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Introduction

The Sulu-Sulawesi Marine Ecoregion (SSME) is located in the Indo-West Pacific, the global center of marine biodiversity (Briggs, 1999). Within this center is an area of maximum coral and tropical reef fish diversity called the Coral Triangle. The SSME is situated at the apex of this triangle. Geographically found between 15° N latitude and 116° E longitude and 0° N latitude and 127° E longitude just above the equator, the SSME touches the coastlines of Indonesia, Malaysia, and the Philippines, and covers an area of nearly a million square kilometers (Figure 1). It comprises the Philippine Inland Seas (Sibuyan Sea, Visayan Sea, Camotes Sea, and Bohol/Mindanao Sea), the Sulu Sea, the Sulawesi Sea, and the small islands and large island provinces within.

Conserving Migratory Species Through Ecoregion Conservation Approach: The Case of Sea Turtles in Sulu-Sulawesi Marine Ecoregion



Figure 1. The SSME comprises the Philippine Inland Seas (Sibuyan Sea, Visayan Sea, Camotes Sea, and Bohol/Mindanao Sea), the Sulu Sea, the Sulawesi Sea, and the small islands and large island provinces within.

Thirty-five million inhabitants directly benefit from the biodiversity of this marine ecoregion in terms of fisheries, tourism, navigation for trade and commerce, transportation and communication. Coastal development has significantly progressed to support various economic activities and for human habitation. Unsustainable trends in the use of these resources and the complex patterns of human-mediated activities in the region however, resulted in local extinction of species, depletion of biological populations, and degradation and loss of habitats.

Recognizing that small-scale and site-specific approaches to conservation do not achieve full conservation results, the World Wide Fund for Nature (WWF) developed a more comprehensive, long-term, and large-scale approach to biodiversity conservation called ecoregion conservation. Ecoregion is defined as a relatively large unit of land or water that is biologically distinctive and harbors a characteristic set of species, ecosystems, dynamics and environmental conditions (WWF, 1998). Through WWF's comprehensive analysis of the earth's biological wealth, 238 ecoregions, which represent the earth's biodiversity were

identified. Of the over 200 terrestrial, freshwater, and marine ecoregions, the SSME was identified as one of WWF's priority marine ecoregions. This evolutionary approach is designed to conserve, and where necessary, restore the fullest possible range of biodiversity over large spatial and temporal scales.

The first step in the process for developing an ecoregion conservation program is the reconnaissance - a rapid assessment of the ecoregion's biodiversity, threats and opportunities for conservation as well as the identification of existing interventions and key actors. The next step is the formulation of the biodiversity vision where the aspirations for conserving and restoring the biodiversity of the Sulu-Sulawesi Seas are articulated. This vision is set by a broad range of stakeholders and experts based on the biophysical and socioeconomic assessments. The vision, a 50-year goal for biodiversity conservation in the ecoregion, is anchored on the four fundamental goals of conservation:

- The representation of all distinct natural communities within a network of protected areas;

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Box 1. Biodiversity of the SSME.



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The SSME harbors, among others, 22 species of whales and dolphins including sperm and killer whales; 5 of the world's 7 species of sea turtles; the endangered dugong or sea cow; whale shark, the largest fish in the world; the very rare megamouth shark; the highly prized Napoleon wrasse; and even the extremely rare deep-dwelling coelacanth, the only living representative of a group of fishes from the dinosaur era.

The biodiversity of the Sulu-Sulawesi Marine Ecoregion provides direct benefits in terms of fisheries, tourism and navigation for trade and commerce, transportation and communication to 35 million inhabitants.

The SSME Vision



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A marine ecoregion that remains to be globally unique and a center of diversity with vibrant ecological integrity, harboring representative species, assemblages, communities, habitats, and ecological processes. A highly productive ecoregion that sustainably and equitably provides for the socioeconomic and cultural needs of the human communities dependent on it. An ecoregion where biodiversity and productivity are sustained through generations by participatory and collaborative management across all political and cultural boundaries.

- The maintenance of ecological and evolutionary processes that create and sustain biodiversity;
- The maintenance of viable populations of species; and
- The conservation of blocks of natural habitats large enough to be responsive to large-scale periodic disturbances and long-term changes.

Based on the biodiversity vision, a broad stakeholders' Ecoregional Conservation Plan is developed through stakeholders' workshops and situation analysis. The conservation plan sets the 10-15 year conservation goals for the ecoregion and identifies conservation actions to achieve these goals.

The vision for the SSME was formulated through the Workshop to Formulate the Biodiversity Conservation Vision for the Sulu-Sulawesi Marine Ecoregion (SSME) held in March 2001. Seventy-eight biophysical and socio-economic experts from Indonesia, Malaysia and the Philippines participated in the workshop.

While the Ecoregion Conservation Plan is being formulated, an interim WWF action plan has been developed. This plan was based on the biodiversity vision and the recommendations of the visioning workshop. It outlines specific targets, actions to achieve the targets, and activities to be undertaken by WWF over a period of five years. This provides basis for WWF's conservation interventions on issues that require immediate action while the planning process is still being completed. The over-all goal of the interim WWF action plan is to ensure continuous adoption of the fundamental goals of biodiversity conservation and advocate

economic development compatible with biodiversity conservation. Under the plan, WWF will pursue ten objectives, one of which is: “threatened species and their habitats protected to maintain viable populations”.

