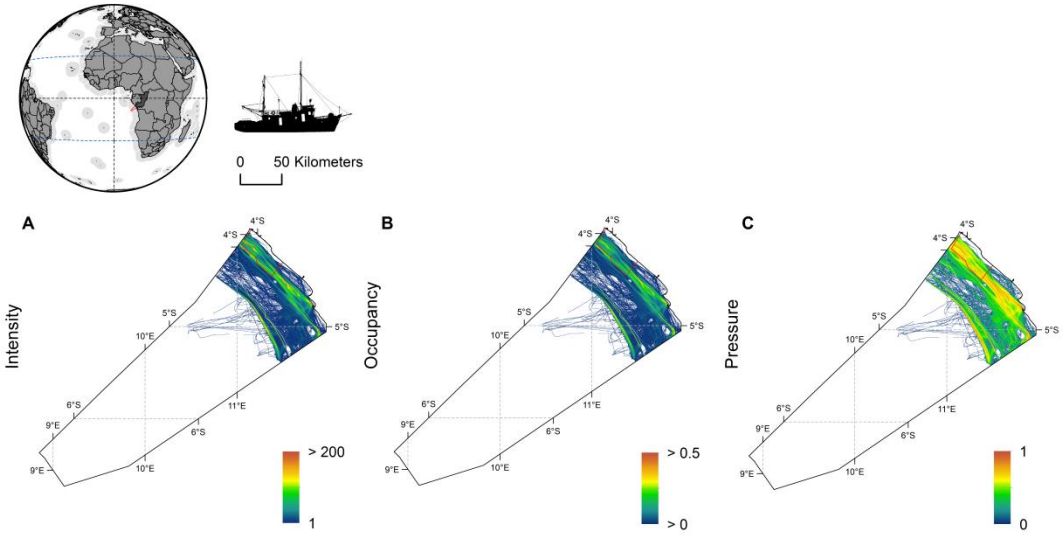


Fig. S5 The spatial distribution of annual fishing vessel (A) intensity (number of 24-h vessel transits recorded in each cell); (B) occupancy (proportion of year each cell is occupied); and (C) pressure (intensity of utilisation for each cell) at a 0.002 degree longitude and latitude cell resolution within Congo-Brazzaville's exclusive economic zone. Data derived from vessel monitoring system (VMS) data for 2012 provided by CLS. The red outline depicts the boundary of the marine component of Parc National Conkouati-Douli (Congo-Brazzaville's only marine protected area). See **Fig. S2** for letter of support from the Ministère de l'Agriculture, de l'Elevage et de la Pêche (**MAEP**) that granted project partners access to this data from CLS.

