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Review of SEASTAR2000: Sea turtles, Mekong giant catfish, dugongs

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ABSTRACT

We are performing the Southeast Asia sea turtle associative research (SEASTAR2000), the Mekong giant catfish tracking project (MCTP) and the dugong biological survey (DBS) as one of the 21st Century Center of Excellence Programs, 2002-2007. All the species of the projects are heavily endangered and need a sufficient degree of protection. Whilst very little is known of the species the need to implement conservation is a pressing problem in Thailand and neighbouring ASEAN countries. The conservation policy sometimes poses troubles because the area to be protected is also a fishing ground where the local people live. We must appreciate the need for coexistence between the endangered species and the local people based on our scientific knowledge.

KEYWORDS: SEASTAR2000, MCTP, DBS, sea turtle, Mekong giant catfish, dugong

SEA TURTLE TRACKING

We launched the Southeast Asia sea turtle associative research (SEASTAR2000) in 1999 at the request of the Thai government. At the time, the US government had notified the Thai government of a ban on shrimp exports to the USA due to by-catch of sea turtles by shrimp trawlers. The urgent objectives of the SEASTAR2000 were to clarify migratory paths of sea turtles in the Gulf of Thailand and the Andaman Sea, using a satellite tracking system and to develop a scientific strategy for the conservation.

We released ca. 30 female green turtles attached with Argos platform transmitter terminals (PTT) and clearly found the sea turtle migratory paths as shown in Fig. 1. The results clarified the migratory paths of adult female green turtles after their nesting; in the Gulf of Thailand (Fig. 1a) they migrated to various sea areas sometimes even beyond Thai waters including the South China Sea, and in the Andaman Sea (Fig. 1b) almost all the turtles migrated to the Andaman Islands within Indian territorial waters via different routes. These interesting findings were compiled by Dr. K. Kittiwattanawong in his doctor thesis [Kittiwattanawong 2004].

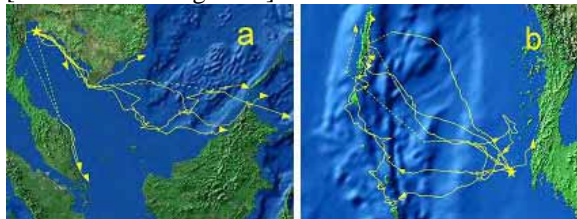


Fig.1. Results of the Argos tracking of adult female green turtles in the Gulf of Thailand (a) and the Andaman Sea (b).

MEKONG GIANT CATFISH TRACKING

Based on the successful results of SEASTAR2000, the Thai government requested us to investigate the migration behaviour of the Mekong giant catfish. The Mekong giant catfish is endemic to the Mekong River basin but they are deeply endangered now.

We launched the Mekong giant catfish tracking project (MCTP) in 2002. We performed the MCTP both in the Mekong River and in an artificial reservoir located in Phayao Province, Thailand using ultrasonic biotelemetry and bio-logging techniques (Fig.2). We discovered many interesting findings in the Mekong giant catfish study which were compiled by Dr. H. Mitamura in his doctor thesis [Mitamura 2005]. The findings will be useful for the utilization of food resources as well as conservation of the giant catfish in the future.



Fig.2. A post doctoral student released a Mekong giant catfish attached with data-loggers and a time-scheduled releaser in Mae Peum reservoir in Phayao Province, Thailand.

DUGONG BIOLOGICAL SURVEY

Dugongs are the only marine mammals that feed on benthic seagrass and they are also greatly endangered. As with the sea turtles, dugongs are sometimes caught incidentally by fishing gear due to the many human activities in the shallow waters where they live and feed.

We launched the dugong biological survey (DBS) in Trang Province, Thailand in 2002. The motivation of the DBS is different from the other two projects. The project was originally ordered by the Japanese government to conserve dugongs inhabiting around the Okinawa Islands. It is said that there are less than 50 dugongs and that they are about to become extinct in the near future. However, little is known of dugongs so that we are keen to compile biological knowledge on dugongs. With this background, we found a suitable experimental field to study dugong biology in Thailand, under the cooperation of Thai researchers.

We attempted to solve the problem by establishing a passive acoustic monitoring technique for dugongs [Ichikawa 2005]. The principle of the technique is to record the dugong calls and analyze them acoustically to locate positions of the sources of the vocalizations. The advantages of this method are that it has no impact on the animals at all during monitoring and that it can be performed at constant detection efficiency even in the night. The limiting condition of the technique is that the focal animal must vocalize frequently and distinctively. A feasibility study was then necessary to better understand how these limitations could be avoided. Based on the acoustic characteristics of the calls, automatic underwater sound monitoring systems for dugongs (AUSOMS-D) were developed (Fig.3).

In these proceedings, some results of the filed experiments using the AUSOMS-D are presented.



Fig.3. Three graduate students bring an AUSOMS-D.

WHAT SHALL WE DO IN THE NEXT STEP?

The results of the SEASTAR2000 and MCTP indicate that both the sea turtle and Mekong giant catfish migrate beyond the borders so that the international cooperation is essential to conserve them and prevent their extinction. We proved that the acoustical survey is also a useful tool to investigate dugong behavior. Although our research projects proposed an effective methodology to understand their behavior and revealed some of it, our knowledge is not sufficient to understand the whole of their habitat. Moreover, we need thoughtful consideration to the local people who live on the coastal and inland fisheries. We are now on the starting line to establish coexistence between endangered species and human beings based on our scientific knowledge.

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