



Indian Ocean – South-East Asian Marine Turtle Memorandum of Understanding



Pakistan

GENERAL INFORMATION

Agency or institution primarily responsible for the preparation of this report:

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Other agencies, institutions, or NGOs that have provided input:

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- 2) Forest and Wildlife Department, Government of Balochistan, Quetta
- 3) Centre of Excellence in Marine Biology (CEMB), The University of Karachi, Karachi
- 4) Pakistan Wetlands Programme
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OBJECTIVE I. REDUCE DIRECT AND INDIRECT CAUSES OF MARINE TURTLE MORTALITY

1.1 Introduction to marine turtle populations and habitats, challenges and conservation efforts. [\[INF\]](#)

Pakistan coastline is about 990km long and stretches from Sir Creek near Indian border in the east to Jiwani near Iranian border in west. The coastline is further divided into the Sindh coast which is about 320km and the Balochistan coast which is approximately 670km long.

Important sandy beaches for marine turtles along the coast include Sandspit, Hawkesbay, Paradise point, Cape Monze, and Mubarak village in Sindh province and Gaddani, Ras Malan, Ormara, Astola Island and Jiwani in Balochistan (Khan and Ghalib, 2006).

Only two species i.e. green turtles (*Chelonia mydas*) and olive ridley (*Lepidochelys olivacea*) occur along the Sindh coastline of Pakistan. Green turtle is more common and its population has shown a stable trend for past many years though it is presently facing a multitude of threats along the coast of Pakistan. On the other hand olive ridley has not been spotted since 2004 (Hussain, 2010) while hawksbill turtle is extremely rare and most recent sightings were made in year 2001 and 2003 in Cape Monze area near Karachi (Hussain, 2010).

Similarly, along the Balochistan coast the green turtles are most common while olive ridley is seen to nest occasionally and hawksbill (*Eretmochelys imbricata*) is extremely rarely reported.

In Past turtles have been exploited in Pakistan for their shells and skin which used to be exported to foreign countries

but this practice no more exists and marine turtles are now declared "Protected" under Sindh Wildlife Protection Act 1972 and Balochistan Wildlife protection Act 1975. Export and domestic consumption of turtles is prohibited under the Pakistan Fish Inspection and Quality Act 1997. The main threats to marine turtles in Pakistan include incidental entanglement in fishing gear, habitat degradation, pollution and unregulated tourism along important turtle beaches.

Research on marine turtles has mainly focused distribution, diversity, studies on nesting and hatching, ecology, tagging and migration patterns. It is felt that the number of studies on marine turtles is still not increasing considering the fact there is two universities along the coastline of Pakistan and many relevant government and non-government organizations. There is a definite need to increase the knowledge about marine turtle and to make it more specific if Pakistan is to achieve a sustainable population of these charismatic animals.

1.2.1 Describe any protocol or approaches practiced in your country, which you consider exemplary, for minimising threats to marine turtle populations and their habitats, which may be suitable for adaptation and adoption elsewhere. [BPR]

Provincial Wildlife Acts provide for the protection of marine turtles. There is a ban on the hunting and use of marine turtles or their products. Additionally, Sindh Wildlife Department has the practice to transfer turtle eggs and place them in safe enclosures for hatching. The hatchlings are safely guided to the sea for development in nature.

Some very good examples of conservation efforts and community participation for turtle conservation in Pakistan can be cited here. Main activities that are helping a great deal in turtle conservation in Pakistan include:

- Ban on the hunting and use of marine turtles or their products
- Staff of Sindh Wildlife Department transfers turtle eggs to safe enclosures for hatching. The hatchlings are safely released in the sea after hatching.
- Enforcement of legislation related to conservation of wildlife including marine turtles.
- Safeguarding key turtle nesting beaches along Sindh and Balochistan coast from poachers
- Protection against feral dogs and other negative human impacts particularly along the Karachi coast
- Turtle watching activities which have educational and awareness raising component associated with it.
- Ensuring hatchling safety by guarding turtle beaches against potential threats and their safe release in sea.
- Promotion of awareness among public and coastal communities relating to the conservation of marine turtles.
- Beach cleaning activities to remove debris and other non-biodegradable items from beaches that interfere the process of egg laying and also cause hatchling mortality due to entanglement particularly in pieces of abandoned fishing nets
- WWF Pakistan has established a Wetland Centre, very close to marine turtle beaches/habitat at Karachi and Jiwani. These centres and deputed staff is very helpful for education and awareness of the masses and to safeguard the turtles visiting beaches for feeding and egg laying.

All these have contributed considerably in promoting the need for conservation of marine turtles and habitats in Pakistan.

1.3.1 Describe any socio-economic studies or activities that have been conducted among communities that interact with marine turtles and their habitats. [BPR, INF]

Under Pakistan Wetlands Programme (PWP), a GEF/UNDP funded project a socio-economic study was conducted on Astola Island during January 2011. Purpose of the study was to determine the dependence of various communities on the Island. [HASAN, S.A., 2011 Socio-Economic Baseline Report, Astola Island(Unpublished report)]

Sindh Wildlife Department, WWF Pakistan and IUCN are main Organizations that engage the coastal communities in conservation related activities not only for the benefit of nature but also to create alternative livelihood for these communities. Different studies mainly focused this aspect in light of declining fisheries along Pakistan coastline. One can always find one programme or the other launched by WWF Pakistan and IUCN. Such programmes are ongoing and presently WWF is trying to create more livelihood options for coastal communities by establishing different kinds of ecotourism e.g. turtle watching, turtle hatchling release, bird watching and dolphin watching.

