COPING WITH THE ECOLOGICAL IMPACTS OF CLIMATE CHANGE : A PROPOSAL TO ESTABLISH A PROTECTED AREA NETWORK FOR CETACEANS IN BANGLADESH

Prepared by
the Wildlife Conservation Society and
Bangladesh Cetacean Diversity Project
in association with the Bangladesh
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WILDLIFE CONSERVATION SOCIETY

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GOALS

The proposed Protected Area Network for Cetacean Diversity (PANCD) aims to achieve three inter-connected goals. The first is to conserve cetacean diversity in Bangladesh now while the current population sizes of a number of species at global risk are known to be sufficient for long-term survival if threats can be reduced. The second is to incorporate the needs of local communities for freshwater and abundant fish and crustacean resources into cetacean protection plans. And the third is to use the protected area network as a mechanism for coping with and better understanding the ecological impacts of declining freshwater supplies and global climate change. Together these goals represent an ideal opportunity to connect wildlife conservation with the sustainable management of aquatic resources in the face of changing environmental conditions.

STATEMENT OF NEED AND ORGANIZATIONAL CAPACITY

The need for a Protected Area Network for Cetacean Diversity (PANCD) in Bangladesh is based on the strong potential to benefit the lives of local people and to achieve effective conservation of a number of cetacean species at risk of extinction within the framework of ecological changes resulting from global climate change and declining freshwater flows.

The Wildlife Conservation Society is ideally suited to implement the PANCD project due to its extensive experience working with NGO partners, local communities and government agencies in Bangladesh and many other developing countries throughout the world to protect wildlife and the livelihoods of local people who depend on natural resources.

BACKGROUND

Human induced climate change and the decline in the availability and quality of freshwater are expected to cause major changes to aquatic ecosystems; however, our understanding of the physical processes and details of ecological effects are rudimentary. This has potentially catastrophic consequences for biological diversity and human welfare.

At the interface of fresh and marine waters are estuaries that support extremely high levels of biological diversity. Freshwater flowing into estuaries terminates in underwater rivers or turbidity currents that erode and contribute to the productivity of submarine canyons. These canyons in turn amplify upwelling and, similar to estuaries, are hotspots of biological production and diversity.

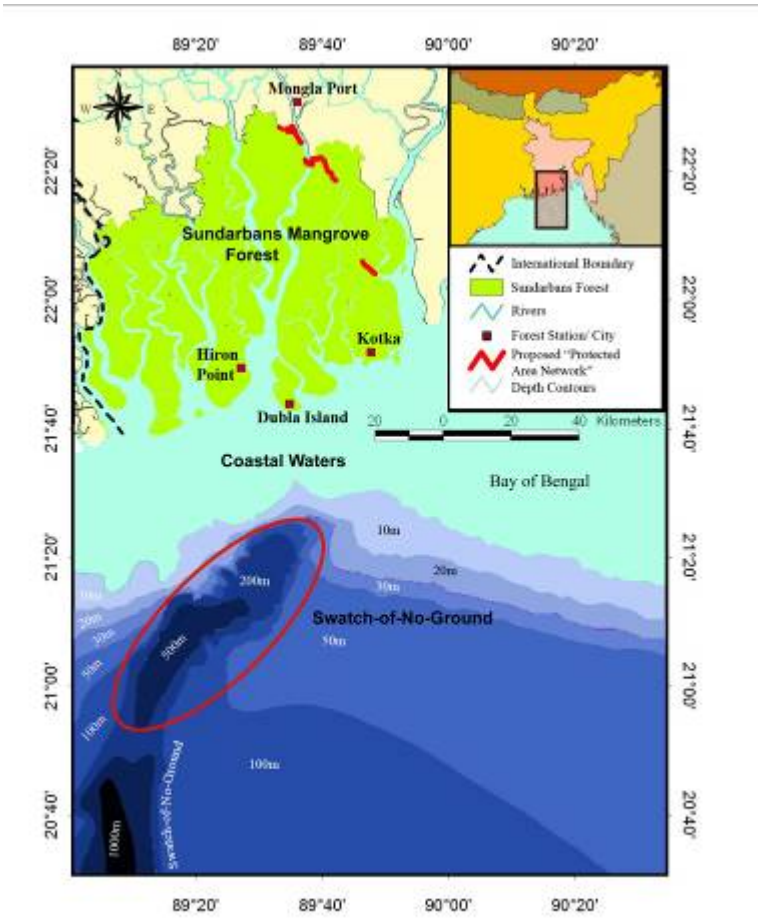
Studies conducted by the Wildlife Conservation Society (WCS) identified a 120-kilometer-wide belt of estuarine, coastal and submarine-canyon waters in Bangladesh as a global hotspot of cetacean (scientific grouping of dolphins, whales, and porpoises) abundance and diversity. This prime cetacean habitat extends across the world's largest continuous mangrove forest and offshore to a 900 plus-meter undersea canyon known as the Swatch-of-No-Ground (SoNG). Waterways of the mangrove forest encompass the farthest downstream range of the "endangered" Ganges River dolphin or Shushuk *Platanista gangetica*. In a narrow geographic band occurring within the same habitat is the farthest upstream distribution of a seasonally mobile population of the "vulnerable" Irrawaddy dolphin *Orcaella brevirostris*. Farther offshore but still occurring in habitat influenced by freshwater inputs is the Indo-Pacific humpback dolphin *Sousa chinensis* and finless porpoise *Neophocaena phocaenoides*. Then a relatively short distance from the fluvial habitat of Shushuks is the SoNG, where a burst of productivity supports large groups of Indo-Pacific bottlenose dolphins *Tursiops aduncus,* Pantropical spotted dolphins *Stenella attenuata,* Spinner dolphins *Stenella longrirostris,* and a probably resident population of Bryde's whales *Balaenoptera edeni/brydei*. The diversity of cetaceans occupying this relatively small area is remarkable, and rigorous abundance estimates indicate that Bangladesh serves a regionally vital role as a reservoir of cetacean abundance and diversity. The area also supports a wide range of intensive fisheries vital to the food security and nutritional health of a large and growing human population.

