

PAST AND ON-GOING SEA TURTLE CONSERVATION PROGRAM IN CAMBODIA

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ABSTRACT

Conservation and protection of threatened wildlife species, including marine turtles, are the responsibilities of the Ministry of Agriculture, Forestry and Fisheries (MAFF). Cambodia has signed several international and regional conventions and MoUs concerning the protection of sea turtles and their habitats. Conservation of natural resources in Cambodia has been strongly hampered by civil war and lack of funding and understanding among authorities and Cambodian people. However, in recent years the Department of Fisheries (DoF) and MAFF have collaborated with many NGOs and international organisations to implement several activities related to conservation of marine natural resources. Currently the establishment of Marine Protected Areas (MPA) is a high priority of the government of Cambodia.

With funding from WWF-Indochina and IUCN, staff from DoF has conducted some surveys of the status of sea turtles in Cambodia and also, a training-workshop has been held in Sihanoukville. In September 2002 the first Cambodian sea turtle, a female green turtle, was equipped with a Platform Transmitter Terminal, and its movements in the Gulf of Thailand was followed. Since September 2002, ten sea turtles have been tagged with traditional tags. Also, a survey interviewing old fishermen about sea turtle nesting grounds in the past and present, and about by-catch of sea turtles, has been conducted. However, there is still an urgent need to conduct research in Cambodia to identify current nesting sites and population sizes.

Future plans include a public awareness program, capacity building, research, implementation and enforcement of management measures for conservation and protection of sea turtles. For this Cambodia will need to form partnerships with NGOs and foreign donors.

INTRODUCTION

Cambodia covers an area of 181,035 km² including inland waters. Fisheries are divided into freshwater and marine sectors. Both sectors play a very important role for the economy and food security of rural people. However, the Cambodian Sea is considered as one of the most diversified coastal ecosystem in the sub-equatorial climatic region, which is dominated by rainy and dry

seasons. The sea has an average depth of 50 meters with different habitats in both inshore and offshore zones. Several freshwater rivers and streams originating from the Elephant and Cardamom mountains flow into the estuaries along the coastline, where both volume and nutrient levels are much increased during the wet season.

The Cambodian Sea is described by the jurisdictional Exclusive Economic Zone (EEZ), which was formally claimed in January 1978 (Tana, 2000). The total area of the EEZ claimed by Cambodia is 55,600 km² (Nelson, 1999). The coastline has a length of 435 km located in the north-eastern part of the semi-enclosed sea, the Gulf of Thailand. The coastal area extends between latitudes 8 to 12° N and longitudes 101 to 104° E from the Thai border in the north to the Vietnamese border in the south. There are still some unresolved conflicts on the boundaries for the EEZ with both neighboring countries.

Along the coastline, there are four provinces or municipalities, namely Koh Kong, Sihanoukville, Kampot and Kep. The local population uses the marine living resources in many ways, but management or surveys on the biodiversity have not included strict taxonomical studies yet (Smith, J., 2001). According to Tana (1997) and the preliminary study of Jensen & Try (2001), few of the marine living resources have been documented, such as crustaceans, molluscs, echinoderms, Cnidaria, reptiles, marine mammals and marine plants.

After the end of the civil war in Cambodia, and up to 1997, the Department of Fisheries (DoF), the Ministry of Agriculture, Forestry and Fisheries (MAFF) and most NGOs focused only on inland fisheries. After 1997, some non-government and governmental agencies, particularly the DoF, changed their direction and policy to give more attention on the marine fisheries.

In the past, the absence of clear policy on natural resources and lack of updated laws and legislation on environmental protection and natural resource conservation, have led to poor enforcement and collusion among state bureaucracy and authorities. This has encouraged rampant anarchistic natural resource exploitation, affecting the natural environment with serious deterioration.

However, in the past few years, DoF tried to draft new laws, decrees, sub-decrees and declarations with other government agencies in order to protect existing natural marine resources for future generations. Furthermore, DoF also tried to persuade donors and NGOs to be further involved in management and conservation of marine biodiversity. To ensure long-term sustainability of marine animals in Cambodia will require marine protected areas (MPAs), research and survey activities on endangered species. MPAs are the main

options for Cambodia and the region, as the marine living resources play a vital role in national economics and also assist in maintaining the regional balance and global ecosystems.