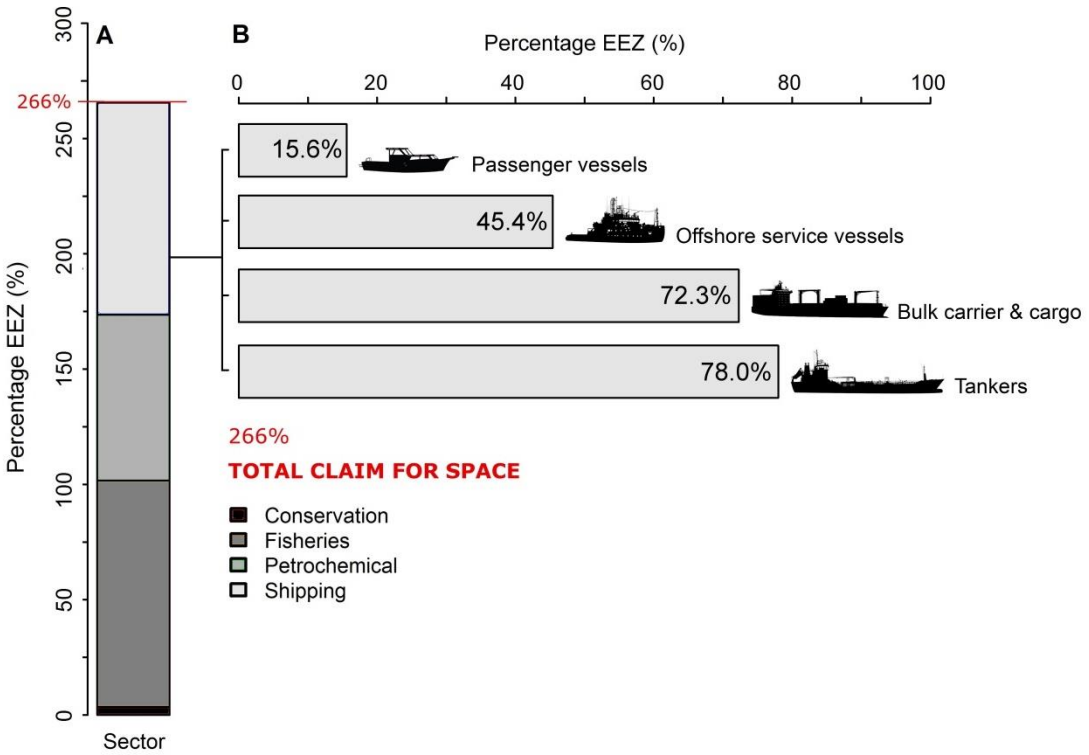


Fig. S6 Estimates of (A) the total amount of ocean space in Congo-Brazzaville allocated (based on legislation) and/or claimed for human activities such as conservation, fisheries, petrochemical extraction and maritime shipping; and (B) the spatial footprint for the four largest shipping sectors, passenger, offshore, bulk carrier and cargo vessels and tankers.

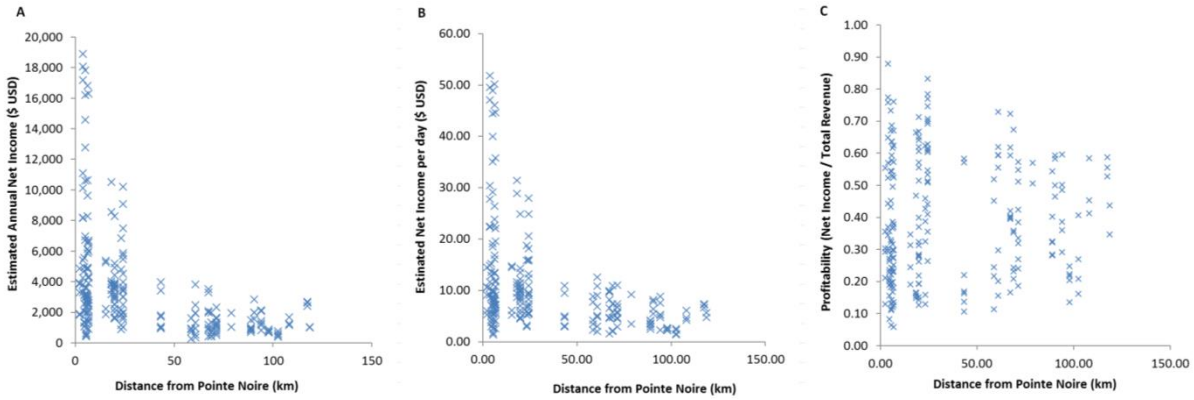


Fig. S7 Preliminary results derived from individual fisher surveys conducted with 221 artisanal fishers across 30 sites along the coast of Congo-Brazzaville: (A) estimated annual net income per fisher (USD); (B) Estimated net income per fisher per day (USD); and (C) estimated annual profitability (net income / total revenue) per fisher relative to respondents distance from Pointe Noire – the economic capital (please note these plots are for illustrative purposes and will be the focus of more detailed statistical analyses in FY2).