It is important to note that most of these activities are concentrated presently along the Karachi coast so there is a apparent need of replicating such activities in other areas along the coastline so that fishers can get greater benefit from such programmes. This is particularly important in the present scenario where fisheries of Pakistan are under great pressure due to growing human population and fishing fleet size. A lot of published literature is available at WWF Pakistan and IUCN and can be searched through internet easily.

1.3.2 Which of these adverse economic incentives are underlying threats to marine turtles in your country? [TSH]

- High prices earned from turtle products relative to other commodities
- Lack of affordable alternatives to turtle products
- Ease of access to the turtle resource (eg. by virtue of proximity or ease of land/water access)**
- Low cost of land near nesting beaches**
- Low penalties against illegal harvesting**
- Other1: Illegal construction activities right on known turtle nesting sites particularly in Karachi and removal of sand from beaches for construction purposes.
- Other2: Unregulated tourist activities
- Other3:
- None of the above or Not Applicable

1.3.3 Has your country has taken any measures to try to correct these adverse economic incentives?
[BPR]

- YES NO NOT APPLICABLE (no adverse economic incentives exist)

Marine Fisheries Department and provincial fisheries departments i.e. Sindh Fisheries and Balochistan Fisheries regularly work with fishers to convince them use of environment friendly fishing gear. Under Marine Fisheries Department Turtle Excluder Devices were installed on a given number of trawlers (exact figures not in hand). There is need to emphasise on these organizations to specifically talk about turtles when interacting with fisher organizations.

Pakistan Wetlands Programme, a GEF/UNDP funded programme has been launched with a strong component for coastal areas and conservation of marine turtles and their habitat. This programme has negotiated with the local communities for sustainable fishing and use of appropriate gears including TED. This programme is also planning to embark upon alternate livelihood practices to divert the dependence of local communities from the natural resources.

1.4.1 Indicate, and describe in more detail, the main fisheries occurring in the waters of your country, as well as any high seas fisheries in which flag vessels of your country participate, that could possibly interact with marine turtles. [INF]

a) Shrimp trawls: YES NO

Shrimp fishery is the major fishery along the coast of Pakistan but the evidences of turtle mortality in this gear is extremely limited or negligible (pers. comm. with Moazzam Khan Ex. Director General Marine Fisheries Department of Pakistan). This fishery is prevalent along entire Pakistan coastline and comprises the major portion of its fishing fleet. It is very old fishing method in Pakistan and is still very popular but due to declining fishery fishers are moving to other jobs as well.

b) Set gill nets: YES NO

These are common in Pakistan particularly in the Indus delta creeks. Mortality of turtles is extremely rare however, these are notorious for being unselective in their catch and are among major culprits involved in killing of small fish and thus degradation of ecosystem. This can have drastic effect on the overall food web because if more and more small fish is being caught there will be no fish to eat for other predators. This practice is also very old and is still very popular particularly along Sindh coastline.

c) Anchored Fish Aggregating Devices (FADs):

Not in knowledge

d) Purse seine (with or without FADs): YES NO

Limited use on small scale

e) *Longline (shallow or deepset)*: YES NO

This gear is common along the coastline of Pakistan both in shallow and deep waters and mortality of dolphins and turtle is sometime reported. This is common along both the Sindh and the Balochistan coast of Pakistan.

f) *Driftnet*: YES NO

Drift nets are common in form of gillnets and widely used along Pakistan coast. Dolphin and turtles mortalities are reported in this gear.

g) *Other1*:

h) *Other2*:

None of the above

1.4.2 Please indicate the relative level of **fishing effort** and **perceived impact** of each of the above fisheries on marine turtles (e.g. in terms of by-catch). [TSH]

a) *Shrimp trawls*

Fishing effort:

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Perceived Impact:

RELATIVELY HIGH MODERATE **RELATIVELY LOW** NONE UNKNOWN

Source: Pers. communication with Moazzam Khan Ex. Director General Marine Fisheries Department of Pakistan and Kiani, M.S. PhD thesis (unpublished information)

b) *Set gill nets*

Fishing effort:

RELATIVELY HIGH **MODERATE** RELATIVELY LOW NONE UNKNOWN

Perceived Impact:

RELATIVELY HIGH **MODERATE** RELATIVELY LOW NONE UNKNOWN

Source: Pers. observation of the author

c) *Anchored Fish Aggregating Devices (FADs)*

Fishing effort:

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE **UNKNOWN**

Perceived Impact:

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE **UNKNOWN**

Source:

d) *Purse seine (with or without FADs)*

Fishing effort:

RELATIVELY HIGH MODERATE **RELATIVELY LOW** NONE UNKNOWN

Perceived Impact:

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Source: Pers. observation of the author

e) Longline (shallow or deepset)**Fishing effort:**

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Perceived Impact:

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Source: Pers. communication with Moazzam Khan Ex. Director General Marine Fisheries Department of Pakistan and pers. observation of the author

f) Driftnet**Fishing effort:**

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Perceived Impact:

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Source: Little is known based on anecdotal records and sporadic fisher inputs? Details required.

g) Other1 (from 1.4.1):**Fishing effort:**

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Perceived Impact:

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Source:

h) Other2 (from 1.4.1):**Fishing effort:**

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Perceived Impact:

RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Source:

1.4.3 Describe any **illegal fishing that is known to occur in or around the waters of your country that may impact marine turtles. Describe the measures being taken to deal with this problem and any difficulties encountered in this regard. [TSH]**

Illegal fishing is common along the coast of Pakistan due to poor enforcement of already present and thought out laws. There is monopoly of some strong fishers that carry out this practice with out any fear.

Major issues are use of extremely small mesh sized nets in Indus delta creeks and the Sindh coast, overfishing, long lengths of nets which are not according to the internationally accepted standards, increasing and unchecked fleet size, presence of sealords particularly in the Sindh province where the people whose lands have been intruded by sea think that they have full rights on the waters where their lands used to be and use of illegal fishing methods.

