9TH MEETING OF THE ADVISORY COMMITTEE
online, 15-19 March 2021
Agenda Item 5

LIST OF IOSEA-ENDORSED RESEARCH PROJECTS

(Prepared by the AC)

Action Requested:
• Endorse the final list
• Recommend steps for its promotion

LIST OF IOSEA-ENDORSED RESEARCH PROJECTS

Activity #42 of the IOSEA Work Programme 2020-2024 requests the Advisory Committee to develop a list of IOSEA-endorsed research projects, which can then be promoted by the AC, the Secretariat and research institutions to help to leverage funding for scientific research to investigate the conservation biology of marine turtles.

All AC members and sub-regional focal points were contacted to help identify priority projects for Activity #42 from the IOSEA Work Programme 2020-2024. The table presented below is a compilation of comments received from the ten AC members and the NWIO Sub-Regional Focal Point (Dr. Thuraya Said Al Sariri). Lindsey West from the WIO MTTF was also contacted to clarify certain priority items identified by an AC member.

Abbreviations used:

AC = Advisory Committee
BIOT = British Indian Ocean Territory
CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flora,
EEZ = Exclusive Economic Zone
ID = Identify
ITWG = Illegal Trade Working Group
IOSEA = Indian Ocean South East Asia
IUU = Illegal, Unreported and Unregulated fishing
MTTF = Marine Turtle Task Force
NIO = Northern Indian Ocean
NWIO = North West Indian Ocean
SWIO = South West Indian Ocean
WIO = Western Indian Ocean
WP = Work Programme 2020-2024

Priorities (Linked to specific WP/ species assessments/ other IOSEA documents when relevant)	Relevant countries/sub-regions[1]	Justification
1. Nesting Beaches – General		
1.1.1. Establish standardized nesting beach sand temperature monitoring across a set of beaches where there is natural beach incubation as the standard practice. *(WP #15, #46)* **1.1.2.** Understand the impact and implications of climate change and coastal change on nesting rookeries. *(WP #5, #10; IOSEA Species Assessments)*	Entire IOSEA region	This will address climate change issues (e.g., sand temperature, erosion) and/particularly observed variability in sex ratios at certain beaches, which indicate problematic hatchling sex ratios with some stocks but not with others. Additionally, sand/incubation temperatures are directly related to incubation periods, hatchling body size, and hatchling survival rates. The goal is to evaluate the potential impacts and identify areas where management plans may need to be implemented.
1.2. Fill the remaining gaps in nesting distribution and relative abundance (estimated cost $5 million over 10 years). Aerial surveys of remote nesting beaches in the Northwest Indian Ocean management unit (estimated cost $500K; Time – 2 years). *(WP #9, #31; IOSEA Species Assessments)*	E.g., NWIO (especially Persian Gulf, Red Sea), and also Somalia, parts of Indonesia, Timor Leste, and Maldives (especially southern atolls)	There are gaps in our understanding of the distribution and relative abundance of nesting across the region. This project would focus on filling these gaps over the next 10 years in key areas. At present the monitoring or annual reporting of turtle populations, or stocks, is limited by lack of basic knowledge in some areas. Before commencement of this activity, a clear plan will be produced, funding or in-kind support identified, and support/endorsement gained from relevant Signatories. A mixed funding model could be produced with industry, Government, and/or GEF, or other sources of funding.

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[1] The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the Advisory Committee, CMS Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. Designations are used in accordance with UN guidance.

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2. Foraging Areas – General		
2.1. Establish index foraging area sites for comprehensive capture-mark-recapture studies for adults and/or juveniles that run for 6 years minimum with genetic stock ID of individual turtles, sex ratios and studies of diet, somatic growth, health, etc. *(WP #31)*	E.g., Centralized areas with logistically accessible foraging turtles like at Derawan in East Kalimantan, Seychelles, sites in the South China Sea, Persian Gulf, and the East African continental coast (please note: ongoing studies at the Eparses Islands (Europa, Juan de Nova and Glorieuses) and La Réunion can serve as examples/ models)	There is a lack of comprehensive in-water information for turtle populations, which is required to understand fundamental ecological areas such as recruitment, survivorship, and population trends – all central to conservation planning.
3. Species-specific		
3.1. Identification of areas (apart from the big/major nesting concentrations) where leatherbacks are nesting and to establish/improve habitat /nest protection in these areas. *(WP #9, #31; IOSEA Leatherback Assessment)*	E.g., Sri Lanka, Indonesia.	This will fill in data gaps and promote recovery of leatherback populations as well as facilitate the conservation of genetic diversity for uncommon genotypes/small populations, all central to conservation planning.
3.2. Leatherback population genetics (nesting beaches). *(IOSEA Leatherback Assessment)*	Sri Lanka, Indonesia, Papua New Guinea, Mozambique, etc.	This will fill in data gaps and facilitate the conservation of genetic diversity for uncommon genotypes/small populations, all central to conservation planning.
3.3. Genetics of leatherbacks from strandings/bycatch/direct take *(WP #1a; IOSEA Leatherback Assessment)*	E.g., Countries with leatherback bycatch programmes and/or direct take (e.g., Australia, Eritrea, South Africa, etc.)	This will help determine source populations with the possibility of conserving small populations with distinct genetic diversity, central to conservation planning.
3.4. Hawksbill genetic population structure, population status, and population dynamics. *(WP #44; IOSEA Hawksbill Assessment)*	IOSEA region, especially key gaps according to the IOSEA Hawksbill Assessment, including SWIO (with less emphasis on Seychelles and BIOT, and areas where Kelonia has ongoing	This will address knowledge/data gaps, and enhance efficacy of recovery and management plans.

