

# THE CHALLENGES AND OPPORTUNITIES FOR RESEARCH, MANAGEMENT AND CONSERVATION ON SEA TURTLES IN VIET NAM

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## ABSTRACT

It is recognized that there are five species of sea turtles in Vietnam's seawaters (loggerhead, olive ridley, leatherback, green and hawksbill turtles), but there are only four species often nest on Vietnam's beaches. Major nesting beaches are not concentrated in the northern part or the southern one of Viet Nam seawaters. In addition, there may be nests on most offshore islands. Determined nesting beaches were found in the Tonkin Gulf, central coasts and the islands in the Gulf of Thailand.

It is significant that declines have occurred in both foraging and nesting populations of all five sea turtle species found in Viet Nam. In addition to the protection of nesting turtles and their nests, reduction in the mortality of juvenile and adult life stages is pertinent to the protection of sea turtles in Viet Nam (Le Xuan Ai., 2001; Mark Hamann., 2002).

The largest current threats for marine turtles in Viet Nam are:

- \* the accidental and opportunistic capture by fishermen and locals,
- \* the direct take of nesting females and their eggs at beaches.

The specific fisheries sectors that pose the largest risk for marine turtles are bottom trawlers, purse seine operators, long-line net with several hook operators and diving activities. In general, most green, hawksbill and olive ridley turtles that are captured by these methods are either killed for food or the production of souvenirs.

Based upon our research project which has been conducted since 1998, these results showed that over the last two to three decades, most of the eggs and nesting turtles were collected for food or their shell. With the exception of Tho Chu Island (Kien Giang), Con Dao National Park (Vung Tau) and Nui Chua Reserve Area (Ninh Thuan Province), and harvest of nesting turtles and nearly to 100% of eggs still occurring for each species nesting in Viet Nam (the final result will be published in 2004's national report as the end of project).

Most sea turtles that are killed (indirectly or directly) are eaten by local fishermen or sold for food or shell products (J. Thomson, TRAFFIC\_Indochina 2002). Continuation of this trade, which places a monetary value on sea turtles, along with the additional threats such as fisheries by-catch and egg harvesting will lead to the inevitable extinction of sea turtles in Viet Nam in the forthcoming decades.

## 1. INTRODUCTION

The sea turtle has been recognized as one of the endangered species in the world by IUCN (International Union of Conservation Nature). There are seven species, which consists of green turtle (*Chelonia mydas*),

leatherback turtle (*Dermochelys coriacea*), hawksbill turtle (*Eretmochelys imbricata*), olive ridley turtle (*Lepidochelys olivacea*), kemp's ridley turtle (*Lepidochelys kempi*), loggerhead turtle (*Caretta*

*caretta*) and black turtle (*Chelonia agassizi*), which is still struggling to survive in various parts of the oceans.

The seawaters of some countries belonging to Asian Countries are recognized as critical habitats for sea turtles of the world. Research, conservation and management activities on sea turtles have been conducted in each coastal country in the region, but there are still gaps in our knowledge of the biological characteristics as well as habitats of sea turtles. There are only 5 species of them, which had been found in Vietnam seawater and they have been threatening species. Therefore, sea turtles need to be seriously studied and properly managed in each member of Asian Countries as well in other coastal nations.

The Government of Viet Nam recognizes the important role in terms of the sea turtle research, management and conservation. Viet Nam was re-initiated the necessary action only after ASEAN workshop on ASEAN Sea Turtles Conservation Programme held 4-5 December 1997 in Jakarta, Indonesia. Since early 1998, the Ministry of Fisheries has appointed the Research Institute for Marine Fisheries (RIMF) as National Institution taking responsibility for research activities and proposing the general framework in managing and protecting sea turtles in Viet Nam.