Federal Marine Fisheries Department along with provincial fisheries departments i.e. Sindh Fisheries and Balochistan Fisheries have a consistent monitoring programme to find and apprehend these culprits and the practice is so wide spread particularly along the Sindh coast (which unfortunately is also the most favoured area for marine turtles) that despite these efforts these illegal activities continue. There is need of thorough monitoring system and strict law enforcement to deal with this important issue.

1.4.4 Which of the following methods are used by your country to minimise incidental capture/mortality of marine turtles in fishing activities? [IND]

a) **Appropriate handling** of incidentally caught turtles (e.g. resuscitation or release by fishers using equipment such as de-hooking, line cutting tools and scoop nets)

YES NO NOT APPLICABLE

Some fishers are good at releasing trapped turtles however there is need to raise awareness in the fisher communities about importance of turtles.

b) **Devices that allow the escape of marine turtles** (e.g. turtle excluder devices (TEDs) or other measures that are comparable in effectiveness)

YES NO NOT APPLICABLE

Use of TEDs is mandatory for all fishing boats. The federal and provincial authorities have assigned the task to the Maritime Security Agency for ensuring compliance of TEDs on all fishing boats in the sea.

In November 2010, IUCN Pakistan under its Balochistan Partnership for Sustainable Development Programme, organized a training workshop for fishermen on use of TEDs.

c) **Measures to avoid encirclement** of marine turtles in purse seine fisheries

YES NO NOT APPLICABLE

d) **Appropriate combinations** of hook design, type of bait, depth, gear specifications and fishing practices

YES NO NOT APPLICABLE

e) **Monitoring and recovery of fish aggregating devices** (FADs)

YES NO NOT APPLICABLE

f) **Net retention and recycling schemes**

YES NO NOT APPLICABLE

g) **Spatial and temporal control of fishing** (e.g. seasonal closures of fishing activities)

YES NO NOT APPLICABLE

A ban on fishing is applied during southwest monsoon season for two months but for some years this is not well implemented.

h) **Effort management control**

YES NO NOT APPLICABLE

Other (list and explain):

None of the above

1.4.5 Which of the following programmes has your country developed - in consultation with the fishing industry and fisheries management organisations - to promote implementation of measures to minimise incidental capture and mortality of turtles in national waters and in the high seas? [IND]

Onboard observer programmes

YES NO NOT APPLICABLE

Only for foreign vessels, there are no observers on indigenous vessels.

Vessel monitoring systems

YES NO NOT APPLICABLE

Limited in extent.

Inspections (i.e. at sea, in port, at landing sites)

YES NO NOT APPLICABLE

Limited in extent.

Training programmes / workshops to educate fishers

YES NO NOT APPLICABLE

Marine Fisheries Department, Sindh Fisheries and Balochistan Fisheries Department , in collaboration with NGOs like WWF-Pakistan and IUCN Pakistan conduct fisher trainings for proper use of fishing gears and for training them to properly use new technologies including TEDs.

Informative videos, brochures, printed guidelines etc.

YES NO NOT APPLICABLE

A lot of work has been done on this aspect by government and non-government organizations (NGOs).

Other (list and explain):

YES NO NOT APPLICABLE

None of the above

1.4.6 Are the mitigation measures described in 1.4.4 and 1.4.5, periodically reviewed and evaluated for their efficacy? [SAP]

YES NO UNSURE

1.4.7 In your country, what types of data collection, research and development have been undertaken to support the reduction of marine turtle incidental catch (while taking into consideration the impact of various mitigation measures on other species)? [SAP]

Sindh Wildlife Department in collaboration with NGOs have carried out some surveys of fishing practices in relation to turtle by-catch. But research on this issue is at preliminary stage.

1.4.8 Has your country exchanged information and provided technical assistance (formally or informally) to other Signatory States to promote the activities described in 1.4.4, 1.4.5 and 1.4.7 above? [SAP]

YES NO UNSURE

1.4.9 What legislative and practical measures has your country taken in support of UN General Assembly Resolution 46/215 concerning the moratorium on the use of large-scale driftnets? [SAP]

Maine Fisheries Department is complying with the relevant resolution.

1.5.1 Does your country have legislation to prohibit direct harvest and domestic trade in marine turtles, their eggs, parts and products; and to protect important turtle habitats? [IND]

YES NO UNSURE

Marine turtles are "Protected" under Sindh Wildlife Protection Act 1972 and Balochistan Wildlife Protection Act 1975. Export and domestic consumption of turtles is prohibited under the Pakistan Fish Inspection and Quality Act 1997. Therefore the use or sale of marine turtles and their products is banned across the country.

1.5.2 Which, among the following list, are economic uses and cultural values of marine turtles in your country? Please rate the relative prevalence / importance of each consumptive or non-consumptive use. [INF]

**USES /
VALUES**

**RELATIVE PREVALENCE /
IMPORTANCE**

Meat consumption

YES NO

HIGH MODERATE LOW UNKNOWN

Egg consumption

YES NO

HIGH MODERATE LOW UNKNOWN

Shell products

YES NO

HIGH MODERATE LOW UNKNOWN

Fat consumption

YES NO

HIGH MODERATE LOW UNKNOWN

Traditional medicine

YES NO

HIGH MODERATE LOW UNKNOWN

Eco-tourism programmes YES NO HIGH MODERATE LOW UNKNOWN**Cultural / traditional significance** YES NO HIGH MODERATE LOW UNKNOWN**Other**

Not relevant, eco-tourism is at an early stage.