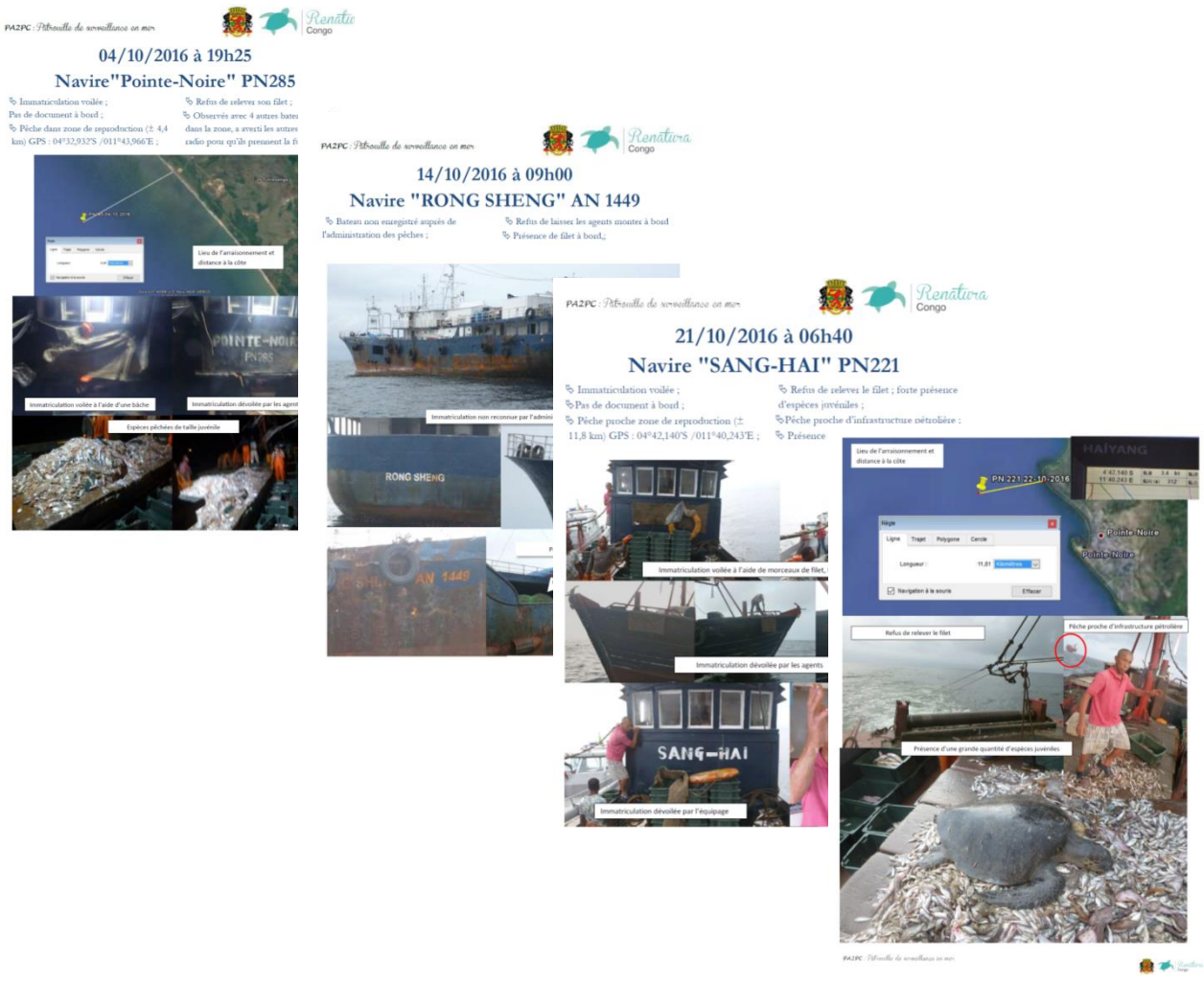


Fig. S8 Example of 3 mission reports from enforcement patrols undertaken by the Ministère de l'Agriculture, de l'Elevage et de la Pêche (**MAEP**) with the support of **Rénatura**.