## 2. OBJECTIVES OF THE PREVIOUS AND FUTURE PROJECTS ARE:

- To facilitate appropriate research, conservation and management of sea turtles between ASEAN Countries and Viet Nam,

- To enhance the common awareness in term of protecting the sea turtles and others,

- To introduce the advanced technology in monitoring, controlling and surveying for sea turtles with integrated coastal zone management approaches

## 3. METHODOLOGY

Project methodology are to :

- \* Consider and classify their taxonomy by using IUCN standards and categories,

- \* Field survey on the fisherman boats, and assess the using fishing gear, etc

- \* Gather and collect information from logbook of fishing boats,

- \* Interview, meeting and discussion at the coastal communes (RRA, PRA tool),

- \* Use questionnaires,

- \* Based line survey and multi-disciplinary investigation, which focus on turtle nesting beach and their ecosystem as well other concerned,

- \* Take pictures of specimen and habitats,

- \* Set-up the National Sea Turtle Database by using SPSS, Access .....software to analyze their distribution, frequency nesting, breeding season, location, biological characteristics, food chain, etc.

## 4. POPULATIONS AND DISTRIBUTION OF SEA TURTLES

Some definitions concerning should be identified as following:

- \* "Sea Turtles" live in Viet Nam Seawaters, means any of the species listed in table 1.

**Table 1: The five name of sea turtle species in Viet Nam Seawaters.**

Vietnamese name	English name	Scientific name
Vich	Green turtle	<i>Chelonia mydas</i>
Doi Moi	Hawksbill turtle	<i>Eretmochelys imbricata</i>
Rua O Luu	Olive ridley turtle	<i>Lepidochelys olivacea</i>
Rua Da	Leatherback turtle	<i>Dermodochelys coriacea</i>
Quan Dong	Loggerhead turtle	<i>Caretta caretta</i>

- \* "Habitats" means all the aquatic and terrestrial environments which sea turtles are in at any stage of their life cycles.

- \* "Vietnamese seawaters" means all of the water bodies and coastal Viet Nam in the South China Sea, which are under its jurisdiction.

- \* "Conservation status of sea turtles" means the sum of the influences acting on a sea turtle species that may affect its long-term distribution and abundance.

- \* "Conservation status" will be taken as "favorable" when:

- a) population dynamics data indicates that the sea turtle species are maintaining itself on a long-term basis as a viable component of its ecosystems;

- b) the range of the sea turtle species is neither currently being reduced, nor is likely to be reduced, on a long-term basis;

Table 2. Sea turtle species and their occurrence in Vietnam seawaters

Area	Number of Species	Scientific name of Species
Tonkin Gulf	4	<i>Chelonia mydas</i> <i>Caretta caretta</i> <i>Dermochelys coriacea</i> <i>Eretmochelys imbricata</i>
Central Seawater	4	<i>Caretta caretta</i> <i>Chelonia mydas</i> <i>Eretmochelys imbricata</i> <i>Dermochelys coriacea</i>
South-eastern Seawater	4	<i>Caretta caretta</i> <i>Chelonia mydas</i> <i>Eretmochelys imbricata</i> <i>Lepidochelys olivacea</i>
South-western water (Gulf of Thailand)	3	<i>Caretta caretta</i> <i>Chelonia mydas</i> <i>Eretmochelys imbricata</i>
Hoang Sa Archipelago (Paracels)	2	<i>Caretta caretta</i> <i>Eretmochelys imbricata</i>
Truong Sa Archipelago	2	<i>Chelonia mydas</i>

c) there is, and will be in the foreseeable future, sufficient habitat to maintain the population of these sea turtle species on a long-term basis; and

d) the distribution and abundance of the sea turtle species approach levels to the extent that potentially suitable ecosystems exist and to the extent consistent with wise wildlife management.

#### 4.1. SPECIES OCCURRENCE

These five species of sea turtles have been identified in Viet Nam and the occurrence of these species throughout seawaters of Viet Nam in Table 2.