1.5.3 Please indicate the relative level and impact of traditional harvest on marine turtles and their eggs. [IND, TSH]**Level of harvest:** RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN**Impact of harvest:** RELATIVELY HIGH MODERATE RELATIVELY LOW NONE UNKNOWN

Source of information:

N/A

1.5.4 Have any **domestic management programmes been established to limit the levels of intentional harvest? [SAP]** YES NO UNKNOWN

N/A

1.5.5 Describe any management agreements negotiated **between your country and other States in relation to sustainable levels of traditional harvest, to ensure that such harvest does not undermine conservation efforts. [BPR]**

No agreement has been signed.

1.6.1 First, select one of the options at left to indicate whether or not your country has any of the following measures in place to minimise the mortality of eggs, hatchlings and nesting females. If yes, then estimate the relative effectiveness of these measures. [IND, SAP]**MEASURES****RELATIVE EFFECTIVENESS****Monitoring/protection programmes** YES NO N/A EXCELLENT GOOD LOW UNKNOWN

Through "watch and ward" patrolling on beaches, feral dogs and domestic animals are kept away from the nesting beaches. Nests that are considered at risk are moved to enclosures.

Education/awareness programmes YES NO N/A EXCELLENT GOOD LOW UNKNOWN

WWF Pakistan with the co-operation from Sindh Wildlife Department established a Wetlands Centre at Sandspit Karachi where permanent staff is placed for providing information to general public about local ecosystems and wildlife. People from all sections of society visit this place and get information about local environment and its features. Special activities such as beach cleaning, turtle watching, release of turtle hatchlings is carried out from this centre. People usually leave this place feeling more motivated for conservation of local environment and associated wildlife. The activities are carried out year round and local fisher communities also get economic benefit as well as education about marine environment.

Egg relocation/hatcheries YES NO N/A EXCELLENT GOOD LOW UNKNOWN

Sindh Wildlife Department in collaboration with WWF Pakistan undertakes such activities. Staff of Sindh Wildlife Department transfers turtle eggs to safe enclosures for hatching. The hatchlings are safely released in the sea after hatching.

Predator control YES NO N/A EXCELLENT GOOD LOW UNKNOWN

- Sindh Wildlife Department in collaboration with WWF Pakistan Wetlands Centre at Sandspit Karachi staff controls feral dog predation on turtle nests.
- Pakistan Wetlands Programme has involved communities of Daran beach, Balochistan to control predation on turtle nests.
- Pakistan Wetlands Programme has undertaken activities in collaboration with locals to control feral cats at Astola Island which is important nesting area for the turtles.

Vehicle / access restrictions YES NO N/A EXCELLENT GOOD LOW UNKNOWN

In addition, there is generally no restriction on visiting beaches (apart from some areas where access is restricted).

Removal of debris / clean-up YES NO N/A EXCELLENT GOOD LOW UNKNOWN

Beach cleaning activities are undertaken by the wildlife authorities of Sindh and Balochistan in collaboration with Pakistan Wetlands Programme and NGOs, like WWF-Pakistan etc.

Re-vegetation of frontal dunes YES NO N/A EXCELLENT GOOD LOW UNKNOWN

Balochistan Forest Department has implemented the Sand Dune Stabilization Project. The target species were not marine turtles, however, they have benefited from this project.

Building location/design regulations YES NO N/A EXCELLENT GOOD LOW UNKNOWN**Light pollution reduction**

YES NO N/A

EXCELLENT GOOD LOW UNKNOWN

Other (list and rate them)

YES NO N/A

1.6.2 Has your country undertaken any evaluation of its nest and beach management programmes?
[SAP]

YES NO NOT APPLICABLE

OBJECTIVE II. PROTECT, CONSERVE AND REHABILITATE MARINE TURTLE HABITATS

2.1.1 What is being done to protect critical habitats *outside* of established protected areas? (NB: It is assumed that legislation relating to established protected areas will have been described in Section 1.5.1) [BPR, SAP]

Pakistan Wetlands Programme has been interacted with the local communities for mass awareness and environmental friendly practices. Alternate livelihood practices are being promoted to reduce pressure from natural resources. In addition, WWF has their programmes of community participation and mass awareness.

2.1.2 Are assessments routinely made of the environmental impact of marine and coastal development on marine turtles and their habitats? [IND, SAP]

YES NO NOT APPLICABLE

EIA for all mega projects in environmentally sensitive areas including marine environment is obligatory under the Pakistan Environmental Protection Act 1997.

2.1.3 Is marine water quality (including marine debris) monitored near turtle habitats? If yes, describe the nature of this monitoring and any remedial measures that may have been taken. [SAP]

YES NO NOT APPLICABLE

National Institute of Oceanography (NIO) monitors the water quality of the Arabian Sea. As such, no issue has been pointed out except for occasional oil spills like Tasman Spirit case near Karachi.

2.1.4 Are measures in place to prohibit the use of poisonous chemicals and explosives? [SAP]

YES NO NOT APPLICABLE

Pakistan Environmental Protection Act (PEPA) 1997 prohibits the use of poisonous chemicals and explosives. The provincial Environmental Protection Agencies of Sindh and Balochistan ensure the implementation PEPA in their respective territories.

2.2.1 Are efforts being made to recover degraded coral reefs? If yes, give details (location, duration, effectiveness, lessons learned, future plans etc). [IND, SAP]

YES NO NOT APPLICABLE (no degraded coral reefs)

Coral reefs have recently been identified in territorial limits of Pakistan under an activity of Pakistan Wetlands Programme. The identified site is now being extensively surveyed.

2.2.2 Are efforts being made to recover degraded mangrove habitats that are important for turtles? If yes, give details (location, duration, effectiveness, lessons learned, future plans etc.) [IND, SAP]

YES NO NOT APPLICABLE (no mangrove habitats important for turtles)

During the last 5 years mangroves have been replanted in Sindh and Balochistan provinces. Mangrove replanting has been encouraged to increase nursery grounds for fish and shrimp stocks and other ecological benefits. In addition to Government initiatives, WWF and IUCN Pakistan are also very active in this regard.

