

### REVIEW AND NEW RECORDS OF THE MARINE MAMMALS AND SEA TURTLES OF INDOCHINESE WATERS

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#### INTRODUCTION

Marine mammals and sea turtles share habitats and threats in all parts of the world, as all species are either considered endangered or in urgent need of basic information for possible nature management measures. Both animal groups would benefit from a more sensitive coastal management. They are simultaneously indicator and flagship species that on one hand may document a healthy environment, and on the other may help create public awareness and attract public and private funding for needed research and management activities (REEVES & TWISS, 1999).

Since marine mammals and sea turtles do not respect international border, cross-border cooperation is imperative. Thai–Danish cooperation on marine mammals goes back to 1991, and sea turtle research in Thailand started even earlier. In 1995 a UNEP workshop (UNEP, 1996) on South-East Asian marine mammals recommended the initiation of regional cooperation between Cambodia and Vietnam, and application of the experiences gained in Thailand during the Thai–Danish cooperation on whales and dolphins (SCIGTAS/MAMATH). In 1996, such cooperation with Cambodia was launched and two workshops on marine mammals were held in Sihanoukville and Koh Kong, respectively (ANDERSEN, 1996).

As a follow up on the recommendations of the UNEP workshop (UNEP, 1996), a joint Thai–Danish request was made to the Institute of Oceanography in Nha Trang, Vietnam, to host a trilateral Southeast Asian workshop on marine mammals and sea turtles. A workshop and seminar took place during 8–13 February 1999 at the Institute of Oceanography in Nha Trang, and the branch of the institute in Hai Phong, with 25 participants from Thailand, Cambodia, Vietnam, Denmark and the United Kingdom (ANDERSEN & KINZE, 1999a)

We would like to take the opportunity to thank the director and staff of the Institute of Oceanography both at Hai Phong and at Nha Trang for their efficient assistance that made the workshop run smoothly. Also, we would like to acknowledge the help of Ms Gill Braulik who acted as a rapporteur during the workshop.

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## REVIEW OF SPECIES AND RESEARCH

The participants reviewed the species occurring in the Gulf of Thailand and the South China Sea based on published records, information presented at the workshop, and examination of specimens at various temples and collections. Short checklists summarizing the reviews of marine mammals and sea turtles are provided in tables 1 and 2, respectively. In total, 20 species of cetaceans, one sirenian, one pinniped species, and five sea turtles species were documented.

## MARINE MAMMALS (TABLE 1)

**Cambodia**

Research on marine mammals in Cambodia has been very limited. However, small scale surveys have been carried out in Koh Kong Province and Koh Rong, Sihanoukville Province, in 1996. Thus, with the addition of the finless porpoise (*Neophocaena phocaenoides*) and bottlenose dolphin (*Tursiops truncatus aduncus*) from Cambodian waters only four cetacean species have been recorded (table 1; ANDERSEN 1996).

**Thailand**

Extensive monitoring has been carried out in Thailand and we have identified 14 species from the Gulf of Thailand. The killer whale (*Orcinus orca*) was recorded there for the first time (ANDERSEN, unpublished).

**Vietnam**

For Vietnam, 17 definite and 2 possible cetacean species were listed. The preliminary checklist by SMITH *ET AL.* (1995) was corrected and amended as follows:

1. SMITH *ET AL.* based the presence of the blue whale on GRUVEL (1925). GRUVEL, however, was referring not to *Balaenoptera musculus* LINNÆUS 1758, the valid scientific name of the blue whale, but to *Balaenoptera musculus* COMPANO 1830, a junior synonym of the fin whale (*Balaenoptera physalus*) and to the Norwegian name of the fin whale (*finhval*). It has not been possible to trace the original source of the record, an unpublished account by Krempf (ROBINEAU, pers comm. 1999). The specimen was obviously not a blue whale, but could have been either a fin whale, a sei whale or possibly a Bryde's whale. The blue whale now has been confirmed for Vietnam by HO & NGI (1999)

2. The identification of the Bryde's whale (*Balaenoptera edeni*) was based on a skull kept at a whale temple at Dai Lanh. Unfortunately, from the photograph it is not possible to determine whether it in fact is a Bryde's whale or a minke whale (*Balaenoptera acutorostrata*).

3. SMITH *ET AL.* (1995) provided inconclusive evidence on the presence of the minke whale. They stated that the bones examined were small and from an "old" animal. Unfortunately, they published neither photographs nor measurements in support of the species identification. The minke whale has now been confirmed by HO & NGI (1999) for Vietnam.

4. Judging from the published tooth count by SERÉNE (1934) SMITH *ET AL.* were uncertain about the species identity of a *Kogia* specimen stranded near the Nha Trang Institute. However, the length of the animal (more than 3 m), and the skull, kept at Natural History Museum in Paris, beyond doubt identify it as *Kogia breviceps*.