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	projects), Red Sea, NIO, Indonesia, and Philippines	
3.5. Loggerhead genetics, life history attributes, foraging areas, habitat use (oceanic and coastal), inter-nesting area habitats, diet, growth, age, and survivorship. *(WP #31; IOSEA Loggerhead Assessment)*	All sub-regions with loggerheads, especially NWIO, NIO, and WIO	This will address knowledge/data gaps, and enhance efficacy of recovery and management plans.
3.6. Quantify loggerhead hatchling production and survival. *(WP #43e; IOSEA Loggerhead Assessment)*	Oman, Yemen, Western Australia, South Africa/Mozambique	Understanding and maximizing hatchling output from nesting beaches is important for designing appropriate management plans for population recovery. In Oman, we also need to understand how this large, but decreasing population, contributes to the Indian Ocean loggerhead stock whose entire life cycle takes place in the Indian Ocean.
3.7. Mixed stock analysis of green, hawksbill, and loggerhead foraging grounds in the Indian Ocean (estimated cost $500K; Time 5 years). *(WP #44; IOSEA Hawksbill & Loggerhead Assessments)*	IOSEA sub-regions where basic work still remains to be done	This is important to understand the connectivity between rookeries and foraging grounds. This work may also help initiate more ongoing studies relevant to basic population parameters (e.g., sex ratios, size class structure, and growth rates). Many locations host resident turtles through the release of bycatch, markets, and dedicated catch studies. This may encourage others to start a capture study. It could also form part of any capacity building training. Funds estimates could provide some incentives for some new projects and also the genetic analysis and reporting ($100-150K).

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4. Habitat		
4.1. Address knowledge gaps in the distribution, status, and abundance of seagrass pastures, coral reefs, and mangroves. *(WP #31, #32, #41; RAMSAR is also relevant here)*	Entire IOSEA region	There are huge data gaps on the distribution, status, abundance, resilience, and productivity of seagrass, coral reef, and mangrove habitats in many countries in the IOSEA region. It is important to have a complete up-to-date coastal inventory of these habitats so that we can better understand the distribution of in-water/foraging habitats and the scale of localised threats and thereby implement conservation and restoration measures, where necessary.
5. Fisheries		
5.1. Evaluate and understand the impacts of IUU fishing and explore possible mitigation measures. *(IOSEA Hawksbill & Loggerhead Assessments)*	EEZs of all IOSEA nations	This is a significant, but poorly documented and understood, threat
5.2. Evaluate and quantify bycatch of different sea turtle species in artisanal and industrial fisheries and explore possible mitigation measures. *(WP #6, #7, #22-25, #64, #72-74, #86f)*	The Territorial Waters and EEZs of all countries where bycatch in fisheries is a problem	This activity will help develop appropriate bycatch mitigation and fisheries management strategies, and thereby reduce a significant, but poorly documented, source of mortality – central to developing conservation and management programmes. Given the magnitude of this activity, priority areas in the IOSEA region must be identified so that work can focus on them.
5.3. Evaluate and quantify the impacts of ghost nets and other ghost gear; identify and evaluate dockside gear disposal facilities in Signatory States. Explore possible improvements for	Entire IOSEA region	This is an important, but poorly documented, threat for marine turtles and other marine life.

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reducing this threat. *(WP #2, #8, #102)*		
6. Threats (non-fisheries)		
6.1. Evaluate illegal take and trade in turtles and explore possible mitigation measures. *(WP #50, #57-60, ITWG & CITES documents)*	Particularly Mozambique, Madagascar, and Southeast Asia (hawksbills & green turtles)	This is a significant threat to sea turtle population survival and recovery.
6.2.1. Characterize and quantify the impacts of marine plastic pollution, across all marine turtle populations and life stages for (a) ingestion and (b) entanglement. **6.2.2.** Evaluate oceanographic features that disperse and concentrate plastic pollution at both large and small spatial scales. **6.2.3.** Understand the socio-economic drivers behind marine plastic pollution, as well as the barriers and opportunities for management. *(WP # 2, #102; IOSEA Species Assessments).*	Entire IOSEA region	This is a critical, widespread, and growing threat to sea turtles and their habitats. Given the enormity of the problem, the plan is to support the development of small, manageable projects that collectively lead towards understanding the issue.
7. Capacity building		
7.1.1. Standardized turtle methodology training, building capacity, and mentoring (estimated cost $1million; Time 5 years). **7.1.2.** Develop or provide advice on appropriate data management systems, tools, or software for the collection and archiving of all types of relevant turtle data (nesting, foraging, strandings, mortality, etc.). The project would be enhanced through workshops and training ($1M; Time 10	Entire IOSEA region	This is particularly important for countries new to marine turtle research and monitoring or those with limited resources and/or training. The goal is to develop a structured plan and build capacity in the areas of on-ground monitoring, databases, and basic analyses through the provision of methodology, tools and training. This will ensure compatibility across the region for core data parameters and ensure the