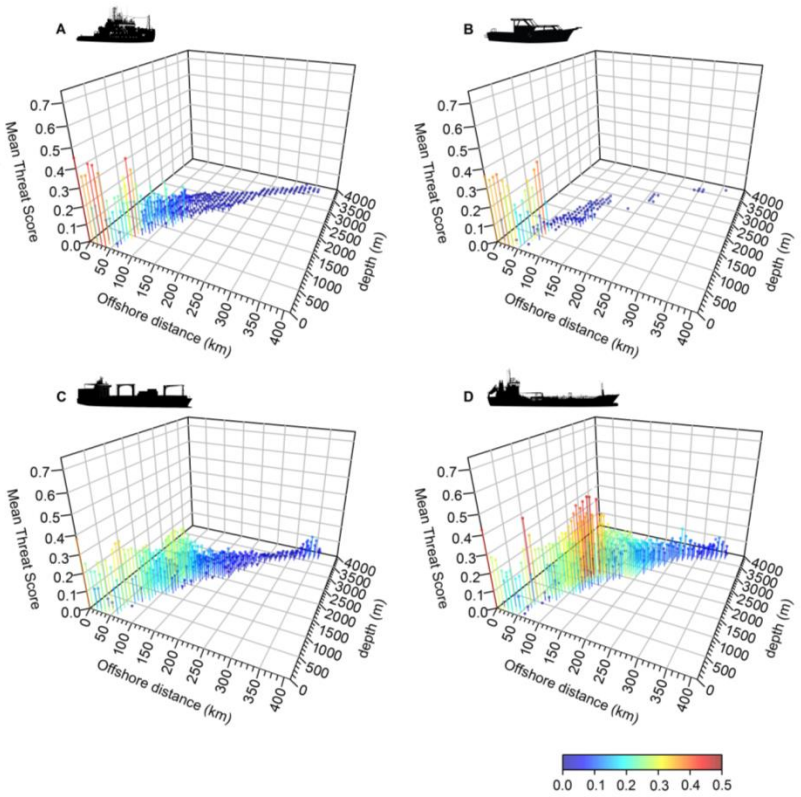


Fig. S9 Average annual threat score for each offshore distance and depth class (n = 40 classes) for: (A) offshore vessels; (B) passenger vessels; (C) bulk carrier and cargo vessels; and (D) tankers operate within Congo-Brazzaville's exclusive economic zone. Note, to aid data visualisation only the lower value for x and y axis labels are presented.

