

**MARINE TURTLE CONSERVATION ACTION PLAN TO 2010
IN VIETNAM**

Foreword

Marine turtles are rare and threatened at a global level and hold significant value in many societies throughout the world, including several in Southeast Asia. All extant marine turtle species are listed on the IUCN Red List for Endangered Flora and Fauna. In recognising the cultural, economical and social benefits that the protection of marine turtles and their habitats can have in Viet Nam, and following Viet Nam's accession to the international MoUs for the protection of marine turtles, The Ministry of Fisheries (MoFi), has exerted themselves on the conservation and management of marine turtles in Viet Nam. In July 2001, MoFi and IUCN hosted the 1st National Workshop on Marine Turtle Conservation in Viet Nam. In December 2001, a round table meeting of senior representatives from all relevant agencies was held to discuss the initiation of the marine turtle project. One of the major outcomes of these meetings was the establishment of a marine turtle project steering committee, the first meeting of which was held in October 2002. In order to make significant headway in marine turtle conservation in Viet Nam, it is imperative that a comprehensive, concerted and integrated effort is undertaken at a national level.

Where the Biodiversity Action Plan (1995) built upon the broader goals of marine biodiversity protection, this "Action Plan for Conservation and Management Marine turtles in Vietnam until 2010" aims to focus on the conservation of one group of marine fauna and their habitat. Preparation of this Action Plan is therefore quite timely, not only for Viet Nam, but for other Southeast Asian countries. The following National Action Plan establishes areas of research and management priority, and will serve as a platform for the development and coordination of current and future programmes that aim to protect, conserve and manage marine turtle populations and their habitats in Viet Nam.

We are confident that this document will make a positive contribution to ongoing discussions of marine conservation policy and management in Viet Nam, concurrently will create good conditions to impulse the international cooperation in support of Viet Nam's goals on marine biodiversity conservation and sustainable development Vietnam's important marine resources.

Minister

Ministry of Fisheries

Acknowledgements

The Marine Turtle Conservation Action Plan to 2010 has been developed by the Ministry of Fisheries with the financial assistance from the Danish Government (DANIDA) and the technical advice and assistance from IUCN - The World Conservation Union (Viet Nam), World Wide Fund for Nature (WWF – Indochina programme) and TRAFFIC. The preparation of the National Action Plan has been a largely participatory process involving stakeholders from Government, research institutions, NGOs and communities. The Ministry of Fisheries would like to express thanks for all of their support.

Contents

| | |
|--|-------------------------------------|
| <i>Acknowledgements</i> | 3 |
| <i>List of abbreviations</i> | 5 |
| 1. BACKGROUND AND RATIONALE | 9 |
| 1.1 Viet Nam – general overview..... | 9 |
| 1.2 Global status of marine turtles..... | 10 |
| 1.3 Status of marine turtle species in Viet Nam..... | 11 |
| 1.4. Threats to marine turtles in Viet Nam..... | 13 |
| 2. MARINE TURTLE CONSERVATION ACTION PLAN | 17 |
| 2.1. PRINCIPLES AND OBJECTIVES | 17 |
| 2.1.1. Principles | 17 |
| 2.1.2. Objectives | 17 |
| 2.2. PRIORITY ACTIVITIES | 18 |
| 2.2.1. Reduce causes of marine turtle mortality..... | 18 |
| 2.2.2. Nesting beach - hatchery management | 21 |
| 2.2.3. Protection, conservation and rehabilitation of marine turtle habitats | 25 |
| 2.2.4. Research and monitoring..... | 27 |
| 2.2.5. Public awareness and education..... | 30 |
| 2.2.6. Regional and international cooperation | 31 |
| 3. IMPLEMENTING ORGANISATIONS AND STAKEHOLDER'S RESPONSIBILITIES | 35 |
| 3.1. Ministry of Fisheries (MoFI)..... | 35 |
| 3.2. Viet Nam National Center of Science and Technology | 36 |
| 3.3. Ministry of Agriculture and Rural Development..... | 37 |
| 3.4. Ministry of Natural Resources and Environment | 38 |
| 3.5. Ministry of Defence..... | 38 |
| 3.6. Ministry of Education and Training..... | 39 |
| 3.7. Ministry of Trade..... | 39 |
| 3.8. General Department of Customs | 39 |
| 3.9. General Department of Tourism Administration..... | 39 |
| 3.10. Ministry of Science and Technology | 40 |
| 3.11. International Organisations | 40 |
| 4. APPENDIX | <i>Error! Bookmark not defined.</i> |

List of abbreviations

| | |
|-------------|---|
| ASEAN | Association of Southeast Asian Nations |
| Bord. Sol | Border Defence Forces |
| CBD | Convention on the Biodiversity |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| Con Dao NP | Con Dao National Park |
| CMS | Convention on the Conservation of Migratory Species of Wild Animals |
| DoFI | Department of Fisheries |
| DoSTE | Department of Science, Technology and Environment |
| EEZ | Exclusive Economic Zones |
| ENV | Education Nature Viet Nam |
| FFI | Fauna and Flora International |
| FPD | Forestry Protection Department/under MARD |
| HIO | Hai Phong Institute of Oceanography |
| IMA | International Marine life Alliance |
| IOSEA MoU | Memorandum of Understanding for the Protection of Marine Turtles and their Habitat of the Indian Ocean and Southeast Asia |
| IUCN | The World Conservation Union |
| MARPOL | The International Convention for the Prevention of Pollution of Ships |
| MARD | Ministry of Agriculture and Rural Development |
| MoD | Ministry of Defence |
| MoE | Ministry of Education and Training |
| MoFi | Ministry of Fisheries |
| MoNRE | Ministry of Natural Resources and Environment |
| MoST | Ministry of Science and Technology |
| MTCAP | Marine Turtle Conservation Action Plan |
| MTSG | Marine Turtle Specialist Group (IUCN) |
| NADAREP | National directorate of fisheries resources exploitation and protection |
| NIO | Nha Trang Institute of Oceanography |
| Nui Chua NP | Nui Chua National Park |
| NGO | Non-Government Organisation |
| PSC | Marine Turtle Project Steering Committee |
| RIMF | Research Institute of Marine Fisheries |
| TED | Turtle Excluder Device |
| TRAFFIC | The wildlife trade monitoring network (a joint programme of WWF and IUCN) |
| UNCLOS | United Nations Convention on the Law of the Sea |
| VEPA | Viet Nam Environmental Protection Agency – under MoNRE |
| WWF | World Wide Fund for Nature |

Background

Viet Nam, located in South East Asia, has a coastline that extends for over 3260 km (not including islands). Additionally, Viet Nam is responsible for managing approximately 1,000,000 sq. km of maritime territory, including 3000 near shore and offshore islands. The land area of Viet Nam is 329,707 sq. km, and the national population in 2001 was 79.2 million people, giving it one of the highest population densities in the world (240.3 habitants/km²), and close to 60% of the population resides along the coastal fringe.