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years). (WP #15, #16, #44e, #46, #48, #54, #84, #86)		archiving of standard data over decades. A plan would help the project to scale actions through time based on resources (e.g., no money may only allow for products and methodology to be sent to groups, while more money might assist with databases, face to face training, etc.). Priority areas could be identified in planning stages to help focus efforts.
8. Community-based activities and Human dimensions		
8.1.1. Develop sub-regional and national plans – in full coordination and cooperation with local key actors – to conduct local workshops at "index sites" to strengthen the appreciation of community-based conservation, including objective self-evaluations of such activities. **8.1.2.** Employ the planning and execution of local workshops on community-based conservation to promote "multiplier effects," which result in more experienced and motivated local actors in planning and conducting these critical activities. (WP #28-29, #55, #61)	Entire IOSEA region	There is a pressing need to involve diverse sectors of different societies in which they willingly appreciate the unique values of marine turtles and their habitats, and thereby participate as active stewards of those resources. Such community-based conservation approaches greatly enhance the effectiveness and success of "official" (international, national, governmental) activities.
8.2.1. Enhance marine turtle conservation, through a broader understanding of the social, economic, and cultural significance of human-turtle interactions and the associated impacts of conservation programmes on local traditions. Hold a series of sub-regional workshops to understand, identify, implement, and evaluate best practice approaches for incorporating social and cultural considerations into conservation	All IOSEA sub-regions	Socio-economic and cultural considerations are absolutely essential for understanding and resolving the many and varied complexities of environmental conservation and management. There is increasing evidence to show that taking account of socio-economic and cultural considerations not only enhances participant engagement and their experience of conservation

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projects. *(WP #51-53, Draft WIO MTTF action plan for addressing socio-economic /cultural work plan actions – 15.06.2016)* **8.2.2.** Elucidate the status and complexity of the "sea turtle economy", defined as the system that supports the production and (total economic) consumption of sea turtle related goods and services. Hint: Sea turtle economy research would be interested in the elements of human-sea turtle interactions that fulfill the needs of the various sea turtle "users" - from sea turtle consumers to sea turtle researchers and conservationists. *(WP #20)*		practice, but it can also improve the likelihood of achieving desired conservation outcomes. However, socio-economic and cultural considerations do not receive sufficient recognition and are often overlooked during conservation project planning. Hence there is a pressing need to ensure that conservation practitioners have sufficient knowledge and understanding to be able to incorporate these approaches systematically across all stages of the project including design, implementation, and evaluation stages. Elucidating the "sea turtle economy" will help us understand the big picture of sea turtle management. Current approach in sea turtle management often does not integrate all these various actors in one interconnected system, resulting in "blind-spots". For example, what has happened since IOSEA's "Illegal Take and Trade of Marine Turtles in the IOSEA Region Report" at the Seventh Meeting of the IOSEA Signatory States in Bonn, Germany in September in 2014? What is the current status of consumption and what are the factors of new/sustained consumption? New dimension: why is non-consumptive use, i.e. not taken as food or manufactured product, not reported as consumption?

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8.3. Design and implement a communication strategy based on a sound foundation of conservation communication and, when/where appropriate, behaviour change theory. *(WP #49, #84e)*	Entire IOSEA region	There is a pressing need to develop and make use of effective communication tools to inform and motivate diverse sectors of different societies throughout the IOSEA region, so that they are aware of, and appreciate the unique values of marine turtles and their habitats. To inform the design of the strategy, research should be undertaken with selected stakeholders to inform both the strategy and to provide a baseline to enable evaluation of the strategy. The research will provide information to ensure that the messages and the channels are most appropriate for each target audience. Site-based communication strategies – which would be multitudinous throughout the IOSEA - need to be directly relevant and tailored to local cultural, linguistic, political, religious, social, etc., characteristics.
9. Legislation and Enforcement		
9.1. Identify gaps between legislation and implementation/enforcement in sea turtle governance with the goal of streamlining protection from a local to global scale. *(WP #27)*	Entire IOSEA region	Sea turtle management is commonly perceived as the need for more and stricter laws. However, in reality once established many laws are rarely implemented or even understood by the responsible authorities For those not implemented, what are the hurdles? For those that worked, what were the enablers? If we compare legislation and practices between countries, what can we learn (what works everywhere, somewhere, nowhere, etc. and why?)?