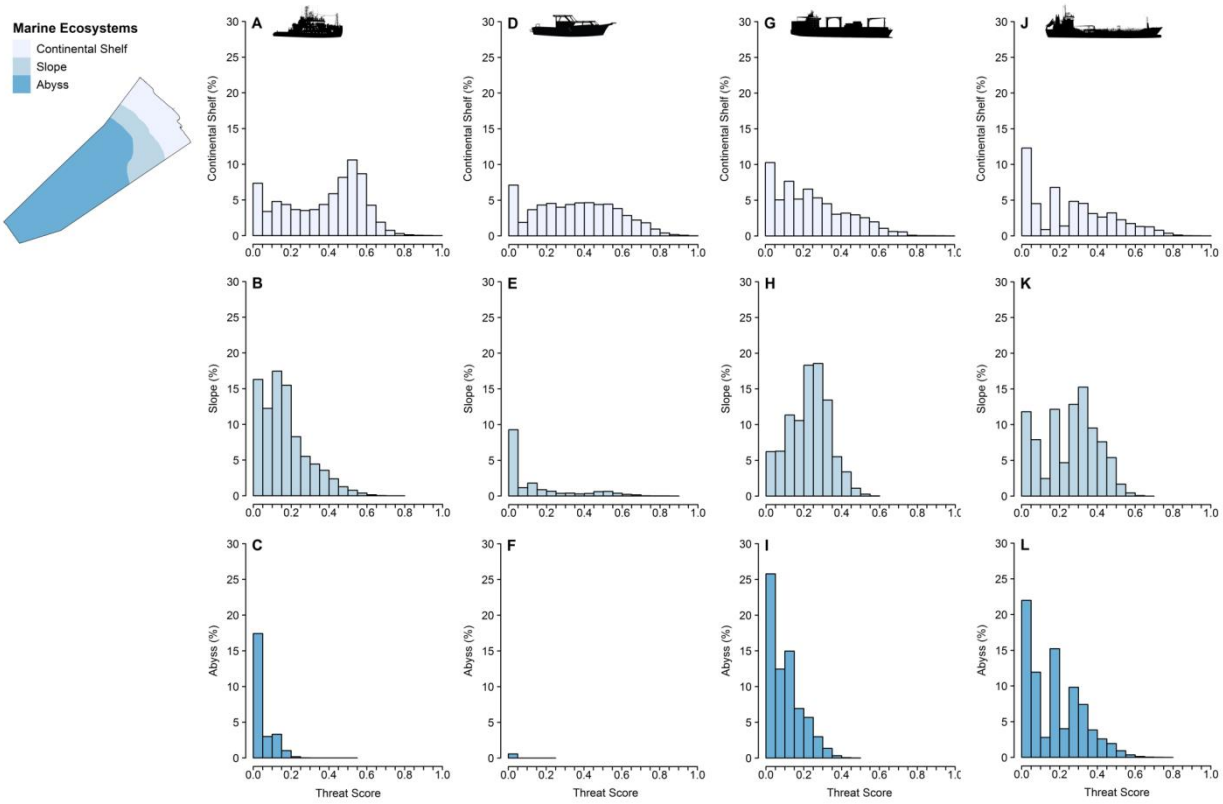


Fig. S10 Histogram of threat scores depicting the percentage of the continental shelf, slope and abyss that falls within each category for: (A – C) offshore vessels; (D – F) passenger vessels; (G – I) bulk carrier and cargo vessels; and (J – L) tankers operating within Congo-Brazzaville's exclusive economic zone. Histogram bars are in bins of 0.05 intervals.