The Viet Nam coast has a diverse range of marine and coastal habitats, ranging from the large stands of mangroves that dominate the Mekong and Red River deltas, to estuaries, coral reef fringed islands and sandy beaches. Of particular note are (1) the Ha Long Bay area in Quang Ninh Province which is listed as a UNESCO World Heritage Site for its outstanding universal value in terms of geographic and biological attributes, and (2) the Hon Mun area (Khanh Hoa Province) which is the first official marine protected area in Viet Nam, established to preserve nationally, and in some cases globally, significant marine biodiversity.

Whereas the *National Biodiversity Action Plan (1995)* sets out objectives that are essential for the protection of both marine and terrestrial biodiversity in Viet Nam, the objectives of this Marine Turtle Conservation Action Plan until 2010 in Viet Nam (MTCAP) are dedicated to the national protection, conservation and management of a single marine fauna group (marine turtles) and their habitats.

The contents of this Action Plan:

- It deals with marine turtles and marine turtle habitat conservation, such as seagrass beds, coral reefs, migration zones and sandy beaches.
- It recognises the long-term cultural, social and economical benefits that marine turtle protection can have on the people of Viet Nam, with particular reference to those residing along the coastal fringe.
- It emphasises the need to remove threats to marine turtles and increase public awareness and education about them and their habitats
- It advocates the role of local Government in decision making
- It takes into account the role of people, communities, and non-governmental organizations (NGOs) in managing marine turtles and their habitats.
- It emphasises local, national and international responsibilities and advocates strong cooperation between these bodies.

Additionally, by signing the IOSEA MoU, the Vietnamese Government has agreed to *implement, subject to the availability of necessary resources, the provisions of the [IOSEA*

MoU] *Conservation and management Plan*. The Conservation and Management Plan established under the IOSEA MoU sets out six objective areas, five of which have particular relevance in developing a national strategy for Viet Nam. The MTCAP places these conservation objectives into a national context:

- (1) Reduce direct and indirect causes of marine turtle mortality
- (2) Protect, conserve and rehabilitate marine turtle habitats
- (3) Improve understanding of marine turtle ecology and populations through research, monitoring and information exchange
- (4) Increase public awareness of the threats to marine turtles and their habitats, and enhance public participation in conservation activities
- (5) Enhance national, regional and international cooperation

The MTCAP has two major strategies:

- Reduce direct and indirect impacts on Viet Nam's marine turtles and hence promote their recovery in the wild
- To help national and international agencies to identify more clearly current marine turtle conservation interventions in Viet Nam and where inputs would be most effective.

The plan recommends explicit and achievable actions to satisfy six conservation objectives until 2010:

- 1) Reduce direct and indirect causes of marine turtle mortality
- 2) Manage marine turtle hatchery programme in Viet Nam
- 3) Protect, conserve and rehabilitate marine turtle habitats
- 4) Expand and monitor research and monitoring me
- 5) Develop a public awareness and education campaign about marine turtles and their habitats
- 6) Establish me that enable local, national and international collaboration

The Plan is divided into four sections. The first section provides the most up-to-date background information on marine turtle abundance, distribution and threats in Vietnam. Section two lists the prescribed actions and conservation objectives. In section three details of institutional responsibilities to undertake these actions are provided along with assignment of priority/feasibility for the prescribed actions. Section four of the document contains the appendices.

The proposed activities are by no means exhaustive and can only represent part of what is needed for the ultimate conservation of biodiversity. The concepts were developed on the basis of consultations, and they take into account other incentives, which are currently being carried out by Government and international agencies.

1. BACKGROUND AND RATIONALE

1.1 Viet Nam – general overview

Viet Nam is a South East Asian coastal country located in the West Pacific, sharing borders, Cambodia and Laos. It has a coastline extending for over 3260 km spanning roughly 15 degrees of latitude. Additionally, following the *United Nations Convention on the Law of the Sea (UNLOP)* in 1982, Viet Nam is responsible for 1,000,000 sq. km of maritime territory and exclusive economic zone (EEZ), which includes more than 3000 near shore and offshore islands.

The Viet Nam coast has a diverse range of habitats such as mangroves, coral reefs, inter-tidal areas, sandy beaches, sea grass and seaweed beds, and lagoon systems. Moreover, many of these ecosystems are diverse in structure and contain high levels of biodiversity. The Viet Nam Government is well aware of the relationships between economic development, environmental protection and reasonable utilisation of natural resources. As such the protection and conservation of natural resources have been recognised by incorporation into Viet Nam's legislation system, and by accession to international conventions.

One of the most effective conservation methods used in Viet Nam has been the establishment of marine protected areas to protect endangered species and areas of high biodiversity. Until April 2003, the total number of protected areas in Viet Nam (including proposed areas) is 199; among them are 15 proposed marine protected areas. These areas are located at various locations along the coast, and include a wide array of habitats. The approach and selection of relative government agencies in considering and proposing MPAs is in support of Viet Nam's goals on marine biodiversity conservation and sustainable development of Vietnam's marine resources.

Marine turtles in Viet Nam are protected by both national (Decree 48/CP) and international (Convention on International Trade in Endangered Species of Wild Fauna and Flora - CITES (Appendix I and II) legislation. The conservation of marine turtles also involves the conservation of marine turtle habitats, as well as other protected other species associated with those habitats. Additionally, in July 2001, the Viet Nam Government formally ratified the Memorandum of Understanding for the Protection of Marine Turtles and their Habitat of the Indian Ocean and Southeast Asia (IOSEA MoU). The Ministry of Fisheries has taken the initiative to begin marine turtle conservation programmes by establishing a steering committee that oversees tasks as they relate to marine turtle conservation and management in Viet Nam. This National Action Plan, compiled by the Ministry of Fisheries under the guidance of the Project Steering Committee is intended to guide the future directives of marine turtle conservation in Viet Nam.

The Action Plan were subsequently reviewed, discussed and developed by all levels of Governmental staff from relevant ministries, scientists, academics and representatives of international NGOs. The plan recommends explicit, achievable and appropriate actions to satisfy six conservation objectives (as described in IOSEA MoU) in Viet Nam.