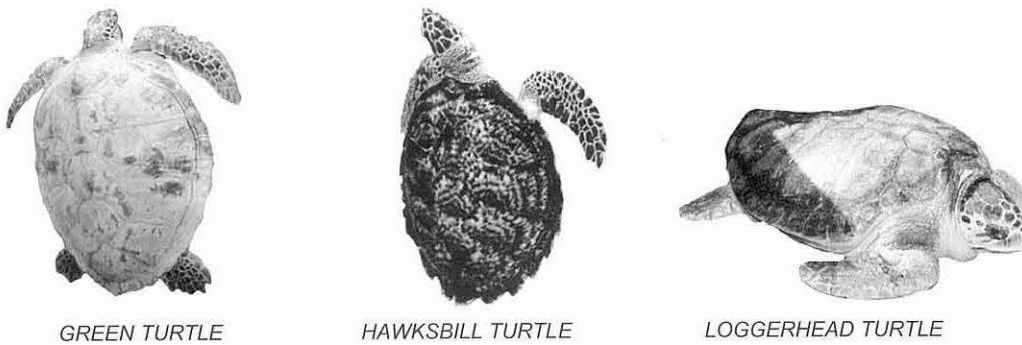
Sea turtles constitute a primary target for conservation in Cambodia, and DoF has carried out a number of activities concerning conservation, mostly in collaboration with NGOs and other government agencies. The results of these activities are summarized in this paper.

HISTORY OF SEA TURTLE STUDIES IN CAMBODIA

In the past, information related to sea turtle conservation in Cambodia was scarce. The early survey carried out by Bourret and Le Poulain (1941) mostly focused on exploitation, trade, consumption and cost of sea turtles in Cambodia (Try, 1999). The information and data of sea turtle in Cambodia were blocked for more than two decades and just started again by Groombridge & Luxmoore (1989) and Tana (1997), the results from their study were very briefly on species composition and habitats because they did not have the project or programme to conduct research by themselves, but collected information by interviewing the local people who living along coastal villages. These information were not enough for the Department of Fisheries to conserve, manage and develop on marine fisheries sector. However, the resulting information still did not fulfill the requirements of the DoF for protection, managing, conserving and developing these marine resources. Therefore, in the past two years, the sea turtles were further studied by Try (1999 and 2000). Try described in detail the status and statistics of sea turtles in Cambodia. Recently, sea turtles were the focus of new studies carried out by Try et al. (2002) and Longdy et al. (2002), who gathered more details about the species, the number of dead sea turtles due to by-catch, on migration, threats, etc. These recent research projects have yielded important information for biologist, researchers, and DoF. However, many sources report that Cambodia still lacks scientific information on the exact nesting, feeding and breeding grounds of sea turtles.

SEA TURTLE SPECIES IN CAMBODIA

Five species of sea turtle have been recorded in



GREEN TURTLE

HAWKSBILL TURTLE

LOGGERHEAD TURTLE

Fig.1 Main Sea Turtle Species of Cambodia

Cambodia, belonging to two families, Cheloniidae and Dermocheliidae. Four species belong to the family Cheloniidae; olive ridley turtle (*Lepidochelys olivacea*), loggerhead turtle (*Caretta caretta*), green turtle (*Chelonia mydas*) and hawksbill turtle (*Eretmochelys imbricata*), while leatherback turtle (*Dermochelys coriacea*) is the unique representative of the family Dermocheliidae. Of these five species, only three - loggerhead, green and hawksbill turtles - are observed every year. Most of the people living along the coast also reported that among these three, only two species - hawksbill and green turtle - are abundant. Mostly, these two species are encountered around some islands such as Koh Rong, Koh Rong Sanleum, Koh Tang, Koh Pring, Koh Polowai, Koh Ses, and a new area in Chrouy Svay, Koh Kong province.

THREATS TO SEA TURTLE POPULATIONS

Globally, a number of factors have been seriously threatening sea turtles. Most of these threats result from human activities, such as over-development of coastal areas (habitat destruction), by-catch, pollution, disturbance and other factors. In Cambodia, there are two main factors that affect sea turtles: coastal development and other human activities, and by-catch.

Development activities and human settlements along the beach, for either tourists or local residents, may disturb and destroy sea turtle habitats. In fact, some parts of the Cambodian coastline, which previously harbored nesting grounds of sea turtles, are today developed into villages, hotels and other tourist areas. This situation is raising concerns about the biodiversity amongst scientists, DoF, MAFF and the Ministry of Environment. In addition, poor management of wastes,

which are discharged directly into the sea, such as solid waste, plastic bags, chemicals, fuel and oil discards from fishing boats, is a threat to the environment. Wastes originate from diverse human activities such as oil and gas exploitation, industry, fisheries, tourism, and also directly from households. Wastes may seriously affect the function of natural ecosystems and aquatic animals. Moreover, logging activities of both inland forests and mangroves along beaches and islands also disturb sea turtles' life cycle because most of these activities occur nearby or in the nesting grounds of sea turtles.