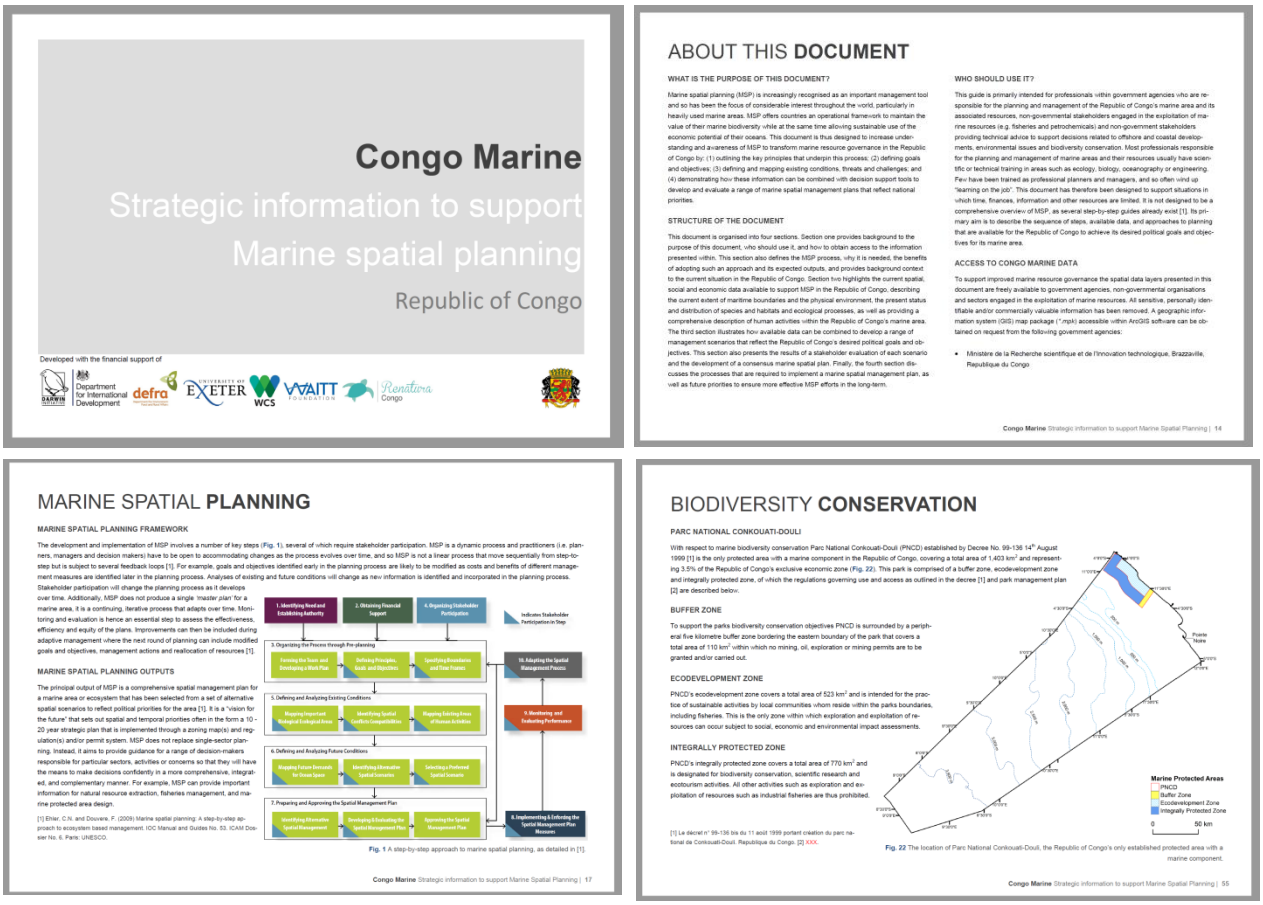


Fig. S11 Extracts of four pages from the national marine spatial planning strategy document for the Republic of Congo under development (examples include working title, about this document, what is marine spatial planning and a description of biodiversity conservation in Congo with description of data presented).

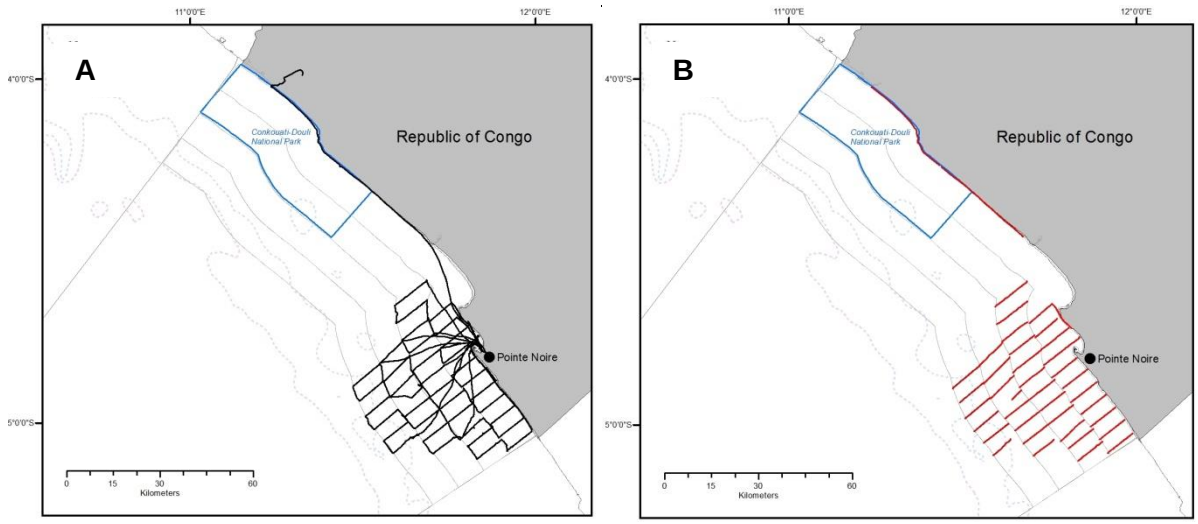


Fig. S12 Marine mammal (A) survey tracks (black lines); and (B) survey effort (red lines) for the marine mammal survey conducted October – November 2016.