Cetaceans in the mangrove forest, coastal and deep-sea waters of Bangladesh integrate the ecological impacts of what are probably the two greatest environmental challenges of the 21st century: global climate change and declining freshwater supplies. The sensitivity of these species to physical and ecological changes related freshwater inputs and sea-level rise led to a recent recommendation by the Standing Working Group on Environmental Concerns of the International Whaling Commission that these animals be used as a case study for understanding the impacts of climate change on cetaceans.

CONSERVATION APPROACH

The conservation approach of the PANCD is participatory, pro-active, and science-based. It addresses local and climate change related threats within an adaptive management framework that is sensitive to the needs of local stakeholders. Three protected sites are initially proposed for Shushuks and Irrawaddy dolphins in the eastern Sundarbans mangrove forest and a single bi-national protected area is proposed for the Swatch-of-No-Ground, which would include both Bangladesh and Indian waters. In coastal waters, a range of conservation measures would be employed to reduce accidental killing of small cetaceans in fishing nets and monitor potential distributional and life history changes associated with climate change and declining freshwater supplies.

We plan to initially focus on Bangladesh, establishing the proposed protected area network in the eastern Sundarbans and extending research and conservation activities farther offshore in coastal and deep-sea canyon waters. In the long-term we plan to engage with India about establishing a bi-national protected area in the SoNG and possibly one in the western Sundarbans.



PROPOSED ACTIVITIES

The "glue" holding the PANCD together is a set of five priority initiatives to be conducted by the Wildlife Conservation Society in collaboration with the Bangladesh Ministry of Environment and Forests and Department.

Adaptation to the Future – Coping with Declining Freshwater Supplies and Global Climate Change

The 'Adaptation to the Future' initiative will integrate information from ecological investigations in protected area segments and adjacent waters (see below) to develop adaptive management models for coping with the impacts of declining freshwater supplies and sea-level rise. A primary goal of the PANCD, along with safeguarding threatened cetacean species, is to enhance the fisheries potential of adjacent waters by protecting fish and crustacean recruitment in dolphin hotspots. As more information becomes available, management responses, including the location and configuration of protected area sites, may be altered to achieve optimum benefits for cetaceans, fish stocks and local people.

Foundations of Tomorrow – Building Local Capacity and Strengthening Local Partnerships

The 'Foundations of Tomorrow' initiative is vital for ensuring the long-term success of the PANCD. This initiative will provide intensive training and mentoring support for local scientists, students, and resource managers who will carry out PANCD activities. More specifically the initiative will involve (1) Partnering with government agencies and local NGOs; (2) Developing an internship program for graduate students in zoology, fisheries, and environmental science and providing them opportunities and guidance for using research findings as part of their Master's and Ph.D. theses; and (3) Providing training and technical support for scientists and resource managers to execute rigorous cetacean and fisheries research and effective conservation interventions.

Share our Smiles – Educational Outreach

'Share our Smiles' is an interactive educational outreach program which aims to disseminate information to local communities on cetacean conservation, sustainable fisheries management and strategies to cope with global climate change and declining freshwater flows. A comprehensive compilation of information, the 'Toolkit for Educators', will combine fun facts, pictures, games, group activities and innovative methods to give teachers, community leaders, NGO field workers, and decision makers a powerful tool to promote socially and culturally appropriate information. The program will partner with local NGOs to expand it outreach among coastal communities and fringe villages of the Sundarbans.

Saving Lives – People and Dolphins

The 'Saving Lives' initiative has a dual, linked purpose. It will improve the safety and livelihoods of coastal fishermen through a Fishermen's Safety Network while protecting coastal cetaceans at risk of extinction. The initiative connects key human development and biodiversity conservation goals in cyclone affected areas by addressing their most destructive effects (the loss of human life and livelihoods) and the most critical threats to dolphins and porpoises (death from entanglement in fishermen's gillnets). The 'Saving Lives' initiative will improve the lives and livelihoods of these communities by providing coastal gillnet fishermen with inexpensive Global Positioning Systems (GPS) and depth sounders, and training them on how to confidently and quickly use this equipment to navigate to safety during storms. The initiative will save dolphin lives by training and encouraging fishermen to safely release live cetaceans found entangled in their nets and collect vital biological information on animals that are found already dead.

Understanding our Waters – Research and Monitoring

The 'Understanding our Waters' initiative will provide science-based knowledge needed to implement the PANCD and effectively conserve cetacean diversity in Bangladesh in the face of global climate change and declining freshwater supplies. Key components of this initiative include (1) Investigating the ecological characteristics of freshwater cetacean hotspots and their value to adjacent areas as reservoirs of biological productivity; (2) Monitoring the conservation status and tracking long-term habitat trends of cetaceans with dedicated surveys and a sighting network established among captains of nature tourism vessels; and (3) Investigating cetacean mortality in gill-net fisheries through systematic interviews with fishermen and encouraging them to report mortalities and collect biological information from entangled animals via the 'Saving Lives' initiative (see above).

For questions or additional information please contact

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