1.2 Global status of marine turtles

There are seven species of marine turtle currently recognised throughout the world: Green turtle (*Chelonia mydas*), Loggerhead turtle (*Caretta caretta*), Flatback turtle (*Natator depressus*), Hawksbill turtle (*Eretmochelys imbricata*), Leatherback turtle (*Dermochelys coriacea*), Olive ridley turtle (*Lepidochelys olivacea*) and Kemp's ridley turtle (*Lepidochelys kempfi*). Of these species, the IUCN Red List of threatened animals (IUCN 2002) lists the hawksbill turtle (*Eretmochelys imbricata*) and leatherback turtle (*Dermochelys coriacea*) as critically endangered globally, the flatback turtle (*Natator depressus* – only recorded from the Indo-Pacific region) as data deficient and the remaining species as endangered. Additionally, all seven species are listed in Appendix 1 of CITES and all species, except the *N. depressus* are included in Appendices I and II of the CMS (Convention on the Conservation of Migratory Species of Wild Animals).

Marine turtles are long-lived, slow growing, migratory marine reptiles that reach maturity somewhere between 15 and 50 years of age (depending on the species and regional variation). Moreover, their life cycle depends upon terrestrial, coastal and oceanic habitats. Dependence on a wide array of habitats, combined with life history traits that do not permit fast regeneration times makes management of these species inherently difficult.

Few marine turtle populations across the globe have escaped systematic harvest of eggs or turtles and/or the widespread indirect mortality through fisheries bycatch, habitat loss, disease and other anthropogenic factors. These impacts have been particularly felt by Southeast Asian nations. Malaysian leatherback turtles are bordering on local extinction with only a few nests being laid each year at present, versus tens of thousands decades ago. Although little data exist for *E. imbricata* and *L. olivacea*, current estimates suggest that large-scale population declines have occurred in Malaysia, Indonesia and the Philippines. Additionally, most *C. mydas* populations have declined significantly in recent decades. Indeed, of the 33 index sites used recently by the IUCN to assess global green turtle population trends, 17 show declining populations, and six of seven populations in Southeast Asia are currently declining. The seventh population (Sabah Islands) had declined by an estimated 80% during the last century. However, since the mid 1980s the annual numbers of nesting turtles has begun to show slight yearly increases). Despite the encouraging trends some populations are showing, marine turtles in SE Asia continue to require effective conservation programmes and management protocols to ensure their survival within the region.

1.3 Status of marine turtle species in Viet Nam

Although records of marine turtle distribution in Viet Nam were published early in the 20th century by Bourret (1941), these were not followed up until the 1970s (Nguyen Khac Huong 1978), and detailed research only began in 1995. In 1995, Con Dao National Park and WWF began a research and monitoring project on the nesting population of marine turtles in the Con Dao islands. These surveys and research projects coupled with recent surveys undertaken by Viet Nam's Ministry of Fisheries, IUCN and WWF have revealed that five species of marine turtle are found in Viet Nam (Table 1).

These surveys have also revealed that marine turtle populations in Viet Nam have been heavily impacted by human activities for many decades. Their meat and eggs were readily harvested for foods, drugs and handicrafts and in several coastal locations fishers accidentally caught marine turtles in their nets, traps or lines (See Hamann et al. 2002). According to the reports of RIMF, IUCN – Viet Nam, WWF Indochina, Nui Chua National Park and Con Dao National Park, populations of all five species of marine turtle in Viet Nam are declining, especially hawksbill, loggerhead and leatherback turtles. Consequently, all species of marine turtle in Viet Nam were listed in Viet Nam Red List book and are hence protected under Vietnamese legislation.

Table 1: Marine turtle species distributed in Viet Nam's sea waters

| Vietnamese names | English names | Scientific names |
|------------------------|---------------------|-------------------------------|
| Vich (Rua xanh) | Green turtle | <i>Chelonia mydas</i> |
| Doi moi | Hawksbill turtle | <i>Eretmochelys imbricata</i> |
| Doi moi dua (Du) | Olive ridley turtle | <i>Lepidochelys olivacea</i> |
| Rua da | Leatherback turtle | <i>Dermochelys coriacea</i> |
| Quan dong (Rua @au to) | Loggerhead turtle | <i>Caretta caretta</i> |

Loggerhead turtle (*Caretta caretta*) are not likely nest along the coast of Vietnam. Foraging areas for this species occur in the waters around Co To and Thanh Lan islands (Quang Ninh province), the coastal waters of the south-central provinces from Quang Ngai to Ninh Thuan, and around the Con Dao Island group. While it is difficult to determine whether numbers of loggerhead turtles residing in Viet Nam's waters have changed or remained stable over time, large declines in the two Pacific Ocean breeding populations (northern Pacific population centred around Japan and the southern Pacific population centred around eastern Australia suggest that regional foraging populations have suffered at least some level of decline.

Leatherback turtle (*Dermochelys coriacea*): It is likely that nesting by leatherback turtles was relatively common along the central coast beaches of Viet Nam 30 or more years ago, the annual nesting population in the 1960s/1970s would have been in the order of 500 females per year. However, data from recent surveys also indicated that fewer than 10 females currently nest along Viet Nam's beaches each year.

Olive Ridley turtles (*Lepidochelys olivacea*) were once common along most of the outer islands of Bai Tu Long Bay and the beaches in the central coast of Viet Nam (Ha Tinh to Phu Yen). Current nesting levels are somewhere in the order of 100 females per year and important nesting sites for this species are located on beaches in Quang Ninh Province (Quan Lan Island), Da Nang City (Son Tra Peninsula) and Quang Binh (scattered along entire sandy coastline).

Hawksbill turtle (*Eretmochelys imbricata*): In the early 20th century hawksbill turtles were regarded as relatively common along the entire Vietnamese coastline and recent surveys indicate that approximately 500 females per year may have nested in the islands of the Gulf of Tonkin, and nesting populations of unknown size occurred in the Vietnamese and Cambodian islands of the Gulf of Thailand and the Con Dao Island group. The manipulation of hawksbill turtle shell was a traditional craft for many decades in many places in Viet Nam and thus hawksbill turtles were considered to be an important economic resource. At present, the numbers of nesting and foraging hawksbill turtles in Viet Nam's waters are very low. Unless urgent action is taken to eliminate the incidental capture and the illegal commercial use of hawksbill turtles, extinction of local, and perhaps regional populations are imminent within decades.

Green turtles (*Chelonia mydas*) are the most abundant marine turtle living along the entire Vietnamese coastline and nesting occurs in several areas along the coast. Prior to the 1970s, it was estimated that approximately 100 females nested each year on the islands in the Gulf of Tonkin, 500 females nested each year along the mainland beaches and near shore islands of south-central Viet Nam (Quang Nam to Ninh Thuan), 230 females nested in Con Dao island groups and 100 of females nested each year on the islands in the Gulf of Thailand. Recent survey data indicate that in all areas except Con Dao (Gulf of Tonkin, south-central Viet Nam and the Gulf of Thailand) annual breeding populations have declined significantly. Each locations currently has around 10 nests laid per year. There is currently no information on the size or status of the nesting population on most of the offshore islands, including Bach Long Vi, Paracel Islands (Hoang Sa), Spratly Islands (Truong Sa), Phu Quy.