By-catch is another factor that seriously affects marine turtles. In the past, sea turtles caught by accident were released by most of the fishermen, as it was believed that this would bring happiness and good luck. However, currently, releasing of accidentally caught turtles is less frequently done, and mostly it is done by relatively rich people, strong believers, and some conservation agencies. The reason for this is the general decline of marine resources and the increasing poverty in Cambodia, while the black market demand from some



Figure 2: Most threatening fishing gear to sea turtles: the stringray hooks and line current conservation programs

countries in the region is rising. In the past few years, somewhere between 150 and 240 sea turtles have been killed by fishermen for either local consumption, sale in the local markets near the beach, or for export through middlemen. In Cambodia, sea turtle by-catch occurs with many fishing gears, namely stingray hooks and line (called Santouch Barbel by Khmer people), trawling net, scomberomorus gill net (locally called Mong Trey Beka), plus illegal fishing gears such as pair-trawlers and explosives. One of the most threatening fishing gears to sea turtles is the stingray hooks and line, which is now being banned in the draft law.

Today, Cambodia is considered as an important exploiter and exporter of wildlife species. In response, Cambodian laws have banned the serving of "wild" meat in restaurants. If such food is found, the restaurant's owner will be punished or heavily fined. Sea turtles are under strict control from DoF/MAFF and other agencies.

It is important that all development projects ensure the proper consideration for marine turtle management and conservation in Cambodia. Updating the legislation, promoting international cooperation, and standardizing research techniques will therefore be necessary. In this regard, today DoF/MAFF and wildlife conservation strategies rely on two programs, which involve cooperation within the governmental sector (with all the government agencies concerned) but also collaboration with the outside sectors.

Inside the sector

As mentioned above, most of the accidentally caught sea turtles were killed by fishermen during their fishing operations. This is mostly due to lack of information among fishers and local people on fisheries law and the importance of conservation of marine endangered species. To remedy this, extension programs and public awareness campaigns should be initiated. Recently, DoF/MAFF, in collaboration with all the other concerned governmental agencies, carried out reforms on the

fisheries policy to ensure the long-term sustainability of sea turtle as well as the other natural resources in the coastal zone. For sea turtle management and conservation, DoF/MAFF is now planning to use the following concepts:

1. Community-based conservation
2. Public awareness building, and
3. Cooperation with involved institutions and local authorities, navy, police, etc.

In September 2002, the DoF/MAFF conducted an international workshop on sea turtle survey and conservation in Cambodia. Local authorities, concerned institutions, fishermen representatives, old experienced fishermen, NGOs and international experts were invited to attend the training workshop. As a result, all participants were made aware of the importance to preserve and conserve sea turtles and other endangered species. Moreover, most of the participants were glad to be better informed through activities such as the workshop. During the discussion in the workshop, participants also requested the government to put the sea turtle issue into the primary educational program.

Voluntary contribution and collaboration of local stakeholders such as fishermen and navy officers will further ease sea-turtle conservation by providing critical and updated information to the DoF. This will also promote a more decentralized, community-based, conservation scheme. Reporting and communication between local stakeholders and the DoF may be direct or indirect, that is, through diverse locally or regionally based institutions. Unfortunately, the remoteness of some fishermen, with no access to communication facilities, may impede even indirect reporting. However, by setting up a mechanism of indirect communication, by-catches will be more frequently reported to DoF and, therefore, tagging and releasing of sea turtles will be eased in the future. Since the workshop, ten sea turtles have already been successfully tagged and released by the Department. For further improving communication of information relating to sea



Figure 3 : Caring and releasing activities of local people for sea turtles

turtles by-catch from fishermen or local stakeholders, the DoF have provided some compensation and encouragement, to people who give information related to sea turtles.