The ecoregion functions as important habitat for both human communities as well as diverse populations of marine wildlife including, among others, five of the seven species of sea turtles. Since these highly migratory marine reptiles are susceptible to extreme development-driven threats and unsustainable fishing practices, conservationists have recommended all species except the Australian flatback and Kemp’s ridley to be included in The World Conservation Union (IUCN) Red List as endangered or vulnerable. All seven sea turtle species are also listed under Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and under Appendices I and II of the Convention on Migratory Species (CMS). Three important habitats of green and hawksbill turtles are found in the Sulu-Sulawesi Seas. These include the nine islands of the Turtle Islands cut across by national borders placing six within the Philippines and three within Malaysia; the Sipadan Island, located in one of the corridors that connect the Sulu and Sulawesi Seas; and the Derawan Group of Islands on the side of Sulawesi Sea, in East Kalimantan,

Indonesia. These islands play an important part in the life cycle of sea turtles in the region (Figure 2).

To strengthen and increase effectiveness of conservation efforts at the national and regional scales, WWF along with other relevant stakeholders from Indonesia, Malaysia and the Philippines through its SSME Program recognized the need to establish a tri-national conservation program for sea turtles

in the SSME. To address this need, the WWF-SSME Program is currently facilitating a tri-national initiative for a coordinated conservation of sea turtles within the context of the ecoregion program. In line with this, the program brought together 22 local managers, decisionmakers, NGO representatives, and government officials from Indonesia, Malaysia and the Philippines for the first Tri-National Training Program on Sea Turtle Biology and



Figure 2. Three important habitats of green and hawksbill turtles can be found in the Sulu-Sulawesi Seas. These include the nine islands of the Turtle Islands cut across by national borders.

The Tri-National Turtle Protected Area hopes to initiate on-the-ground formal tri-national collaboration and cooperation in the conservation of sea turtles in the Sulu-Sulawesi Seas. If the expansion of the Turtle Islands Heritage Protected Area to include Derawan Islands in Indonesia materialized, it will become the world's first tri-national sea turtle protected area.



The Tri-National Training Program on Sea Turtle Biology and Conservation held in Derawan Islands, Indonesia from 27-30 March 2002, provided a venue to share lessons learned and opportunities to broaden collaboration and partnerships, and initiated a process to effect the establishment of a tri-national sea turtle reserve.

Conservation. The training which was held in Derawan Islands, Indonesia from 27-30 March 2002, enhanced the participants' understanding of sea turtle biology, ecology, and increased their technical competence on conservation and sustainable management of marine turtles. It also provided a venue to share lessons learned and opportunities to broaden collaboration and partnerships and initiated a process to effect the establishment of a tri-national sea turtle reserve.

Immediately following the highly successful training, the Strategic Planning Workshop for a Tri-National Sea Turtle Conservation Program for Indonesia, Malaysia, and the Philippines was held in Berau, East Kalimantan from 01-04 April 2002. Sixty-two participants from the three countries participated in the workshop. The planning workshop reviewed the population status and existing management arrangement and issues relevant to the conservation of sea turtles in the three countries; validated the need for a tri-national management program for sea turtle conservation; formulated a tri-national conservation program for conservation involving the three states and generated an action plan to launch and implement the tri-national sea turtle program.

This workshop formulated a comprehensive tri-national sea turtle conservation program for the SSME through consensus building. The program outlines in-country and transboundary interventions, which will form part of a consolidated action plan to be developed and adapted to national situations while maintaining alignment with the existing national and regional conservation programs. This program consists of seven objectives, one of which determines the involvement of stakeholders in turtle management and conservation.

The workshop also agreed to pursue the establishment of the world's first tri-national sea turtle protected area through the expansion of Turtle Island Heritage Protected Area (TIHPA) to include the Derawan Islands in East Kalimantan, Indonesia. The tri-national turtle protected area hopes to initiate on-the-ground formal tri-national collaboration and cooperation to conserve sea turtles in the Sulu-Sulawesi Seas. This will also serve as a platform to expand the tri-national initiative to other conservation concerns, *e.g.*, coral reef, mangrove, and seagrass conservation.

The WWF-SSME Program is currently coordinating with the WWF offices in Indonesia, Malaysia and the Philippines to promote the endorsement of the Tri-National Sea Turtle Conservation Program by the governments of the three nations. The WWF-SSME Program is also working with the TIHPA-Joint Management Committee to establish the tri-national protected area. These initiatives are highly motivated by a recent finding that the three countries share these sea turtle resources. This was scientifically proven when the National Oceanic and Atmospheric Administration of the US Department of Commerce through Sabah Parks, WWF and the Philippine Department of Environment and Natural Resources - Parks and Wildlife Bureau, tracked a nesting

hawksbill turtle with a satellite transmitter on 31 January 2001, from Selingan Island in Sabah, Malaysia. The turtle was tracked for 45 days passing through possible feeding areas in Derawan Islands in East Kalimantan. More recently, a green turtle tagged from the Philippines Turtle Islands was recovered in Derawan. Derawan Islands provide habitats crucial to the various life stages of sea turtles, such as growth and development, reproduction and feeding.

Conclusion

The tri-national sea turtle conservation program is envisioned to effectively conserve the largest green and hawksbill turtle populations and their habitats in the Southeast Asian region. This will also provide a springboard for broader conservation efforts and opportunities for trade, security, and ecotourism in several priority conservation areas adjacent to the territorial boundaries of Indonesia, Malaysia, and the Philippines. If proven effective, this initiative may expand to other sea turtle habitats in other ASEAN countries. Most importantly, the tri-national conservation program for sea turtles in the Sulu-Sulawesi Seas can foster regional collaboration that can contribute to an improved quality of life for its constituency.

There are however, tremendous challenges to effectively implement this tri-national sea turtle conservation program. Current security problems and political conflicts among the three neighboring states particularly along their borders inhibit effective collective conservation interventions. Another challenge we face is to prove that this conservation initiative is economically beneficial to the states' constituents. ■

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