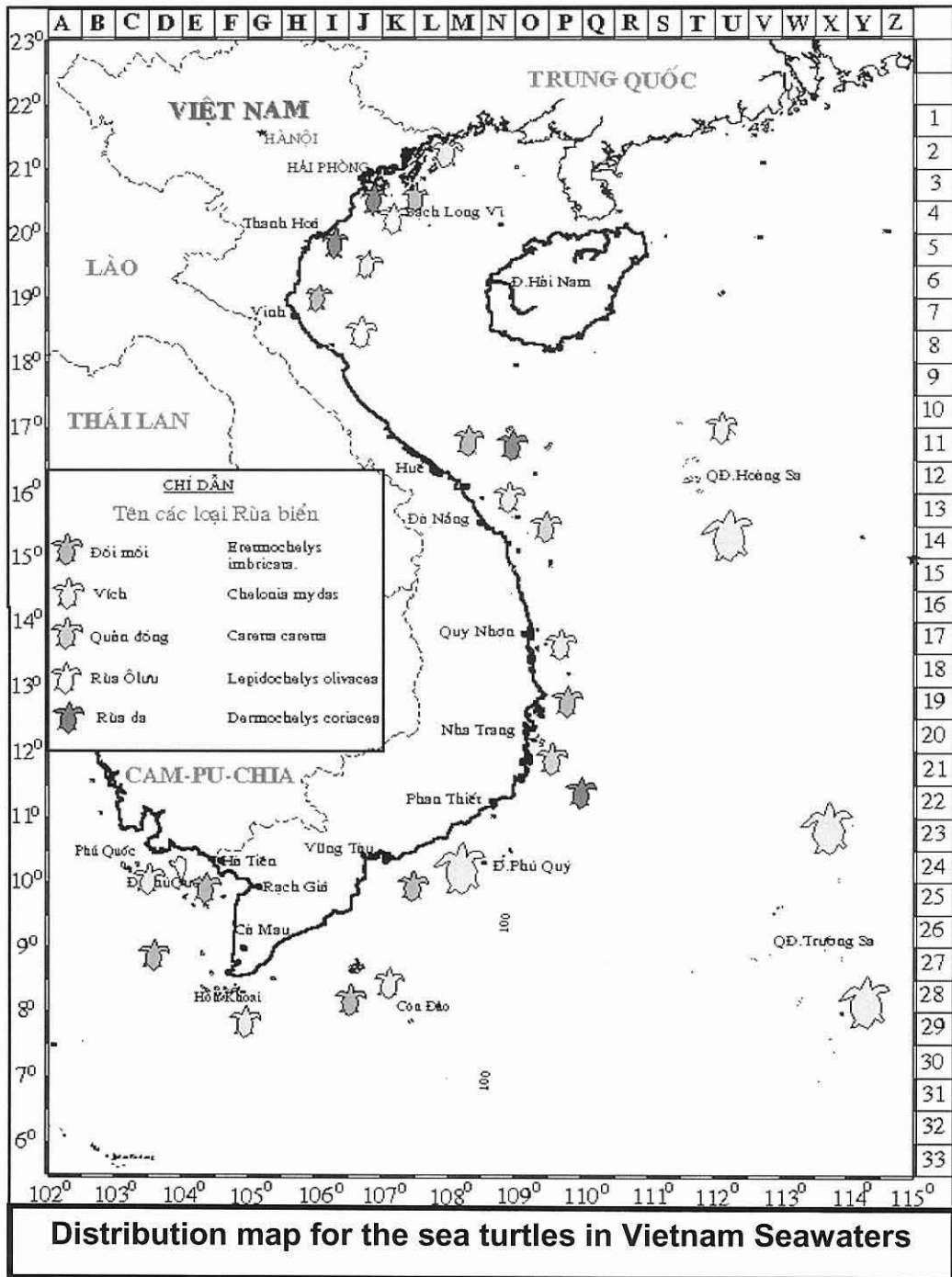
#### 4.2. AFFECT OF HUMAN ACTIVITIES ON POPULATION OF MARINE TURTLES

In Viet Nam, turtle is considered as one of the four cult animals. Turtles are symbol of longevity and other animals are symbols of power, happiness and

wisdom. Therefore, fishermen always try to avoid to catch marine turtles. If fishermen incidentally catch turtles, they should release them immediately back to the sea.