1.4. Threats to marine turtles in Viet Nam

Over the last few decades the threats to Viet Nam's marine turtle population have increased. These threats vary from the direct harvest of turtles for food or the production of ornaments, accidental capture by fishers to the alteration of nesting beaches by both natural events and development. To protect and conserve the marine turtle populations in Viet Nam, a comprehensive research and monitoring strategy should be conducted in the short term. Coinciding with this, a public awareness programme about the value of marine turtles and conservation awareness aimed at local authorities and relevant government agencies is needed. The building and setting up of conservation and rescue turtle centres to rehabilitate and protect turtles caught by fishers or eggs from threatened nests is also very important. It is essential that the Viet Nam government, NGOs, and donors should have a strategy to identify and access funding opportunities for these activities.

At all stages of their life cycle marine turtles are subject to various impacts that may compromise their survival or capacity to breed successfully. These impacts which have the potential to decrease population sizes include: direct and indirect harvest, incidental capture, take of turtles and eggs from nesting beaches, disease, sand mining, tourism development etc. (see annex 1 for detail). Although in most cases quantifiable data do not exist and some certainty is sought in others, this should not prevent actions that will ameliorate preventable mortality. A more detailed description of each of these threats is presented below.

1.4.1 Direct impacts to marine turtle populations

The direct take of turtles and eggs from the nesting beaches is a principal factor underlying the decline in nesting numbers of all marine turtle species in Viet Nam. It appears that nesting activity is now so scattered, both spatially and temporally, that the likelihood of direct take of females ashore for nesting is greatly reduced. However, recent survey data indicate that nearly all of the eggs may be harvested in the non-protected locations. Population modelling data from other populations indicates that it will take 35 to 50 years for the effects of egg harvesting to be reflected in a corresponding decline in the nesting turtle numbers. It is clear that Vietnamese nesting populations cannot sustain this practice. In fact the only option that will benefit marine turtles is 100% protection of nesting turtles and their eggs.

Similarly, while some fishing techniques (such as Cau Kieu 'long-line fishing' and gill nets) have been adapted or used to specifically target marine turtles in foraging areas, catch rates have now declined to the point where for almost all fishers, it is no longer economically feasible to solely target marine turtles. Today, most of the foraging turtles are caught accidentally in fishing gear. However, the opportunistic capture of both green and hawksbill turtles by fishers diving for other economically important marine products such as molluscs

and crustaceans, poses a significant threat to these species. This take could involve hundreds of turtles from each species, and needs to be eliminated in the near future if Viet Nam's foraging populations of these species are to survive.

In April 2002, the Viet Nam Government listed marine turtles in the modified decree 48 CP. According to this decree all purposeful harvest, kill or trade in marine turtles is illegal.

1.4.2. Indirect impacts on marine turtle populations

Impacts on foraging habitat and food sources

The incidental capture of marine turtles is a large and widespread problem, with a significant percentage of these either drowning in fishing gear or being killed for food when accidentally caught in nets. The fishing methods of most concern are, (1) bottom trawling, (2) drift and set gill nets, and (3) Cau Kieu (long lining).

A report by The Asia Development Bank (ADB) (1999) estimated that between 1993 and 1998 there was an average of 40,000 registered vessels operating within the waters of the 18 coastal provinces that were surveyed in the present project. Of the registered vessels operating in Viet Nam, 34.2% are bottom trawlers and 20.4% are gill-net vessels. Hence, approximately 13,680 and 8,160 bottom trawlers and gill net vessels exist in these 18 provinces. Survey data compiled by MoFI, RIMF and IUCN indicate that almost all marine turtles are caught as bottom trawl or gill net bycatch.

Turtle Excluder Devices (TED) in trawl nets, restricted (closed season/area zones) and restricted tow or net setting times have helped to alleviate high turtle mortalities in several countries and these should be examined in the context of Vietnamese fisheries. This issue is however, still in dispute because of its extra expense and potential lost production. However, in other nations research has shown that shrimp from trawlers with installed TEDs are of higher quality and running costs of boats has decreased because fewer crew are needed. Also while the costs involved with TED installation is one negative aspect the costs could be significantly reduced by manufacturing and installing the devices locally, using locally sourced materials rather than importing them from other nations.

The number of fishing and tourist boats along the Viet Nam coastline has increased significantly in the last two decades. Associated with this has been an increase in marine noise and pollution levels e.g. oil/fuel residue, solid waste rubbish (including plastics, discarded nets and other foreign material). These factors have negatively affected marine turtle populations in other areas of the world through ingestion, entanglement, injury, and obstruction or by degrading the foraging or nesting habitats, and it is likely that they have

contributed in some way to the decrease in marine turtles in Viet Nam. In fact, these factors are likely to constitute the largest non by-catch or consumptive threat for marine turtles in Viet Nam. Marine debris does not only impact marine turtles but also threatens the health of the marine ecosystem and dependent industries such as tourism and fishing. Unless this problem is addressed in the short term, Viet Nam's valuable coastal and marine ecosystems will be under serious threat of becoming seriously degraded.

Coral reefs in Viet Nam have suffered from explosive and cyanide fishing, and seagrass and mangrove habitats have experienced decades of clearing, harvesting, sedimentation and other anthropogenic impacts. Considerable efforts by both Government and Non-Government Organizations have been made in recent years to stop these destructive fishing techniques, and promote the wise use of marine and coastal habitats.

Impacts on nesting turtle habitats

Beside the natural factors such as beach erosion from storms and or high tides etc., operations such as sand mining, tourism development, debris and development in the coastal zone are major negative impacts on nesting areas of marine turtles.

Although a report on the environmental impacts of sand mining in Minh Chau – Quan Lan (Quang Ninh) is not available the impact on nesting turtles seems inevitable. Along the mainland coast sand mining exists in numerous areas, however it is unknown whether any conflicts with marine turtle nesting beaches exist. Continued marine turtle surveys in Phu Yen and Khanh Hoa provinces will be required to determine if any negative impacts are likely along those beaches.

The beaches on which turtles are still occasionally seen nesting are mostly undeveloped and mainly located on offshore islands, or away from tourist developments. However, the beaches on Son Tra peninsula (Da Nang City) and several beaches in Quan Lan and Minh Chau (Quang Ninh) are earmarked for tourist development. If these beaches are developed, marine turtle nesting rookeries may be threatened by a variety of factors such as beach removal or alteration, physical obstruction to the dunes, lighting, noise, and increased beach use by people.