5. The sei whale (*Balaenoptera borealis*) was added to the fauna list of Vietnam through a re-identification of a whale skeleton kept at the Zoological Museum of the Hai Phong Branch of the Institute of Oceanography. This specimen was earlier listed as a humpback whale (*Megaptera novaeangliae*) by SMITH *ET AL.* (1995) based on an incomplete scapula with both acromion and coracoid processes broken off but not missing. The presence of a bifurcated first rib and a ventral basi-cranial exposure much broader than long as well as other characters, however, immediately identifies it as a sei whale (JUNGE, 1950; OMURA *ET AL.*, 1981). Of the 2 or 3 records of the humpback whale listed by these authors, only one, an animal stranded in Nam Ha Province and now mounted at the Institute of Oceanography in Nha Trang, can be retained.

Noteworthy for Vietnam is the occurrence of largha seals (*Phoca largha*) in Vietnamese waters (HO & NGI, 1999).

## SEA TURTLES (TABLE 2)

### Cambodia

(Based on information presented during the workshop by T. S. Tana)

No systematic research and monitoring of sea turtles have been carried out in Cambodia and no confirmed records of any species exist. However, the green sea turtle (*Chelonia mydas*) and the hawksbill (*Eretmochelys imbricata*) would be the most likely species to occur.

Surveys for sea turtles have been conducted in Cambodia leading to the identification of many nesting beaches. No information is kept about which beaches are used for nesting each year, and breeding may vary in intensity from year to year.

Because most of the Cambodian islands have low human population density, the turtles can nest on these beaches relatively undisturbed. Turtles are, however, threatened by gillnets, longlines and trawlers and to some extent by human consumption as they are caught and eaten by villagers.

### Thailand

(Based on information presented during the workshop by S. Chantrapornsy)

In the Gulf of Thailand the green and hawksbill sea turtles have been recorded while in the Andaman Sea the olive ridley (*Lepidochelys olivacea*) and leatherback (*Dermochelys coriacea*) sea turtles have been reported. The main nesting area in the Gulf of Thailand is the Ko Khram south of Chonburi. Nesting in other areas of the Gulf is now rare due to development and pollution. Nesting occurs year round but the peak is during May to September. Breeding at Phra Thong Beach on Phuket Island occurs only in winter and peaks in December. Information collected since 1978 indicates that in situ breeding has decreased by 90% in the Phuket area. Causes of this decline are harvest of eggs, disturbance

at beaches and incidental catches in certain fishing gears. Eggs are illegally consumed and sold at local markets and their natural nesting habitats are severely threatened by destruction.

Ongoing sea turtle monitoring projects in Thailand are carried out at the following locations: Man-nai Island, Khram Island, Phuket Marine Biological Center, Phuket Thai Navy Tablamu, Phang Nga, Kao Lumpee-Thamuang Beach National Park, Phang Nga Sirinarth National Park Surin and Similan National Parks

Sea turtle research has been ongoing at the PMBC for 20 years. Conservation strategies used by the PMBC include an education campaign, monitoring of beaches, and patrol by the Thai Navy to stop poaching. Eggs have been collected and moved to a safe beach for hatching. Some eggs were hatched in the lab and local people have participated in the release of hatchlings, which they believe will bring them good luck. Publicity posters detailing life cycles and the importance of conservation have been erected at breeding beaches. Within Thailand, the NGOs have had a strong involvement in sea turtle conservation.

### Vietnam

(Based on information presented during the workshop by N. H. Phung and V. S. Tuen)

Vietnam has a very long coastline with many islands and a large number of suitable habitats for sea turtles. Breeding of sea turtles takes place at the Institute of Oceanography, Nha Trang, for the purpose of release in nature. Five species have been recorded: Olive ridley (*Lepidochelys olivacea*), hawksbill (*Eretmochelys imbricata*), loggerhead (*Caretta caretta*), green sea turtle (*Chelonia mydas*) and leatherback turtle (*Dermochelys coriacea*). Olive ridley and hawksbill are the most common species and the rarest are the loggerhead and leatherback. Nesting beaches were documented during a recent interview survey, revealing two nesting locations in the north in the Gulf of Tonkin and many areas around Nha Trang and in southern Vietnam. In estimated 6,000 to 8,000 turtles are captured each year by fishermen. All turtles are protected by legislation and the habitat is also protected but there is no enforcement except in one area in the north and Con Dao in the south. In the past there was some sea turtle farming

Mostly hawksbill and green turtles occur on Coa Dao Island, where sometimes 300 females visit. There are active protection measures. The problem of nests being destroyed by exceptionally high tides and storm events was noted. The most important step forward is to run a publicity campaign to educate people about conservation of sea turtles.

### RECOMMENDATIONS FOR FUTURE WORK

A one-day 'Logical Framework Approach' (DANCED 1998) exercise on future sub-regional cooperation was held at the workshop. The workshop was conducted in a participatory way, i.e. securing ownership of and responsibility for the project by all participants.