Some interview-based studies were carried out in 1998-2002 by RIMF in Thanh Hoa (Tonkin Gulf), Quang Nam, Da Nang and Khanh Hoa provinces (Central of Vietnam), Con Dao and Tho Chu Islands (Southern part and Gulf of Thailand). The results showed that most of the marine turtles were incidentally caught by different types of fishing gears especially by bottom trawls, gillnets, long-line and sometimes by purse seine. However, number of marine turtles incidentally caught by fishing gears as by-catch in Viet Nam was estimated to be less than 100 individuals per year.

On the other hand, coastal habitants who are not involved in fisheries activities are still hunting marine turtles by scuba diving and long-lines for tourism purposes or collecting marine turtle eggs for domestic consumption as food.



## 5. Nesting season and egg collection

Con Dao (Ba Ria-Vung Tau), Tho Chu (Kien Giang) and Nui Chua (Ninh Thuan) Reserve Area are the main nesting sites of sea turtles in Viet Nam. Annually, thousands of sea turtles go ashore for nesting on sand beaches of these major nesting sites. Nesting season for sea turtles differs among different species. In general, nesting season lasts from March to November with the peak from May to October.

Observations on nesting behaviour of sea turtles showed that turtles usually nest mostly at night at about 15 minutes before or after spring tide.

Hatch rate of sea turtles depends on the interaction of a number of factors, such as salinity, humidity, temperature, gas flow, rainfall, tidal inundation, erosion, and predation. The hatch rate ranged with average of 75.3%.

Table 3: Distribution by sea turtle species in the seawaters of Viet Nam.

Area	Leatherback	Olive Ridley	Loggerhead	Green	Hawkshill
Tonkin Gulf	+	+	+	+	+
Central waters	+	+	+	+	+
Southeast waters	+	+	+	+	+
Southwest waters	+	+	+	+	+
Paracels archipelago	+	+	+	+	+
Sprattly archipelago	+	+	+	+	+

Source: L.X. Ai & Thuoc 1999, D.D. Dat, et.al. 2002.

## 6. CONSERVATION AND MANAGEMENT

In 1995, the Programme " Salvation of Sea Turtles in Vietnam " has been launched and supported by WWF. Observations on nesting behaviour of marine turtles have been conducted during reproduction period in Con Dao Island. Nesting on nesting sites in Con Dao are recorded and marked, and those being threatened be washed away by wave should be removed to safe sites. Newly emerged hatchlings are rearing in artificial lakes for some time then is released to sea.

The number of saved hatchlings was increased gradually year by year. In 1994 only 6,000 hatchlings have been released into Vietnam Sea, increased to 28,500, 70,000 and 100,000 hatchling turtles in 1995, 1997 and 2001, respectively.

The difficult problems we are facing in research and conservation of marine turtles in Viet Nam are shortage of financial support, lack of training opportunities, insufficient knowledge to technology and it's applications, etc.

## 7. RESEARCH ACTIVITIES

Present research has been conducted in relation to sea turtles in Viet Nam. The topic titled " Study on marine turtles resources, to determine measures to protect and develop their resources in seawaters of Viet Nam since 1998 only and with very limited budget granted by Ministry of Fisheries of Viet Nam. The main objectives of the study are as follows:

- \* To estimate the abundance and distribution of sea turtles.
- \* To study on tagging, nesting behaviour and biology.
- \* To study on affect of fishing gears on sea turtles.
- \* To establish sanctuaries

On the other hand, activities on conservation of sea turtles in Con Dao have been carried out since 1995 with assistance of IUCN\_VN and WWF\_Indochina in both technical and financial terms.