2.2.3 Are efforts being made to recover degraded sea grass habitats? If yes, give details (location, duration, effectiveness, lessons learned, future plans etc.). [IND, SAP]

YES NO NOT APPLICABLE (no degraded sea grass habitats)

Such habitat type is under search by the Pakistan Wetlands Programme.

OBJECTIVE III. IMPROVE UNDERSTANDING OF MARINE TURTLE ECOLOGY AND POPULATIONS THROUGH RESEARCH, MONITORING AND INFORMATION EXCHANGE

3.1.1 Give a list of available literature that includes baseline information from studies carried out in your country on marine turtle populations and their habitats. [INF]

- 1) GHALIB, S.A. AND ZAIDI, S.H., 1976 Observation on the survey and breeding of Marine Turtles of Karachi coast. Agric. Pak., 27: 87 – 96.
- 2) GROOMBRIDGE, B., 1987a. Makran Coast: a newly explored habitat for marine turtles. WWF–Pakistan Newsl., 6: 1–5.
- 3) GROOMBRIDGE, B., 1987b. A preliminary marine turtle survey on the Makran coast, Baluchistan, Pakistan with notes on birds and mammals. IUCN Conservation Monitoring Centre, Cambridge (Unpublished report) 25 pp.
- 4) GROOMBRIDGE, B., KABRAJI, A.M. AND RAO, A.L., 1988. Marine Turtle in Baluchistan (Pakistan). Marine Turtle Newsl., 42: 1–3.
- 5) FIRDOUS, F. 1988 Conservation of turtles at Sandspit and Hawkesbay, Karachi. In: Proc. Int. Conf. on Marine Sciences of the Arabian Sea (eds. M.F. Thompson and N.M. Tirmizi), American Institute of Biological Sciences, Washington D.C: pp. 217–222.
- 6) GROOMBRIDGE, B., 1989. Marine turtles in Balochistan: Report on Aerial Survey, 9–11 September 1988 with notes on wetland sites and a proposed marine turtle Conservation project. World Conservation Monitoring Centre, Cambridge. Unpublished report. 22 pp.
- 7) FIRDOUS, F., 2001 Sea Turtle Conservation and Education in Karachi, Pakistan. ASEAN. In: Sea turtles of the Indo-Pacific (eds. N.J. Pitcher and G. Ismail) Rev. Biodiv. Environ. Conserv. (ARBEC) pp. 1–10.
- 8) ARSHAD, M., ALI, Z., MAHMOOD, H. AND MUZAFFAR, M., 2002. Makran Coastal Wetlands Complex – A preliminary biological assessment, WWF, Pakistan. pp. 60 (Unpublished report)
- 9) FIRDOUS, F., 2003 Some aspects of bioecological studies of green turtle (*Chelonia mydas*) and Olive Ridley Turtle (*Lepidochelys olivacea*) from Karachi Coast. Ph.D. thesis, Karachi University.
- 10) WWF – Pakistan 2004 Rapid Rural Appraisal – Tehsil Jiwani (Unpublished report)
- 11) Hussain, B. 2010. Studies on population, status, distribution, and environmental impacts on reptiles in the vicinity of Karachi coast. PhD thesis. University of Karachi. Pakistan.
- 12) WAQAS, U., HASNAIN, S. A., AHMAD, E., ABBASI, M. and PANDRANI, A. 2011. Conservation of Green Turtle (*Chelonia mydas*) at Daran Beach, Jiwani, Balochistan. Pakistan J. Zool., vol. 43(1), pp. 85-90).

3.1.2 Have long-term monitoring programmes (i.e. of at least 10 years duration) been initiated or planned for priority marine turtle populations frequenting the territory of your country? [IND, BPR]

YES NO UNSURE

A long term monitoring programme for green turtles is underway at the Sandspit and Hakesbay beaches of the Sindh coast. This programme is being run by Sindh Wildlife Department with collaboration of Wetlands Centre of WWF Pakistan and some corporate groups. This programme aims to provide better protection to female turtles coming on these beaches, reducing the number of stressors and predators, patrolling and safeguarding turtle nesting beaches, nests and hatchlings, local community awareness raising, beach cleaning activities and safe release of hatchlings after hatching.

A similar programme is also being carried out at Daran beach of the Balochistan coast where Pakistan Wetlands programme is taking care of green turtles that come for egg laying. There have been no breaks in data collection since these programmes started and it is now regular feature to collect yearly data about turtles coming for nesting, counting number of nests and number of hatchlings released.

3.1.3 Has the genetic identity of marine turtle populations in your country been characterised? [INF, PRI]

YES NO UNSURE

NIL

3.1.4 Which of the following methods have been or are being used to try to identify migration routes of turtles? Use the text boxes to provide additional details. [INF, PRI]

Tagging YES NO

Sindh Wildlife Department tags selected females visiting beaches for nesting.

Satellite tracking YES NO

Sindh Wildlife Department and Pakistan Wetlands Programme have carried out such activity (but at limited scale).

Other

None of the above

3.1.5 Have studies been carried out on marine turtle population dynamics and survival rates (e.g. including studies into the survival rates of incidentally caught and released turtles)? [INF, PRI]

YES NO UNSURE

3.1.6 Has research been conducted on the frequency and pathology of diseases in marine turtles? [INF, PRI]

YES NO UNSURE

3.1.7 Is the use of traditional ecological knowledge in research studies being promoted? [BPR, PRI]

YES NO UNSURE

Yes, up to some extent only in one or two recent publications i.e. Hussain (2010) and Waqas et al., (2011). This area need to be improved in upcoming studies.