Gaps in knowledge were recognised which demand more research and training. During this session it was concluded that cooperative work should target three areas: awareness, training, and research and monitoring. Thailand could clearly provide a training platform

for the two neighboring countries Cambodia and Vietnam, and a research assistance project, was envisaged to be implemented in 2001.

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Table 1. List of confirmed records for the Gulf of Thailand (Th) including the waters of Cambodia (Ca) and Vietnam (Vn).

Countries	Species	Vernacular name	References and remarks
Th, Vn?	<i>Balaenoptera edeni</i>	Sittang whale	Andersen & Kinze (1993). Species identification for Vietnam based on inconclusive evidence in Smith et al. (1995).
Vn	<i>Balaenoptera acutorostrata</i>	Minke whale	Ho & Ngi (1999), New species record for Vn.
Vn	<i>Balaenoptera borealis</i>	Sei whale	This paper. New species record for Vn. Listed as humpback whale in Smith et al. (1995).
Vn	<i>Balaenoptera musculus</i>	Blue whale	Ho & Ngi (1999) New species record for Vn.
Th	<i>Balaenoptera physalus</i>	Fin whale	Andersen (unpublished data) Subfossil specimen.
Vn	<i>Megaptera novaeangliae</i>	Humpback whale	Smith et al. (1995).
Th, Ca, Vn	<i>Neophocaena phocaenoides</i>	Finless porpoise	Andersen & Kinze (1999), Andersen (unpublished), Smith et al. (1995) New species record for Ca.
Vn	<i>Kogia breviceps</i>	Pygmy sperm whale	Serene (1934), Listed as <i>Kogia</i> sp. in Smith et al. (1995)
Vn	<i>Kogia simus</i>	Dwarf sperm whale	Smith et al. (1995)
Th, Vn	<i>Peponocephala electra</i>	Melon-headed whale	Andersen & Kinze (1999), Smith et al. (1995)
Th, Vn	<i>Globicephala macrorhynchus</i>	Short-finned pilot whale	Andersen & Kinze (1999), Smith et al. (1995)
Th, Vn	<i>Pseudorca crassidens</i>	False killer whale	Andersen & Kinze (1999), Smith et al. (1995)
Th, Ca, Vn	<i>Tursiops truncatus (aduncus)</i>	Bottlenose dolphin	Andersen & Kinze (1999), Andersen (unpublished data) Smith et al. (1995). New species record for Ca.
Th, Vn	<i>Sousa chinensis</i>	Indo-Pacific hump-backed dolphin	Andersen & Kinze (1999), Smith et al. (1995).

Table 1. List of confirmed records for the Gulf of Thailand (Th) including the waters of Cambodia (Ca) and Vietnam (Vn).

Countries	Species	Vernacular name	References and remarks
Vn	<i>Steno bredanensis</i>	Rough-toothed dolphin	Smith et al. (1995).
Th, Vn	<i>Stenella longirostris</i>	Spinner dolphin	Andersen & Kinze 1999, Smith et al. 1995.
Th, Vn	<i>Stenella attenuata</i>	Pan-tropical spotted dolphin	Andersen & Kinze 1999, Smith et al. 1995.
Th, Vn	<i>Delphinus capensis</i>	Common dolphin	Andersen & Kinze 1999, Smith et al. 1995.
Th, Ca, Vn	<i>Orcaella brevirostris</i>	Irrawaddy dolphin	Andersen & Kinze 1999, Lotze 1973, Smith et al. 1995.
Th	<i>Stenella coeruleoalba</i>	Striped Dolphin	Andersen & Kinze 1999
Th	<i>Orcinus orca</i>	Killer whale	Andersen (unpublished)
Th, Ca, Vn	<i>Dugong dugon</i>	Dugong	Thiemmedh (1968), Tana (unpublished), Smith et al. (1995)
Vn	<i>Phoca largha</i>	Largha seal	Ho & Ngi (1999) New species record for Vietnam

Table 2. Sea Turtles recorded from the Gulf of Thailand and the South China Sea

Countries	Species	Vernacular name	References and remarks
Vn	<i>Caretta caretta</i>	Loggerhead sea turtle	Nguyen Huu Phung & Vo Si Tuen (pers. comm.)
Vn, Th, Ca?	<i>Chelonia mydas</i>	Green sea turtle	Nguyen Huu Phung & Vo Si Tuen (pers. comm.) Chantrapornsyl (pers. comm.) Species record for Cambodia based on likely occurrence
Vn, Th, Ca?	<i>Eretmochelys imbricata</i>	Hawksbill sea turtle	Nguyen Huu Phung & Vo Si Tuen (pers. comm.) Chantrapornsyl (pers. comm.) Species record for Cambodia based on likely occurrence
Vn	<i>Lepidochelys olivacea</i>	Olive ridley sea turtle	Nguyen Huu Phung & Vo Si Tuen (pers. comm.)
Vn	<i>Dermochelys coriacea</i>	Leatherback sea turtle	Nguyen Huu Phung & Vo Si Tuen (pers. comm.)