Institutions currently involved in research and conservation on sea turtles in Viet Nam are: Research Institute of Marine Fisheries (RIMF), Con Dao National

Table 4: Nursing grounds of sea turtles found in Vietnam

No	Nursing ground	Sea turtle species
1	Con Dao Island (including 16 places)	<i>Chelonia mydas</i> , <i>Eretmochelys imbricata</i> , <i>Caretta caretta</i>
2	Nui Chua (Ninh Thuan)	<i>Chelonia mydas</i> , <i>Eretmochelys imbricata</i>
3	Quang Ninh (including Vinh Thuc Island and Minh Chau beach)	<i>Chelonia mydas</i>
4	Bach Long Vy Island (Hai Phong)	<i>Chelonia mydas</i>
5	Spratly archipelago	<i>Chelonia mydas</i>
6	Phu Quy Island	<i>Chelonia mydas</i>
7	Phu Quoc Island	<i>Chelonia mydas</i>
8	Tho Chu Island	<i>Chelonia mydas</i>

Source: Phan Hong Dung 2002; D.T. Dat et.al. 2002

Park and Nui Chua Reserve Area. The following researchers are involved in sea turtles research: from RIMP - Dr. Chu Tien Vinh, Mr. Phan Hong Dung, Mr. Dinh Thanh Dat. From Con Dao National Park - Mr. Dao Xuan Ai, Mr. Nguyen Truong Giang. From Nui Chua Reserve Area - Mr. Tran Phong.

## 8. LAW AND ENFORCEMENT

There are not any special enactments, regulations on pertaining to sea turtles in Viet Nam. However, the following legal documents issued by the Government of Viet Nam relating to the Fisheries Resources Protection and Development (including sea turtles) can be listed:

- Ordinance dated 25 April 1989 on Protection and development of fisheries resources, which stipulated that:

- \* " Prohibit any actions causing harmful affects on resources, habitats of aquatic living resources " (Chapter I, Article 5).

- \* " Exploitation and commerce of living aquatic resources of high economic value being rare, threatened or endangered should be banned" (Chapter II, Article 12).

- Enactment No 195 - HDBT (Council of Ministers) dated 2 June 1990 guiding on execution of the Ordinance dated 25/April/1989.

- Decision No 130-CP dated 20 April 1991 on Establishment of the Fisheries Protection Department under Ministry of Fisheries.

- National Law on Environment Protection issued in 1993.

- Provisions No 415/TTg dated 20 August 1994 of Prime Minister promulgating the statute on the organization and activities of State Inspectors in the field of protection of fisheries resources.

The Ministry of Fisheries of Vietnam has also issued other relating documents, namely:

- Circular No 04-TS/TT dated 4 August 1990 guiding execution of ordinance on protection and development of fisheries resources.

- Circular No 04-TS/TT dated 21 November 1994 guiding the execution of enactment No 85-CP on administrative punishment in fisheries resources protection.

- Decision 682 TS/QD dated 11 September 1993 enacting the provisions on marine resources exploitation and management in key fishing grounds

- The ordinance dated 25 April 1989 stipulates that "The Government of Viet Nam welcomes and ready to cooperate closely with any regional and international organizations in protecting, conserving fisheries resources, their habitats and other shared aquatic living resources".

## 9. LEARNED LESSONS AND FUTURE ACTION PLAN:

### 9.1 Learned lessons

- \* Many research, conservation and management activities on sea turtles have been done in Vietnam.

Since 1998, Research Institute for Marine Fisheries (RIMF) has responsibilities to study on sea turtles in Viet Nam, which was appointed by Government of Viet Nam. Research Institute for Marine Fisheries (RIMF) has conducted a programme so-called "Research on sea turtles resources to determine solutions for protection and conservation activities in Vietnam seawaters", which covered all biological and ecological and management aspects.

\* Marine species conservation: This will focus on dugong and sea turtle populations. Research on population, behaviour, migratory patterns, and reliance on Con Dao's seagrass beds will be combined with species-specific technical training and links with other regional research programs.