3.2.1 List any [regional or sub-regional action plans](#) in which your country is already participating, which may serve the purpose of identifying priority research and monitoring needs. [\[INF\]](#)

Nil

3.2.2 On which of the following themes have [collaborative](#) studies and monitoring been conducted? Use the text boxes to describe the nature of this international collaboration or to clarify your response. Answer 'NO' if the studies/monitoring undertaken do not involve [international](#) collaboration. [\[INF, PRI\]](#)

a) Genetic Identity YES NO NOT APPLICABLE

b) Conservation status YES NO NOT APPLICABLE

Sindh and Balochistan Governments undertake conservation efforts in collaboration with the Federal Government.

c) Migrations YES NO NOT APPLICABLE

Marine turtles are tagged to monitor the migration pattern.

d) Other biological and ecological aspects YES NO NOT APPLICABLE

There is a growing trend to collaborate with the neighbouring countries, to share the experiences of biological and ecological studies under the umbrella of different conventions and United Nations agencies.

Other

3.3.1 List, in order of priority, the marine turtle populations in your country in need of conservation actions, and indicate their population trends. [\[PRI\]](#)

Priority sites /locations in Sindh province: Hawks bay, Sand pit and Hub River Estuary.

Priority sites /locations in Balochistan province: Omara Turtle Beaches, Jiwani Turtle Beaches, Hingol National Park Beaches and Astola Island

Population trend: Green turtle is more common and its population has shown a stable trend for past many years though it is presently facing a multitude of threats along the coast of Pakistan. On the other hand olive ridely has not been spotted since 2004 (Hussain, 2010).

3.3.2 Are research and monitoring activities, such as those described above in Section 3.1 periodically reviewed and evaluated for their efficacy? [\[SAP\]](#)

YES NO UNSURE

3.3.3 Describe how research results are being applied to improve management practices and mitigation of threats (in relation to the priority populations identified in 3.3.1, among others). [\[SAP\]](#)

Research results are being used to improve the efficacy of conservation actions through assessment of hatchery management practices and assessment of habitat loss.

3.4.1 Has your country undertaken any initiatives (nationally or through collaboration with other Range States) to standardise methods and levels of data collection? [BPR, INF]

YES NO UNSURE

3.4.2 To what extent does your country exchange scientific and technical information and expertise with other Range States? [SAP, IND]

OFTEN (SYSTEMATICALLY) OCCASIONALLY RARELY NEVER

3.4.3 If your country shares scientific and technical information and expertise with other Range States, what mechanisms have commonly been used for this purpose? Comment on any positive benefits/outcomes achieved through these interactions. [INF]

Through sharing published materials.

3.4.4 Does your country compile and make available to other countries data on marine turtle populations of a regional interest? [INF]

YES NO UNSURE

OBJECTIVE IV. INCREASE PUBLIC AWARENESS OF THE THREATS TO MARINE TURTLES AND THEIR HABITATS, AND ENHANCE PUBLIC PARTICIPATION IN CONSERVATION ACTIVITIES

4.1.1 Describe the educational materials, including mass media information programmes that your country has collected, developed and/or disseminated. [INF, PRI]

Posters, radio, TV awareness campaigns (marine turtle identification, ecology, threats, nesting beach protocol) targeted at coastal communities are carried out by the Provincial Wildlife Department in Sindh Province. Ongoing school trips to nesting sites to enhance awareness at grass root levels.

A programme was developed and implemented by the Sindh Wildlife Department in the form of brochures and posters.

Ministry of Environment has its own website.

Newsletters include: Zoological Records published by the Zoological Survey Department and WWF and IUCN- Pakistan newsletters and websites.

4.1.2 Which of the following groups have been the targets of these focused education and awareness programmes described in above in Section 4.1.1? [PRI, INF]

- Policy makers
- Fishing industry
- Local/Fishing communities
- Indigenous groups
- Tourists
- Media
- Teachers
- Students
- Military, Navy, Police
- Scientists
- Other: Foreign delegates and tourists.
- None of the above

The school children are encouraged to visit the information centre established by WWF-Pakistan and also to undertake beach clean up activities to educate them in nature conservation issues.

4.1.3 Have any community learning / information centres been established in your country? [BPR, SAP]

YES NO

WWF Pakistan with the co-operation from Sindh Wildlife Department established a Wetlands Centre at Sandspit Karachi where permanent staff is placed for providing information to general public about local ecosystems and wildlife. People from all sections of society visit this place and get information about local environment and its features. Special activities such as beach cleaning, turtle and watching, release of turtle hatchlings is carried out from this centre. People usually leave this place feeling more motivated for conservation of local environment and associated wildlife. The activities are carried out year round and local fisher communities also get economic benefit as well as education about marine environment.

4.2 Alternative livelihood opportunities [IND, BPR] Describe initiatives already undertaken or planned to identify and facilitate alternative livelihoods (including income-generating activities) for local communities.

Turtle, bird and dolphin watching activities are carried out from the WWF Wetlands centre at Sandspit, Karachi and in all these activities local fisher communities are involved in order to help them economically through these alternative livelihood programmes. Turtle and bird watching is well established and hundreds of people come and join these activities year round however dolphin watching ecotourism is still in infancy but the response from general public is overwhelming.

Due to the concern about people security in sea and also to minimize disturbance to dolphins this activity is carried out at small scale and will be slowly built based on experience gained through these pilot trips. There are lot of challenges that come in the way of development of such enterprises which include lack of infrastructure, lack of skilled people, uneducated and poor fishers. These need to be addressed properly if such enterprises are to be developed. There is also need to expand this effort to other segments of the coastline to benefit greater fisher communities.