Outside sector

In the past, Cambodia cooperated with other organizations in relation to the prohibition of trade of turtles and other endangered marine species. Cambodia signed the Convention on Biological Diversity on 9th February 1995, the CITES convention on 2nd December 1997 and the Ramsar convention in 1999. Furthermore, Cambodia signed the ASEAN MOU on Sea Turtle Conservation and Protection on 30th April 1999, after becoming a full member of ASEAN. Collaboration with non-governmental agencies such as NGOs, universities and other organizations must be strengthened to ensure a successful development of the conservation program. Currently, Southeast Asia Sea Turtle Associative Research (SEASTAR) under the Kyoto University provided a transmitter tag, a so-called Platform Transmitter Terminal (PTT) in order to monitor sea turtle migration and to provide scientific information about this turtle's movement in the Gulf of Thailand. The World Wildlife Fund for Nature (WWF, Indochina) is already involved in this program by kindly providing funds for surveys and the workshop. On the other hand, an awareness program based on local and international standards has been encouraged by IUCN, which published a photographic guide in Khmer and English. The book described the turtles of Thailand, Laos, Vietnam and Cambodia. In terms of capacity building, Cambodian officers have attended many training courses and workshops on sea turtle conservation and management. Further collaboration with other regional organizations involved in similar actions such as SEAFDEC should also be promoted, especially for migrating species like sea turtles, if sustainable management of their populations is to be achieved at the regional scale.

FUTURE PROJECT PLANS

It is noted that some progress activities have already been made for local and regional cooperation, including initiatives such as the Inter-action Convention to develop institutional capacity of both government and non-government agencies on protection, conservation and management of sea turtles, and therefore ensure long-term sustainability of sea turtles in Cambodia and in the region.

The DoF/MAFF is now concentrating on step two, as planned, which aims to develop public awareness on the species. Posters, pamphlets and books are being designed for distribution throughout the coastal zone. The posters will outline the life cycle of sea turtles and also educate people of the dangers of sea turtle egg collection. The pamphlets will provide basic information related to sea turtle conservation to local communities. Students writing books will include photos of sea turtles for identification and conservation purposes.

However, much more needs to be done to check and update the existing scientific information on sea turtles. Responding to this, many activities are planned, such as research and survey on exact nesting, feeding, and breeding grounds of sea turtles in some isolated islands. This should be carried out by DoF officers in the near future. Additionally, Cambodia aims to build more regional cooperation in areas such as information exchange, legislation, enforcement, training, capacity building and public awareness. These will lead the country to be able to conserve and manage their marine turtle populations autonomously, but also develop the knowledge and skills of government officers at the regional level.

In order to implement the future plan cited above, Cambodia really needs more contribution from local people, but especially financial support from partnership with organizations such as NGOs, and regional nations involved in activities of sea turtle conservation. Overcoming the above issues really require the development of a sea turtle conservation and management system in the country as well as in the region. No funds have yet been sourced to implement the future plans.

CONCLUSION

The marine environment is changing day by day, mostly under influence of human activities. Marine fisheries resources, including sea turtles, are under threat due to the negative impacts of overfishing, pollution, conflicts of interest and socio-economic hardship. Declining livelihoods of local people often bring them to further pressure the fisheries resources.

Current management of fisheries resources, including sea turtles and other aquatic animals in isolated islands, are facing diverse problems. The DoF/MAFF does not have the capacity to access those remote areas and

tasks are difficult to fulfill because of lack of equipment and communication facilities to contact local agencies and fishermen. Supporting funds and collaboration among the government and non-government agencies are the major issues that must be obtained to implement the future plans on conservation and management of sea turtles in Cambodia. In addition, public awareness extension and decentralized, community-based conservation program will also promote a more sustainable development of our fisheries in the country.

This paper clarifies the situation and summarizes existing information on sea turtles in Cambodia. The past and on-going activities on marine resources conservation and management will provide the awareness necessary for promoting future surveys or research projects to biologist, NGOs and others involved in wildlife conservation programs.

RECOMMENDATION AND SUGGESTIONS

To ensure the sustainability of our sea turtles and of other marine natural resources, as well as natural

habitats, co-management and benefit sharing need to be implemented in cooperation to solve the problems identified locally or regionally. Public awareness campaigns and extension programs stressing the importance of natural resources should be offered to local people.

In this regard, more research and survey activities on sea turtles in Cambodia are required. Clearly, scientifically documented information about areas suitable for protection and conservation of sea turtles is needed. This would serve as a guide for future actions and management interventions.

The Department of Fisheries would like to thank gratefully WWF, Indochina and SEASTAR2000, and stress the importance of continued support in the future. The DoF would also like to invite the non-government agency and international organizations to support, fund, provide knowledge and form partnerships with local and national authorities in order to locate the exact nesting grounds, feeding grounds and good habitats of sea turtles. Due to lack of funding from the government, the DoF/MAFF cannot currently undertake the necessary monitoring, protection, management and conservation of sea turtles.

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