Many mainland beaches in Viet Nam have extremely high levels of marine debris. Much of this debris consists of glass, plastics and polystyrenes, oil, and other items associated specifically with fishing such as floats, nets, and light bulbs. This is a problem for marine turtle nesting because it may impede movement and nest digging, lead to injury and

infections, and in some cases may cause turtles to be trapped, and prevent hatchlings from reaching the sea.

1.4.3. Illegal trade in marine turtles and their products

While most olive ridley, leatherback and loggerhead turtles that are killed, indirectly or directly, are eaten by fishers or sold for food, green turtles and hawksbill turtles are often illegally sold for the production of stuffed turtles or shell products (Although it is difficult to ascertain actual numbers of turtles that are killed each year, or the rate in which products turn over in stores, these reports provide strong evidence that a potentially large, and well organised, commercial wholesale trade in turtle products exists in Viet Nam. , In addition, the recent report by TRAFFIC (TRAFFIC Southeast Asia-Indochina 2002) indicates that there is a black-market import of turtle shell from other countries to Viet Nam, and significant numbers of turtle shell products are being sold to international and domestic tourists.

2. MARINE TURTLE CONSERVATION ACTION PLAN

2.1. PRINCIPLES AND OBJECTIVES

2.1.1. Principles

The Marine Turtle Conservation Action Plan should represent the opinion of the Party and the engagement of the Government. It should be developed basing on following principles:

- The objectives and contents of the MTCAP are not apart from the objectives and Prime Minister approved contents of the 1995 Biodiversity Action Plan.
- Correspond with the national strength sources, developed based on the experiences of other countries.
- Correspond with the National socio-economic development strategies.
- Correspond with International Conventions such as International Convention of Biodiversity (1994), CITES (1994).
- Pursuant to the National Strategy for Environmental Protection (NSEP).

2.1.2. Objectives

General objectives:

The objective of *Marine turtle Conservation Action Plan to 2010 in Viet Nam* is to protect, conserve and managed marine turtles and their habitats in Viet Nam

Strategic objectives:

- Reduce direct and indirect impacts on Viet Nam's marine turtles and hence promote their recovery in the wild
- To help national and international agencies to identify more clearly current marine turtle conservation interventions in Viet Nam and where inputs would be most effective

Specific objectives:

1. Reduce direct and indirect causes of marine turtle mortality
2. Manage marine turtle nesting areas
3. Protect, conserve and rehabilitate marine turtle habitats
4. Research and monitoring
5. Increase public awareness and education
6. Enhance national, regional and international cooperation

.2. PRIORITY ACTIVITIES

.2.1. Reduce causes of marine turtle mortality

Requirement: Identify the threats and the methods to reduce mortality of marine turtles along Viet Nam's coastal zone and islands, ensuring little or no impact to the lives of local people.

.2.1.1. Status

Although several authors have documented the distribution and threats to marine turtles in Viet Nam, none have adequately addressed the issues nationally, or from the socio-economic perspective of the fishing communities. Similarly, with specific regard to the hawksbill trade, while several authors have made detailed studies on the existence and scope of the trade and estimate the number of products for sale, no studies have specifically addressed capture and mortality rates of hawksbills caught accidentally or directly for this trade.

.2.1.2. Recommended activities

It is apparent through recent survey work that marine turtle populations in Viet Nam have been significantly impacted over the last 20 to 30 years by both: (1) direct harvest for food or turtle products; and (2) accidental capture in fishing gears.

The following actions are aimed to reduce this mortality as much as possible.

Activity 1

Identify the threats to marine turtle populations and their habitats

Cause

Incomplete knowledge of the threats to marine turtle populations and their habitats in Viet Nam

Specific actions

- 1) The NADAREP (MoFi) together with Border soldiers and research institutes (Institute of Oceanography, Research Institute of Marine Fisheries) conduct baseline surveys to identify and characterise threats to marine turtle populations and marine turtle habitats in the Spratly and Paracel Archipelagos and other offshore islands.
- 2) Expand the baseline research in Quang Ninh, Da Nang, Khanh Hoa, Phu Yen, and Binh Thuan Provinces to collect more detailed information about threats to nesting and courting marine turtles.

Activity 2

Develop culturally, socially, and economically feasible management programmes to protect marine turtle populations and their habitats.

Cause

Lack of a coordinated and integrated approach to the conservation of marine turtles and their habitats

Specific actions

- 3) Identify funding sources to maintain a yearly contact of the Marine Turtle Project Steering Committee (PSC).
- 4) Through the PSC, facilitate a common forum for exchange of knowledge and expertise among stakeholders. This could take the form of an annual meeting.
- 5) Organise workshops, field studies, exchange or programmes to enhance national expertise among research and management agencies.
- 6) Through the exchange of information, identify the best practice protocols for conserving and managing marine turtle populations in Viet Nam.
- 7) Develop annual work plans through the PSC to identify priority areas and assign responsibilities for the implementation of the Action Plan.

Activity 3

Assess the socio-economic status of the most threatened communities/economic groups.

Cause

Economic incentives drive the direct and opportunistic take of marine turtles in Viet Nam

Specific actions

- 8) Conduct socio-economic studies in fishing communities and other businesses involved in the processing or trade of marine turtle products in concentrated locations to determine the level and nature of dependence on marine turtle products.
- 9) Investigate solutions and sustainable alternative income generation for, and traders who involved in the processing or trade of, marine turtle products.

Activity 4

Reduce fisheries based marine turtle mortality in Viet Nam

Cause

Unregulated and unreported, and potentially high rates of incidental capture of marine turtles in Viet Nam

Specific actions

- 10) Continue the collection of baseline quantitative information on capture rates of marine turtles in fisheries bycatch, with a view to collect seven years of data, beginning in 2003.
- 11) Initiate the research and development of TEDs in Viet Nam, with the aim to implement pilot studies at key locations within two years, and to expand the research and development into additional coastal areas within five years. Priority areas include but are not limited to Con Dao, Da Nang (adjacent to Son Tra), Phu Quoc, Phu Quy, Phu Yen, Binh Dinh, Ly Son, Quang Ninh.
- 12) Investigate and collect information of discarded nets annually, and analyse potential risks to marine turtles and propose methods to reduce risks.
- 13) Examine the potential of other management options such as spatial and seasonal closures, reduction of shot times or restrictions on the types of fishing gear used (especially Cau Kieu in Phu Yen and Shark/Ray nets around offshore islands) to reduce mortality.
- 14) Design and implement an observer programme to monitor bycatch in coastal and offshore marine fisheries for local authorities.
- 15) The PSC continue to liaise with fisheries management authorities to continue to make necessary adjustments to these bycatch reduction measures as required.

Activity 5

Enforce the prohibition on the use of marine turtles and their products under Decree 48/CP, Fauna groups I and II.

Cause

Unregulated and potentially high rates of direct take of marine turtles and eggs in Viet Nam.

Specific actions

- 16) Expand the awareness programme started in 2003 aimed at fishers, fisheries enforcement officers, customs and police that aims to raise awareness of existing legislation and illegal trade issues and continue this project for several years.
- 17) Design and initiate an awareness programme aimed at business owners/managers involved in the illegal sale of turtle products that would raise awareness of existing legislation and illegal trade issues.
- 18) Confiscate and destroy all marine turtle products that remain for sale in all stores and warehouses in accordance with the law.

- 19) Determine the cultural, traditional, and economical values of marine turtles to fishers (consumptive and non-consumptive).

2.2.1.3. Implementation, monitoring and evaluation

Implementation agencies

Government agencies

The RIMF, Con Dao National Park, HIO and NIO have a certain amount of expertise and capacity to provide support and guidance for conservation programmes. MoFI, FPD, Customs and Police could play an effective role in conservation efforts by increasing their presence in areas where detrimental initiatives are conducted.

International sector:

NGO's have been an important driving force behind the existing programmes. The capacity and the potential for NGO's to assist run and manage awareness raising programmes, given enough governmental and financial support, would be considerable.

Monitoring and evaluation

These tasks will be overseen by the PSC. Progress will be monitored by the submission of annual reports containing specific details of all scientific and community based work by each conservation project. The PSC or a person(s) designated by them shall conduct periodic assessment of all mortality assessment projects, and provide a focal point for all information dissemination. A monitoring mechanism will also be initiated to evaluate benefits, participation and conservation efforts.

2.2.2. Nesting beach - hatchery management

Requirement: To protect the clutches of eggs laid on Vietnamese beaches and increase the number of hatchlings safely entering the sea. Increase the protection of nesting turtles and improve the success of hatchery incubation at defined sites.

2.2.2.1. Current status

The hatcheries are vital to the conservation success of marine turtle nests because they protect eggs from human consumption, predation and/or inundation by storm tides. The current practice is to collect eggs from the nesting female shortly after she has finished egg laying and then bury these eggs into freshly dug artificial egg chambers. The Con Dao National Park

staff currently relocates approximately 50% of nests laid on beaches to hatcheries located on the same beach.

If left unmanaged, hatcheries have the potential to compromise hatchlings' chance of survival in the wild, through alterations to nest density, incubation temperature and the physiology of gas exchange. Moreover, incorrect nest relocation techniques, and hatchery site selection and hatchling release methods can negatively affect the conservation success of the project. Nevertheless, if well managed, hatcheries have the potential to be very useful management options, especially in areas where leaving eggs in-situ will lead to them collected by local residents, eaten by predators and/or inundated by tidal surges.

Hatcheries that have sound scientific management can serve as important centres for training, education and awareness programmes. There are examples in other countries where hatcheries are the centre-piece of education and awareness projects that aim to teach school children and the general public about marine turtle conservation.

Because of the potential negative affects that a hatchery environment may have upon hatchling sex ratios, hatchling quality (body condition and performance) and hatchling quantity (emergence success), hatcheries are a secondary management option behind leaving nests in-situ. However, when it is deemed necessary to establish a hatchery, i.e. in places where egg harvest by people or predation by native/introduced fauna or inundation are likely. A set of hatchery management guidelines need to be established to optimise the benefits, as well as allowing monitoring and modification of hatchery techniques where they are necessary, so the hatcheries produce minimum negative impacts on marine turtle populations.

2.2.2.2. Recommended activities

Activity 1

Develop a strategy to protect marine turtle's clutches at nesting beaches and hatcheries, determine the rates of hatchling production from these beaches and develop strategies to increase hatchling production.

Cause

Insufficient knowledge of nesting beaches and hatchling production rates of marine turtles

Specific actions

- 20) Manage nesting beach habitats with regard to beach lighting, beach/dune use, waste disposal, sandy land aquaculture development and vehicle use and localize protected places.

- 21) Carry out nesting beach programmes (especially at Con Dao, Ninh Thuan and Da Nang) to collect data on inter-nesting habitat ranges, hatchling sex ratios and hatchling survivorship.
- 22) Conduct baseline surveys to collect more detailed information about distribution of nesting and courting areas of marine turtles, especially offshore islands. The priorities are Da Nang (Son Tra peninsula), Bach Long Vy, Phu Quy, the Spratly and Paracel Archipelagos, Phu Yen (Bai Tien and Bai Xep) and Khanh Hoa (Bai Dai and Bai Cay Bang).
- 23) Work to eliminate the impact of the harvest of nesting turtles and their eggs on marine turtle populations at Con Dao, Tho Chu, Ninh Thuan, Da Nang and Quan Lan.
- 24) Analyse data to evaluate the success of current nesting beach programmes with regard to hatchling production.
- 25) Use the existing data to direct management towards reducing the mortality of eggs and hatchlings, preferably by using in-situ methods.
- 26) Investigate and upgrade the potential use of protective hatcheries to maximise hatchling production.

Activity 2

Develop and implement a legally binding set of nesting management guidelines based on scientific studies.

Cause

Lack of a standardised, scientifically validated and legally enforceable set of guidelines to manage hatcheries.

Specific activities

- 27) Establish protect and rescue awards in Quang Ninh (Quan Lan-Minh Chau island), Da Nang (Son Tra) and some other hot spots in order educate and raise awareness of local communities about the distribution and reproduction of, and threats to, marine turtles.
- 28) Produce a set of standardised, scientifically validated guidelines in keeping with the criteria set out by the IUCN-MTSG guidelines and other contemporary studies as soon as possible.

Activity 3

Make adequate and effective institutional arrangements for periodic monitoring review and regulation of hatchery activities

Cause

Monitoring and regulation of hatchery activities are inadequate.

Specific actions

- 29) The PSC refer to the IUCN-MTSG to develop, coordinate, monitor and control hatcheries to ensure proper hatchery management.
- 30) Use trained Con Dao staff to assist in beach surveys and hatchery and beach management surveys in other regions.

Activity 4

Design and implement a series of capacity building and technical training courses for staff involved in the conservation and management of marine turtle hatcheries.

Cause

Inadequate skills and training for systematic hatchery management.

Specific actions

- 31) Design and implement a series of training and awareness raising courses for staff that are working on marine turtle conservation or on aspects of life history and conservation as they relate to hatchery incubation.

2.2.2.3. Implementation, monitoring and evaluation

Implementation agencies

Government agencies

The Ministry of Fisheries is to cooperate with the Ministry of Agriculture and Rural Development and local authorities to manage nesting beaches and have the legal authority to adjust their activities. The research institutions as RIMF, HIO, NIO, Con Dao NP should participate in professional studies.

International organisations

International organisations play important roles in technical cooperation and financial seeking for these activities.

Monitoring and evaluation

Reviewing and monitoring of hatcheries will be the responsibility of the PSC. Progress will be monitored by the submission of annual reports by hatchery managers. Performance indicators can include comparisons of nest temperature, emergence success, incubation period and hatchling scale counts.

2.2.3. Protection, conservation and rehabilitation of marine turtle habitats

Requirement: Improve protection of marine turtles and their habitats along the coast of Viet Nam, while ensuring that local communities are not adversely affected economically.

2.2.3.1. Current status

Although limited, quantifiable data exists on the distribution of nesting areas for marine turtles in Viet Nam. In contrast, very little information currently exists about the distribution and abundance of marine turtle foraging populations in Vietnamese waters. Moreover, what we do know is based upon interviews with local fishers and provincial Government staff. Few areas have been sufficiently ground surveyed. Additionally, most of the data that has been obtained from surveying fishers is based on rates of incidental capture and is limited by the memory of the respondents. This may be biased temporally, spatially or towards particular species, size classes or maturity.

2.2.3.2. Recommended activities

Activity 1

Specify the main habitats of marine turtles in Viet Nam

Cause

Inadequate knowledge of critical marine turtle habitats in Viet Nam.

Specific actions

- 32) Train and involve border soldiers on offshore islands to collect data on marine turtle distribution, abundance and threats.
- 33) Identify critical near-shore and off-shore habitats such as migratory corridors, inter-nesting habitat, courtship areas and foraging habitats.

Activity 2

Research and establish necessary scientific measures to protect and conserve marine turtle habitats.

Cause

Lack of suitable methods to protect critical marine turtle's habitat in Viet Nam

Specific actions

- 34) Designate and manage protected areas, sanctuaries, temporary exclusion zones, and restricted use zones to remove threats to marine turtles and preserve key habitats.
- 35) Continue to support proposals to establish marine protected areas at Cat Ba Island (Hai Phong), Phu Quoc (Kien Giang Province) and Co To, Bach Long Vi (Quang Ninh Province) to preserve nationally and (in some cases globally) significant levels of marine biodiversity.
- 36) Develop incentives for the adequate protection of areas of critical habitat outside protected areas
- 37) Undertake environmental impact assessments of coastal and marine development and other existing or proposed human activities that may affect marine turtle habitats e.g. sand mining at Quan Lam (Quang Ninh), and tourist development at Son Tra (Da Nang).
- 38) Monitor land-based and ship-based pollution such as oils, plastics, and other discarded wastes in necessary locations.
- 39) Review and strengthen the enforcement of existing bans on the use of destructive fishing techniques (dynamite and cyanide).
- 40) Continue to monitor the status of coral reef and seagrass habitats in Viet Nam.

Activity 3

Rehabilitate degraded marine turtle habitats.

Cause

Lack of effective methods to rehabilitate degraded marine habitats.

Specific actions

- 41) Develop and run beach clean up projects to remove debris that impedes turtle nesting and/or hatchling production.
- 42) Enhance the recovery of degraded coral reefs, mangroves and sea grass habitats by supporting research and development that is aimed at developing the technology to culture and replant seagrass along the Viet Nam coast and re-establish coral areas.
- 43) Encourage participation of locally based fisheries management.
- 44) Support research aimed at developing technology and methods to harvest fisheries in order to limit the destruction ability of marine turtle's habitats.

2.2.3.4. Implementation, monitoring and evaluation

Implementation agencies

Government sector and Non Government Sectors: Both sectors are adequately resourced to conduct more detailed surveys of nesting turtle distribution in Viet Nam. The Ministry of Fisheries (Department of Fisheries in relating provinces, NADAREP etc.), the Ministry of Science and Technology, the Ministry of Natural Resources and Environment, and research institutions such as RIMF, HIO and NIO and NGOs such as IUCN, WWF, TRAFFIC, IMA, FFI, UNESCO have considerable capacity and knowledge to undertake surveys, monitoring programmes to manage priority habitats such as seagrass, coral reef and mangrove areas.

Monitoring and evaluation

These tasks will be overseen by the PSC. Progress will be monitored by the submission of commission reports containing specific details of all scientific and community based work by each project. The PSC or a person(s) designated by them shall conduct periodic assessments of all habitat assessment projects, and provide a focal point for all information dissemination. A monitoring mechanism will also be initiated to evaluate benefits, participation and conservation efforts. These activities should be combined with other environmental protection programmes.

2.2.4. Research and monitoring

Requirement: Improve the knowledge in biology and ecology of marine turtle populations by monitoring and exchanging information.

2.2.4.1. Status

With the exception of nesting beach studies at Con Dao National Park, most research and monitoring efforts in Viet Nam have focussed on the distribution, abundance and threats of marine turtles, coral reef habitats and seagrass meadows. It is only now that these baseline efforts have been conducted that specific management orientated research and monitoring initiatives can be increased both spatially and temporally.

2.2.4.2. Recommended activities

Activity 1

Conduct research to conserve and manage marine turtles and their habitats.

Cause

Lack of baseline information on marine turtle biology, life history and population status.

Specific actions

- 45) Continue the long term monitoring (capture – mark - recapture) of the nesting turtles at Con Dao to assess conservation status of the nesting population.
- 46) Create a central data depository that will allow adequate long-term protection of Con Dao data and beach protocols.
- 47) Use a combination of flipper tagging, genetic studies and telemetry to identify migratory routes and or destinations.
- 48) Undertake genetic studies to identify management units for marine turtle nesting and foraging in Viet Nam.
- 49) Use the information from a centralised database to disseminate and distribute information pertinent to local, national and regional conservation initiatives

Activity 2

Analyse data to support the mitigation of threats and to assess and improve their conservation status.

Cause

Insufficient data required to mitigate the threats to marine turtles and assess and improve their conservation status

Specific actions

- 50) Continue the collection of information on foraging and nesting marine turtles at Con Dao, Ninh Thuan, Tho Chu and other priority sites to analysis the reproductive trends
- 51) Use research results to continually assess, and if necessary, adjust management procedures such as tagging or hatchery programmes.

Activity 3

Establish a secretarial subcommittee within the National Steering Committee to collect data and facilitate the exchange of information between parties.

Cause

Insufficient exchange of information

Specific actions

- 52) Following the appropriate IUCN-MTSG guidelines, standardise the methods and levels of data collection across all national programmes.
- 53) Determine appropriate methods/media for information dissemination.