4.3.1 Describe initiatives already undertaken or planned by your country to involve local communities, in particular, in the planning and implementation of marine turtle conservation programmes. Please include details of any incentives that have been used to encourage public participation, and indicate their efficacy. [BPR, IND]

Recently stakeholder dialogue has been initiated by SWD with the support of WWF Pakistan and IUCN. Through these dialogues, local knowledge of marine and coastal ecosystems can be gained, and potential opportunities of how communities can be involved in protection and management can be explored.

4.3.2 Describe initiatives already undertaken or planned to involve and encourage the cooperation of Government institutions, NGOs and the private sector in marine turtle conservation programmes. [IND, BPR]

Office of the Conservator Wildlife, Disaster Management Division (previously National Council for Conservation of Wildlife (NCCW), Ministry of Environment) is trying to involve provincial wildlife departments in undertaking such initiatives with the collaboration of local and international NGOs.

A Wetlands Management Committee has also been created for better coordination among the line agencies. This office also coordinates with various ministries, provinces, NGOs and other agencies for cooperation on issues related to biodiversity conservation (including marine turtles).

OBJECTIVE V. ENHANCE NATIONAL, REGIONAL AND INTERNATIONAL COOPERATION

5.1.1 Has your country undertaken a national review of its compliance with Convention on International Trade in Endangered Species (CITES) obligations in relation to marine turtles? [SAP]

YES NO NOT APPLICABLE

5.1.2 Does your country have, or participate/cooperate in, CITES training programmes for relevant authorities? [SAP]

YES NO NOT APPLICABLE

As a Party to the Convention, Pakistan actively participate in all relevant training workshops/programmes.

5.1.3 Does your country have in place mechanisms to identify international illegal trade routes (for marine turtle products etc.)? Please use the text box to elaborate on how your country is cooperating with other States to prevent/deter/eliminate illegal trade. [SAP]

YES NO NOT APPLICABLE

Such information is provided by the CITES Secretariat and TRAFFIC international through their newsletters and circulars. NGOs also play a role in this regard and undertake different studies to monitor illegal trade and its routes.

5.1.4 Which international compliance and trade issues related to marine turtles has your country raised for discussion (e.g. through the IOSEA MoU Secretariat, at meetings of Signatory States etc.)? [INF]

None

5.1.5 Describe measures in place to prevent, deter and eliminate domestic illegal trade in marine turtle products, particularly with a view to enforcing the legislation identified in Section 1.5.1. [INF]

Legislation: Wildlife Protection Acts impose a complete ban on domestic and international trade in marine turtles and their products. The Marine Fisheries Department and Coast Guard are responsible for monitoring compliance.

Education and awareness programmes targeted at coastal communities are aimed at preventing illegal trade.

5.2.1 Has your country already developed a national action plan or a set of key management measures that could eventually serve as a basis for a more specific action plan at a national level? [IND]

YES NO

- Strategic Plan for Conservation of Marine Turtles in Pakistan is being finalized by IUCN Pakistan under its Balochistan Partnership for Sustainable Development Programme in consultation with all stakeholders. It will address all issues.
- The Biodiversity Action Plan of Pakistan will provide the basis for development of national turtle action plan.
- In addition to that, Pakistan Wetlands programme is in process of developing an action plan for the conservation of wildlife, including marine turtles which are of global significance.
- The National Conservation Strategy (NCS) of Pakistan has also been reviewed.

5.2.2 From your country's perspective, which conservation and management activities, and/or which particular sites or locations, ought to be among the highest priorities for action? [PRI]

Conservation and management activities:

- Conservation of critical habitats of marine turtles in the water and the land.
- Awareness raising, capacity building and changing behaviour.
- Research and monitoring.

Priority sites /locations in Sindh province: Hawks bay, Sand pit and Hub River Estuary.

Priority sites /locations in Balochistan province: Omara Turtle Beaches, Jiwani Turtle Beaches, Hingol National Park Beaches and Astola Island.

5.2.3 Please indicate, from your country's standpoint, the extent to which the following local management issues require international cooperation in order to to achieve progress. [PRI]

- Illegal fishing in territorial waters ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Incidental capture by foreign fleets ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Enforcement/patrolling of territorial waters ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Hunting/harvest by neighboring countries ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Poaching, illegal trade in turtle projects ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Development of gear technology ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Oil spills, pollution, marine debris ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Training / capacity-building ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Alternative livelihood development ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Identification of turtle populations ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Identification of migration routes ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Tagging / satellite tracking ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Habitat studies ESSENTIAL IMPORTANT LIMITED NOT AT ALL
- Genetics studies ESSENTIAL IMPORTANT LIMITED NOT AT ALL

Nil

5.3.1 Identify existing frameworks/organisations that are, or could be, useful mechanisms for cooperating in marine turtle conservation at the sub-regional level. Please comment on the strengths of these instruments, their capacity to take on a broader coordinating role, and any efforts your country has made to enhance their role in turtle conservation. [INF, BPR]

Informally share information through electronic media (email, internet). Geopolitical situation does not permit the frequent exchange of information.

Participation in regional and global level meetings under various conventions has resulted in synergies with other agencies.

5.3.2 Has your country developed, or is it participating in, any networks for cooperative management of shared turtle populations? [BPR, INF]

YES NO NOT APPLICABLE

5.3.3 What steps has your country taken to encourage Regional Fishery Bodies (RFBs) to adopt marine turtle conservation measures within Exclusive Economic Zones (EEZs) and on the high seas? [SAP]

Nil

5.4.1 Describe your country's needs, in terms of human resources, knowledge and facilities, in order to build capacity to strengthen marine turtle conservation measures. [PRI]

Training of the researchers to carry out tagging, tracking and genetic studies is important and needs international co-operation. Development of a local facility to conduct such activities is essential if Pakistan is to save its marine turtle fauna for future generations. Help from international turtle experts in dealing with incidental turtle capture in local fisheries and development of proper methods to minimize or preclude this issue will be really helpful. Pollution along some of the key turtle areas along Pakistan coast e.g. Karachi coast is rising which needs quick response from government and researchers. Skill development and training to carry out such research according to international standards is key for the betterment of turtle habitats in Pakistan and for marine environment in general. More funding (if made available) can do a lot of good for these turtle populations.