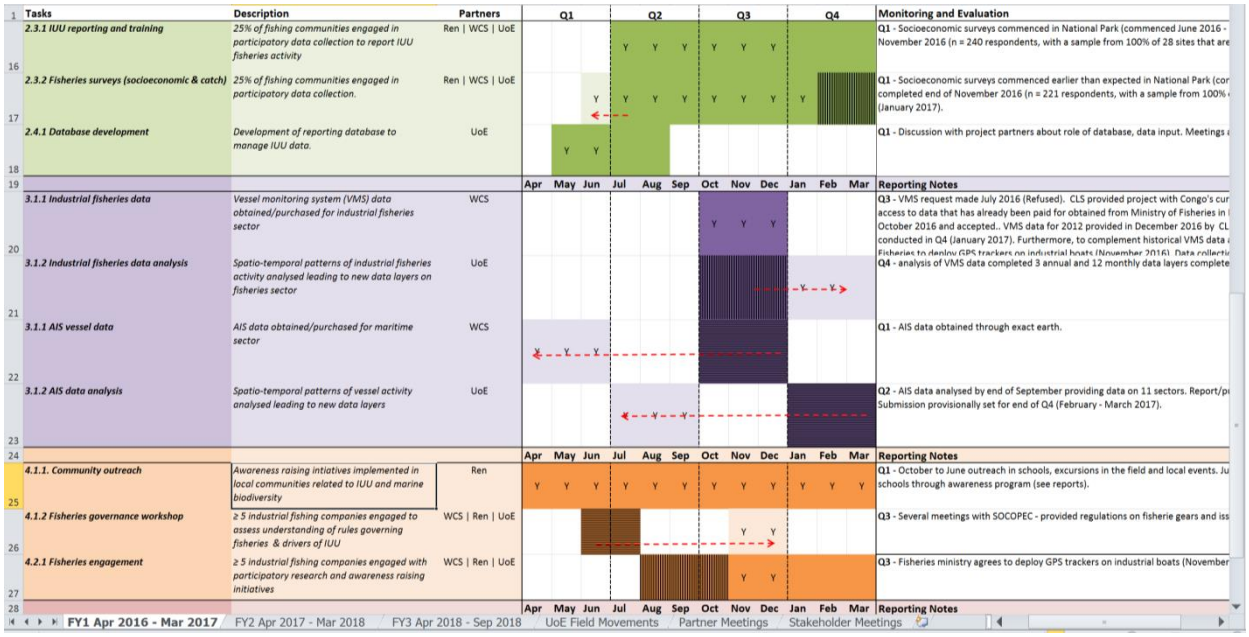


Fig. S13 Example of datasheets used by project partners to detail progress, changes and timeframes for delivery of project activities. Spreadsheet details activities by financial year, field movements of staff, and key partner and stakeholder meetings.

Fig. S14 Graphical abstract of a project related publication in the Open Access Journal Conservation Letters disseminated on twitter (N.B. Darwin Initiative Logo and use of @Darwin_Defra within tweet), as well as the altmetric score related to attention generated across a variety of social media.

Copy of change request (Submitted 07/03/2017)

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS

DARWIN INITIATIVE - APPLICATION FOR APPROVAL TO AMEND PROJECT OR BUDGET

Project Ref No	23-011: Transforming marine resource management in the Republic of Congo

Details of your request

In order to increase the number of at-sea patrols targeting illegal unreported and unregulated (IUU) fishing project partners would like to request to transfer £5,000 currently allocated for consultancy in FY1 to operating costs in FY2. This money will be managed by **Rénatura** to support more regular boat missions currently undertaken by the Ministère de l'Agriculture, de l'Elevage et de la Pêche (**MAEP**), who are at present struggling to purchase fuel on a regular basis. This will thus provide **MAEP** with the ability to undertake a minimum of 1 boat mission per month for the following 12 months.

Estimates are based on £5,000 GBP being equivalent to ~4,016,388.50 CFA (£1 GBP ~ equivalent to 803.2770 CFA; Source: OANDA CFA average currency exchange rate for 2016). Average estimated fuel costs per mission by **MAEP** are ~315,000 CFA thus 12 missions would be ~3,900,000 CFA leaving a contingency of ~236,388.50 CFA. Note that boats that are apprehended are subject to a range of fines outlined in the fisheries law [1]. Thus, it is hoped that these funds will support a more sustainable model of financing for purchasing of fuel to support additional missions as the project progresses.

Please see attached amended logframe (see track changes) and budget for more details, as well as three enforcement mission patrol reports from 2016 to illustrate existing efforts.

[1] Loi No 2 (2000) Portant organisation de la pêche maritime en République du Congo. Loi No 2 - 2000 du 1er fevrier 2000.

How is this different to your original application?

In our original application we had allocated £5,000 in FY1 to develop an online spatial database to host IUU fishing data to inform more targeted enforcement efforts and reporting efforts (see Output 2.4 and Indicator 2.6). The project partners still continue to collect IUU fishing data from boat-based patrols, fisher surveys, GPS tracking and observations to support this objective. However, following subsequent discussions with project partners and local stakeholders following a preliminary analysis of fisher survey, VMS and GPS tracking data in February 2017 it was determined that it was not essential for the database be an online tool and that the money would be better targeted at increasing the number of at-sea boat patrols, which would be undertaken by **MAEP** and supported by **Rénatura**. See justification section below for details on the results of these surveys.

Justification

Preliminary analysis of three datasets in FY1 Q4 based on data gathered in FY1 Q1 – Q3 revealed the following:

1: National Fisher survey: From a total of 221 respondents (~equivalent to 9% of estimated fishers operating in this sector) across 30 (100%) sites we estimated that small-scale fisheries generates an estimated $3,141,581 USD per year (excluding downstream benefits), and that the average net income was $3,633 ± 3,696 USD per fisher per annum, and average losses associated with IUU are $1,082 ± 1,740 USD per fisher per annum, which is equivalent to 29.8% of fishers net income. Please note more detailed statistical analyses will be completed

by end of FY1 Q4 – FY2 Q1, with follow up fisher surveys to be conducted in 2018.

2: Vessel monitoring system (VMS) data: Analysis of historical VMS data from 2012 has revealed that the spatial footprint occupied by the industrial fisheries sector is equivalent to 22.3% of Congo's EEZ (8,189 km^2), of which 12% of their footprint (1,080 km^2) is found within Conkouati-Douli National Park and 14% (1,203 km^2) within the artisanal fisheries zone, equivalent to 77% and 65% of their respective areas.

3: GPS tracking: The **MAEP** with support from **Rénatura** has been deploying GPS trackers on industrial fishing vessels to ascertain whether historical patterns of fishing effort and IUU are similar. Preliminary findings have revealed that, of the 7 vessels tracked to date 6 (86%) have engaged in illegal fishing within Conkouati-Douli National Park (Congo's only marine protected area) and/or fisheries zone reserved exclusively for artisanal fishers. Please note this work is ongoing and will reveal more information about preferred 'illegal' fishing areas of the industrial fleet.

Following these findings a partner monitoring and evaluation meeting was held in February 2017 to discuss how best to reduce the scale and impact of IUU – in line with the projects objectives. It was determined that the £5,000 allocated to the development of an online spatial data base would be better targeted at increasing the number of at-sea boat patrols to reduce IUU fishing effort, increase presence of enforcement vessels at sea and enhance local capacity. The reporting database (Activity 2.4) will still exist, with the University of Exeter (lead partner) providing analysis of GPS, VMS and fisher survey data to support more targeted patrols – i.e. providing spatial maps on 'hotspots' of activity, fisher preferences (i.e. depth zones, distance from shore), and patrol maps (vessel tracks and arrest locations).

What are the consequences of this request not being approved?

The proposed request is targeting at building local enforcement efforts to build a more sustainable model of financing additional boat-based marine patrols. If this request is not approved then the University of Exeter will be required to return these unspent funds.

Does this request have implications for your budget spread in different financial years? If so, please complete the following table:

	2015-16	**2016-17**	**2017-18**	**Start/end dates**
Current	£119,099	£111,867	£68,470	01/04/2016 - 30/09/2018
Proposed	£114,099	£116,867	£68,470	01/04/2016 - 30/09/2018

Project Leader	Professor Brendan Godley
Tel No	
Email	

Checklist for submission

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