\* Education of local people and fishermen in marine conservation, especially of the coral reef ecosystem and sea turtle/dugong protection and

\* Save sea turtles mean that the Sharing Responsibility + Responsible Fishery Operation + Marine Environmental Protection

## 9.2 Future action plan:

Description of action plan, including 2 components, which is combined in the following 6 issues, they are:

\* Sustainable nesting management:

a/Nesting and environmental consideration and assessment,

b/Studying and pilot applying TEDs in fishing gear and practices,

c/Sea turtle resource enhancement: Incubating and hatching /tagging/DNA technologies and taxonomic identification,

d/Establishing the marine protected areas/artificial and natural reef, seagrass for sea turtles.

\* Integrated Research, Conservation and Management:

e/ Social-economic impacted research and voluntary activities in relation to sea turtle management and conservation, and making a national network,

f/ Stopping/banning the sea turtle's market, innovating regulation and enhancing awareness public.

## RECOMMENDATIONS

We hereby recommend that the Government of the Socialist Republic of Viet Nam address the following recommendations in order to prevent further declines in the sea turtle populations in Vietnam seawaters, and to

allow populations to recover from their reduced state.;

\* it is strongly urged necessary to enforce the provisions of local (group 1 of decree 48/CP) and international (CITES) legislation for the prevention of trade in sea turtle products.

\* It is strongly urged to upgrade the regional IUCN Red List categories for all five species of sea turtle in Viet Nam.

\* We strongly recommend that along with local NGO groups, we should develop a two-year project that (1) develops community based conservation initiatives through education and awareness raising strategies, and (2) expands the biological knowledge base for sea turtles in Viet Nam.

\* It is strongly urged to undertake or support a single year molecular ecology project to address (1) assignment of nesting rookeries into management units, and (2) analysis of DNA collected from animals caught at sea in order to determine which management units are being impacted by the accidental and direct take of sea turtles in Vietnam Seawaters.

\* We recommend that Ministry of Fisheries (MoFI), building on experience and knowledge gained by other ASEAN nations, initiate research and development of TED's in the Vietnamese trawl fisheries with the aim of implementation within three years.

\* The Provincial Offices of MoFI (as Fishery Resource Protection Department-FRPD) and Ministry of Science, Technology and Environment-MoSTE (as Department of Science, Technology and Environment-DoSTE) are urged to undertake baseline surveys along selected mainland and island beaches to determine sources and approximate levels of beach-washed litter, floating litter, and submerged litter.

\* We recommend that the Provincial Offices of MoFI in Phu Yen, Binh Thuan, Ba Ria-Vung Tau and Kien Giang support a pilot research project to collect baseline biological data on foraging area populations. If implemented, this would be the first systematic foraging ground study in South East Asia.

\* We recommend that representatives from the Ministry of Defence-MoD on the Spratly and Paracel Islands be provided with the necessary training and equipment to conduct baseline surveys of sea turtle distribution, abundance, status and threats.

\* It is strongly urged to continue supporting the extremely valuable nesting beach tagging studies at Con Dao National Park, Nui Chua (Ninh Thuan) Reserve Area and Tho Chu Island (Kien Giang).

\* We recommend that the Government of Vietnam support more detailed baseline studies at several

possible nesting beaches along the Vietnam coast to clarify the importance of these areas as sea turtle nesting areas. For example, Da Nang, Phu Yen, Khanh Hoa, Phu Quy, and the outer islands of the Tonkin Gulf .

\* We recommend that the Government of Vietnam undertake, or support, a project that uses modern satellite telemetry techniques to increase the awareness and understanding of local Vietnamese school children and other community members about sea turtle migration.

\* We strongly urge the Government of the Socialist Republic of Viet Nam to sign and implement the Convention on Migratory Species (CMS).

## ACKNOWLEDGEMENTS

This report forms part of a national funded project to develop a Marine Turtle Research, Management and Conservation for Viet Nam.

We would like to specifically thank the official and local people for participating in various aspects of the survey and research, including assisting us to obtain permits, conduct local field surveys.

This assistance, sharing and collaboration is gratefully acknowledged.

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