5.4.2 Describe any training provided in marine turtle conservation and management techniques (e.g. workshops held, training manuals produced etc.), and indicate your plans for the coming year. [PRI, INF]

- In February IUCN Pakistan under its Balochistan Partnership for Sustainable Development Programme, organized arranged a seminar to highlight marine turtles conservation issues at Karachi.
- In November 2010 IUCN Pakistan under its Balochistan Partnership for Sustainable Development Programme, organized a four-day workshop "Finalization of Strategic Plan for Conservation of Marine Turtles in Pakistan" at Karachi.
- In November 2010 IUCN Pakistan under its Balochistan Partnership for Sustainable Development Programme, organized a training workshop for fishermen on use of TEDs.

5.4.3 Specifically in relation to [capacity-building](#), describe any partnerships developed or planned with universities, research institutions, training bodies and other relevant organisations. [BPR]

Nil

5.5.1 National policies and laws concerning the conservation of marine turtles and their habitats will have been described in Section 1.5.1. Please indicate their effectiveness, in terms of their practical application and enforcement. [SAP, TSH]

Marine turtles are "Protected" under Sindh Wildlife Protection Act 1972 and Balochistan Wildlife protection Act 1975. Export and domestic consumption of turtles is prohibited under the Pakistan Fish Inspection and Quality Act 1997. Therefore the use or sale of marine turtles and their products is banned across the country. A positive change is expected in future by effective implementation of these laws.

5.5.2 Has your country conducted a review of policies and laws to address any gaps, inconsistencies or impediments in relation to marine turtle conservation? If not, indicate any obstacles encountered in this regard and when this review is expected to be done. [SAP]

YES NO UNSURE

Strategic Plan for Conservation of Marine Turtles in Pakistan is being finalized by IUCN Pakistan under its Balochistan Partnership for Sustainable Development Programme in consultation with all stakeholders. It will address all issues.

5.5.3 From the standpoint of law enforcement, has your country experienced any difficulties achieving cooperation to ensure compatible application of laws across and between jurisdictions? [TSH]

YES NO UNSURE

OBJECTIVE VI. PROMOTE IMPLEMENTATION OF THE MoU INCLUDING THE CONSERVATION AND MANAGEMENT PLAN

6.1.1 What has your country already done, or will it do, to encourage other States to sign the IOSEA MoU? [INF]

Nil

6.1.2 Is your country **currently favourable, in principle, to amending the MoU to make it a legally binding instrument? [INF]**

YES NO NO VIEW

6.1.3 Would your country be favourable, over a **longer time horizon, to amending the MoU to make it a legally-binding instrument? [INF]**

YES NO NO VIEW

6.2 Secretariat and Advisory Committee

6.2.1 What efforts has your country made, or can it make, to secure funding to support the core operations of the IOSEA MoU (Secretariat and Advisory Committee, and related activities)? [IND]

Not applicable.

6.3.1 What funding has your country mobilised for domestic implementation of marine turtle conservation activities related to the IOSEA Marine Turtle MoU? Where possible, indicate the specific monetary values attached to these activities/programmes, as well as future plans. [IND]

- Provincial wildlife authorities carry out different activities on their own allocated funds.
- Pakistan Wetlands Programme is funded by GEF and other donors like Embassy of the Kingdom of the Netherlands. This Programme has been carrying of various activities regarding marine turtle conservation.
- IUCN Pakistan is implementing Balochistan Partnership for Sustainable Development Programme funded by Embassy of the Kingdom of the Netherlands; this programme also has marine turtle conservation activities.

6.3.2 Has your country tried to solicit funds from, or seek partnerships with, other Governments, major donor organisations, industry, private sector, foundations or NGOs for marine turtle conservation activities? [IND]

YES NO

WWF-Pakistan has funding mechanisms to encourage civil society conservation efforts, in the form of viable projects.

We are in the process of seeking international support for the Pakistan Wetlands Project . This project includes a component on marine turtle conservation.

6.3.3 Describe any initiatives made to explore the use of economic instruments for the conservation of marine turtles and their habitats. [BPR]

Sindh Wildlife Department, Karachi, is promoting ecotourism in collaboration with IUCN/WWF in the coastal areas and creating awareness among the public for conservation of coastal and marine ecosystems. Pakistan Wetlands Programme of (under ex. Ministry of Environment of Pakistan) is also putting in considerable effort to increase awareness among coastal communities and also for turtle conservation.

6.4.1 Has your country designated a lead agency responsible for coordinating national marine turtle conservation and management policy? If not, when is this information expected to be communicated to the IOSEA MoU Secretariat? [IND]

YES NO

Office of the Conservator Wildlife, Disaster Management Division (ex. National Council for Conservation of Wildlife) Pakistan is the focal agency for inter-provincial coordination.

6.4.2 Are the roles and responsibilities of all government agencies related to the conservation and management of marine turtles and their habitats clearly defined? [IND]

YES NO UNSURE

The roles of different agencies for conservation of marine turtles are clearly defined.

6.4.3 Has your country ever conducted a review of agency roles and responsibilities? If so, when, and what was the general outcome? If not, is such a review planned and when? [SAP],

YES NO UNSURE

Comments/suggestions to improve the present reporting format:

Nil

Additional information not covered above: