

## Final Evaluation Report

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Your Details	
Full Name	Swapnil Surendra Tandel
Project Title	Assessing the Extent of Sea Turtle and Marine Mammal Bycatch in Small Scale Fisheries and Developing a Conservation Strategy along the Northern Arabian Sea Coast
Application ID	23640-1
Grant Amount	£4,980
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Date of this Report	28 <sup>th</sup> February 2020

1. Indicate the level of achievement of the project’s original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
<p>To understand the intensity and magnitude of threat from fisheries interactions on marine mammals and turtles, in the region</p>				<p>We could study the intensity and magnitude of threat to marine mammals and turtles based on fisheries-dependent, opportunistic, boat-based and land-based observation in association with fisherman from February 2018 to May 2019.</p> <p>The data will now be used to map a seasonal advisory to fishing communities. The results of current study will support future long-term monitoring in the region.</p> <p>Surveys revealed fishery interaction for a small cetacean (<i>Sousa plumbea</i>) and Indo-Pacific finless porpoise (<i>Neophocaena phocaenoides</i>) which are common in the region.</p> <p>Preliminary results from the study highlight that green turtle (<i>Chelonia mydas</i>) and olive ridley (<i>Lepidochelys olivacea</i>) are incidentally caught in fishing gear (i.e. gill nets, shore seines, hand trawl, hook/hand/pole line) operated by small scale fishers in the near shore water in operational range between 5 -15 m deep which extend up to 30 m. The coastal stretches of the study regions experiencing considerable stress due overfishing by illegal methods by using FAD (i.e. light fishing and speed/bull trawling) by mechanised craft from my own and neighbouring states leading to resource depletions in the region.</p> <p>For marine mammals, Indian Ocean humpback dolphin (<i>Sousa plumbea</i>) has the highest level of bycatch interaction in the small-scale fishery. We have recorded catch composition of opportunistic feeding</p>

			<p>incidence in order to predict the reason for the attraction of dolphins closer to the net. In the study we observed that majority of fishers operating gill nets specifically consider them a nuisance due to their ability to damage the fishing net which leads to economic loss in terms of catch loss and net damage to fishers.</p> <p>However, in one of the study region small-scale fishers operating mini pursiner net in near shore water believe that the dolphin pod brings good catch close near to the shore in their operational grounds.</p> <p>As cetaceans are considered as divine, fishers try to release them live if caught in active fishing which often causing net damage to fishers.</p>
<p>Identify /mapping major turtle/ marine mammal bycatch regions, species wise occurrence, seasonal pattern and diversity.</p>			<p>Based on the fishery dependent survey, interviews along with secondary data generated through community network we managed to collect and create GIS maps for fishery interaction/ bycatch and sightings of marine mammals and sea turtle in artisanal fishing grounds in the regions in order to determinate bycatch species in associated fisheries which will be published in peer review research article.</p> <p>Interesting observations are: -</p> <p>We encountered several groups of Indian Ocean humpback dolphin (<i>Sousa plumbea</i>) with a maximum group number of 60 and minimum group number of two, and one group of Pantropical spotted dolphin (<i>Stenella attenuata</i>).</p> <p>Two sightings of a killer whale pod (<i>Orcinus orca</i>) in coastal water less than 30 m deep, one documented with opportunistic feeding from trawl net, which is quite unusual.</p> <p>We have 28 live rescue documentation of sea turtles from fishery bycatch and ghost nets in the region during surveys.</p> <p>The study also identified bycatch species of threatened elasmobranchs from the region</p>

		<p>which will be useful in future research of the species.</p> <p>More effort to collect interaction documentation in small scale fishery is required due to lack of documentation device on board, a larger number of small-scale fishers operate in shallow water less than 10 m-15 m who do not carry cameras or mobiles that are capable of good recording during fishing trips due to fear of water damage to equipment.</p>
<p>To Enhance Community engagement and awareness</p>		<p>We are directly involved with regional small-scale fisherman and fisheries cooperatives and community leaders from both the study regions. Fishers were supportive during fishery dependent surveys and awareness programmes from February 2018 to May 2019.</p> <p>An informal network of information sharing was created and all the community members were interested in sharing information, whatever they knew.</p> <p>Bycatch interaction was also reported/documented by onboard volunteers from the fishing community that includes records of dead sea turtles and stranding records of marine mammals.</p> <p>Community awareness was created by distributing pamphlets and conducting workshops.</p> <p>With the Rufford grant, we also carried out a workshop and awareness talks on “Stakeholder perception on marine mammal and sea turtle interaction in fisheries” at our field base in Sindhudurg, Maharashtra in association with ICAR-CMFRI, Mumbai, which is a national institute working on fisheries research in the region and the Mangrove Foundation, a division of the forest department.</p>

			<p>Considering the 300 km of coastline in the study region, more effort on community awareness and education activities by authorities and NGOs is required for continuous dialogue, and discussion is needed with community for better conservation and management.</p>
<p>Create community network for reporting fishery interaction and stranding incidents</p>			<p>We have managed to create a community network across three coastal districts in a state which provides the data on fishery interactions, sightings and stranding incidents of marine wildlife protected species under the Indian law. Though it is a long-term process in a short period of over a year from ending of 2018- 2019 we have received data on 34 rescues from our study regions from two districts which include 28 sea turtles and four whale sharks, information from community network is highly valuable for supporting management actions. The same information can be used in identifying critical habitat for the species in future research.</p> <p>Data collected through our community network and fishing community volunteers was the first regional authentic documentation record for pod of killer whale (<i>Orcinus orca</i>) in both the study areas.</p> <p>We also promote and provide support to fishers for the newly launched compensation scheme by Forest Department for the rescue of marine wildlife protected species. Where a documented live release of a protected animals gets 25,000 Indian rupees.</p>

**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.**

Due to ongoing conflict between fishing community and government authority over developmental projects in one of a study sites in Ratnagiri district in the region where

fishers are hostile and not ready to cooperate, we decided to keep focused in the regions which are accessible in the district to complete our objectives.

Extended bad weather conditions after post-monsoon season delayed the work also there was insurgence of jelly fish swarms and trigger fish in the coastal water of study regions in mid-November and December 2018 which hampered the fishing activities of the small scale fishery sector; fishers avoid venturing in the sea for fear of suffering losses and this led to us extending our survey period.

**3. Briefly describe the three most important outcomes of your project.**

1. We have collected baseline data on small scale fishery interaction from this area, with identification of potential habitats of fishery interaction in participatory mode for multiple endangered and protected species where interaction rates are higher. These will be helpful in designing future studies on larger scale on sea turtles and marine mammals within the region.
2. We have started community-based multi-stakeholder network which includes fisherman, community leaders, regional reporters, conservationists working in the regions to document and share stranding and fishery interactions of marine wildlife protected species under the law. As a result we were able to record first regional sighting of presence of killer whale pod in nearshore water from both the districts.
3. Along with spreading awareness, we engaged communities for better conservation and management of the resources and we have identified a few locations where sustainable ecotourism activity can be created with participation of local fishing community which will support livelihoods, further reducing fishing pressure in near shore waters in the particular regions.

**4. Briefly describe the involvement of local communities and how they have benefitted from the project.**

1. We have designed our surveys keeping local fishing communities at the core of the study. From boat-based observations to taking interviews, fishing community members were the backbone of the project and we have hired the volunteers from the fishing community and enumerated them during project work.
2. We also trained a few small-scale fishers to use GPS and how to use potential fishing zones advisory for better catching the fish in the region.

3. Creating awareness during the project period whenever we got an opportunity has built trust among the community for our work; fishers we sensitised are now aware of the marine wildlife protected species under the law.
4. We also provide support to community and Maharashtra Forest Department in success of newly launched ex-gratia schemes.

#### **5. Are there any plans to continue this work?**

Yes, we will continue to collect the stranding and fishery interaction data through our community network in the regions which will create a robust data for multiple threatened species in the region.

Future research objectives in the region:

1. Some of the critical habitat identified during the project baseline study for multiple endangered species will be monitored closely and will be used in advanced research work in collaboration with different organisations and government authority in future.
2. We have observed the mishandling of the species during live release and there is a need for training on handling techniques of marine wildlife protected species within the community which will be implemented in future work.
3. Promote and develop a sustainable ecotourism-based approach with community participation in the region where bycatch rates are higher.

#### **6. How do you plan to share the results of your work with others?**

Findings of the project will be published in a scientific journal and will be shared with other research organisations and government authorities to facilitate the development of conservation measures in the region. We have presented our work in a workshop organised as part of the project to communities and officials from forest department. During the course of the project our work in the region has been published in regional newspaper media and articles.

Link for the news articles including the regional media about our work mentioning support from Rufford Foundation:

<https://www.lokmat.com/oxygen/sea-friend/>

<https://www.asianage.com/metros/mumbai/290319/olive-ridley-rescued-from-gill-net-in-sindhudurg.html>

<https://kadapuram.com/2019/04/08/killer-whales-off-ratnagiri-researchers-want-more-study-of-their-migratory-behaviour/>

<https://www.asianage.com/metros/mumbai/010219/seahorses-getting-trapped-in-sindhudurg-estuaries.html>

<https://www.asianage.com/metros/mumbai/020519/algal-bloom-plagues-sindhudurg-waters.html>

[https://www.mahamtb.com/Encyc/2019/5/2/sea-informer-.html?fbclid=IwAR2HJ2TmMR0zbeXg1zby9fJwAhnOldWAmIkYMS6O\\_y4HUeAVYp-osWiglzQ](https://www.mahamtb.com/Encyc/2019/5/2/sea-informer-.html?fbclid=IwAR2HJ2TmMR0zbeXg1zby9fJwAhnOldWAmIkYMS6O_y4HUeAVYp-osWiglzQ)

**7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?**

Actual length of the project was January 2018 to February 2019. The RSG grant was utilised from January 2018 to May 2019 for the project work due to unforeseen activities that occurred during project period which led to a 4-month extension.

**8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.**

Item	Budgeted Amount	Actual Amount	Difference	Comments
Printing/ documentation/ workshops/training material/ Miscellaneous	500	400	-100	Brochure, outreach materials, Workshop arranged for 150 fishers' and questionnaires for interview during survey period
Stationary	50	50		
Living expenses- Researchers/DA/	1200	1705	+505	Money saved from GPS and binocular, utilised to cover living expenses of researcher and three volunteers during the course of project period.
Fuel for Boat +hiring	800	550	-250	We have used small artisanal

charges+ enumeration charges				fishing vessels with and without engines which operate in coastal waters thus required less fuel to operate additional due to my personal contacts with fishing community from the region we save considerable amount money on hiring charges
Transport	1000	900	-100	300 km stretch had to be covered for the study period, where there is limited public transport.
First Aid kit	50	15	-35	
Camera	500	862	+362	We required a seaworthy camera with zoom lens, which was not available in budgeted amount thus the cost was increased to purchase the camera with mentioned specification
Camera (Go PRO)	500	334	-166	Available at better price
GPS + Rechargeable Batteries + Charger +Binoculars	200	50	-150	We rented GPS during the course of project period at a very cheap rate
Binoculars	180		-180	Volunteers equipped with personal binocular, so we don't have to purchased extra
Communication-Internet +phone		87	87	
	<b>4980</b>	<b>4953</b>	<b>-27</b>	Balance will be used in publications purpose. Exchange rate during the transfer is 1 £ = 86.283 INR

## 9. Looking ahead, what do you feel are the important next steps?

1. More efforts in monitoring fishery interaction are required from small scale fisheries. These can be implemented by providing them with watertight cases for protecting mobiles and cameras to reduce the chances of water damage so fishers can carry these along with them during fishing trips.
2. We will include fishery interactions from mechanised fishery sector in future research work from the region in next phase; it will help in understanding the fishery interaction on broader scale in the fishing grounds from these regions.

3. To expand our effort more threatened elasmobranch marine wildlife protected species that regularly bycaught in the fishery which required urgent protection from the region will be included for example whale shark, sawfish, guitar fishes etc.

**10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?**

1. We have used Rufford foundation logo on banners and presentations utilised during the workshop.
2. The Rufford foundation logo was used on 200 forms used for taking interviews.
3. The Rufford Foundation logo was used in certification of appreciation provided to volunteers.

**11. Please provide a full list of all the members of your team and briefly what was their role in the project.**

**Team members: (advisory) -**

**Dr. Akhilesh K.V and Dr. Ram Kumar S** – Are the primary advisors in the projects the surveys planned and designed with them they have provided support in field and guidance to me whenever required and played key role in successfully organization of workshop for the community during the project, they are also assisting in data analysis generated under the study.

**Dr. Mridula Srinivasan (advisory)** - is the international advisor and expert for this project, she has provided valuable inputs on data analysis, survey plans and dealing with stranding incident which we forwarded in community.

**12. Any other comments?**

We are thankful for the support of Rufford foundation for the funding support it won't be possible to carry out the study as it was the only source of funding to the study for entire duration.



Figure 1 & 2: Collecting standing data of sea turtle and Indian ocean humpback dolphin



Figure 3,4 & 5: Workshop organised for fisherman awareness during project period



Figure 6: Fishery dependent survey with small scale fisherman



Figure 7 & 8: Fishery interaction of (*Sousa plumbea*) in small scale fishery



Figure 9,10 & 11: Interviewing fisherman from landing centre with volunteers