- 54) Set up a turtle monitoring network at coastal provinces to collect, exchange, disseminate and distribute information pertinent to local, national and regional conservation initiatives

Activity 4

Solicit funds from Government, NGO and other donors and through fund raising initiatives such as ecotourism, and reinvest in marine turtle conservation activities.

Cause

Inadequate funding to conduct effective, long-term conservation and monitoring programmes

Specific actions

- 55) Develop the capacity of the PSC to prepare fund-raising proposals and design fund raising initiatives.
- 56) Examine the possibility of funds from Government, NGO's and others for research and monitoring projects.
- 57) Promote self-sustaining funding programmes by initiating local and national fund-raising campaigns and through commercial ventures such as sale of T-shirts, posters, handicrafts etc.
- 58) Establish and promote 'eco-friendly' tourism activities (such as turtle watching activities at Con Dao, Ninh Thuan, Da Nang etc.) as a means of attracting financial support.

2.2.4.3. Implementation, monitoring and evaluation

Implementation agencies

Government sector: The Con Dao National Park has managed the nesting beach studies at Con Dao since 1995. DoSTE at Ninh Thuan Province have managed the nesting beach studies in the Nui Chua nature reserve since 2001. RIMF, HIO and NIO have a certain amount of expertise and capacity to provide support and guidance for research and monitoring programmes. NADAREP, FPD, Customs and police could play an effective role in conservation efforts by increasing their presence in areas where detrimental initiatives are conducted.

International sector: NGO's have been an important driving force behind the existing programmes, in particular. The capacity and the potential for NGO's to assist run and manage awareness raising programmes, given enough governmental and financial support, would be considerable.

Monitoring and evaluation

These tasks will be overseen by the PSC. Progress will be monitored by the submission of annual reports containing specific details of all scientific and community based work by each conservation project. The PSC or a person(s) designated by them shall conduct periodic assessment of all mortality assessment projects, and provide a focal point for all information dissemination. A monitoring mechanism will also be initiated to evaluate benefits, participation and conservation efforts.

2.2.5. Public awareness and education

Requirement: Develop and foster a sense of appreciation and responsibility about the uniqueness and importance of marine turtles and marine turtle habitats among local communities, promote their participation in local conservation activities.

2.2.5.1. Status

Prior to 1995, there were few studies of marine turtles in Viet Nam, thus the general awareness among Government, communities, NGOs and other stakeholder groups of the issues surrounding marine turtle conservation were low. However, since 1995, the Con Dao National Park has managed a nesting turtle capture – mark - recapture project and has managed to raise local awareness levels considerably. Coinciding with this, in 2001, MOFI, together with NGO partners IUCN, WWF and TRAFFIC have embarked on a broad scale marine turtle project, which aimed in part, to raise awareness among all stakeholder groups.

2.2.5.2. Recommended activities

Activity 1

Develop and foster a sense of appreciation and responsibility about the uniqueness and importance of marine turtles and marine turtle habitats among local communities, decision makers, enforcement agencies and tourists.

Cause

Lack of concern and awareness about marine turtle conservation

Specific actions

- 59) Develop and conduct focussed awareness campaigns aimed at all stakeholder groups (politicians and other decision makers, teachers, fishing communities, media). The awareness programme must focus on the plight of marine turtles and the urgent need to protect them and their habitats.
- 60) Continue to support the marine turtle education package such as scientific films, posters, biological and ecological picture albums of marine turtle and their habitats.

- 61) Involve local communities/fishers in nesting beach and foraging area conservation, research and management, under established guidelines such as reporting or tag and release programmes for accidentally caught turtles.

2.2.5.3. Implementation, monitoring and evaluation

Implementation agencies

Government sector:

The Con Dao National Park has managed the nesting beach studies at Con Dao since 1995 and has made considerable awareness raising efforts. DoSTE at Ninh Thuan Province have managed the nesting beach studies in the Nui Chua National Park since 2001 and have been invaluable in raising awareness about marine turtle conservation in this province. The NADAREP at Kien Giang has been instrumental in establishing awareness campaigns in Kien Giang province, including Ha Tien, Phu Quoc and Tho Chu. The research institutions as RIMF, HIO and NIO have made valiant efforts over the last five years to raise the awareness of marine habitat protection. MoFI, FPD, Customs and Police could play an effective role in conservation efforts by increasing their presence in areas where detrimental initiatives are conducted.

International sector:

NGO's have been an important driving force behind the existing programmes, in particular. The capacity and the potential for NGO's to assist run and manage awareness raising programmes, given enough governmental and financial support, would be considerable.

Monitoring and evaluation

These tasks will be overseen by the PSC. Progress will be monitored by the submission of annual reports containing specific details of all scientific and community based work by each conservation project. The PSC or a person(s) designated by them shall conduct periodic assessment of all mortality assessment projects, and provide a focal point for all information dissemination. A monitoring mechanism will also be initiated to evaluate benefits, participation and conservation efforts.

2.2.6. Regional and international cooperation

Requirement: Enhance mechanisms for cooperation and held promote information gathering and exchange about marine turtle conservation between nations and support implementations of regional and international agreements.

2.2.6.1 Status

Marine turtles are migratory species, with the potential to migrate many thousands of kilometres between foraging and nesting environments. Therefore protection and management

programmes must often rely upon different local, state and international governments and their agencies. Moreover, recent advances in molecular technology coupled with tag/recapture programmes have identified that particular foraging areas may contain turtles from several breeding populations. Therefore it is highly likely that turtles foraging in Vietnamese waters migrate to breed in neighbouring countries and vice versa.

Existing regional initiatives specifically relating to marine turtle conservation

IOSEA MoU

Viet Nam became a Signatory to the MoU on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and Southeast Asia in July 2001.

ASEAN MoU

Viet Nam became a Signatory to the ASEAN MoU on Sea Turtle Conservation and Protection on September 20th, 1997.

CITES

Viet Nam became a Party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in April 1994.

CBD (Convention on Biodiversity)

Viet Nam approved the Convention on Biodiversity in November 1994.

CMS (Convention on the Conservation of Migratory Species of Wild Animals)

Viet Nam has indicated desire to join CMS at the earliest opportunity once the relevant responsible government agency has been agreed upon

2.2.6.2. Recommended activities

Activity 1

Collaborate with, and assist, signatory and non-signatory states to combat issues relating to the illegal trade of marine turtle products.

Cause

Existing national and international trade, import and export of marine turtle products

Specific actions

- 62) Encourage other ASEAN member states that are not yet signatories to the IOSEA and/or CITES to become parties to both. Work with other regional Governments to develop strong regional compliance with CITES.

63) Assist Government enforcement agencies to comply with existing national and international laws regarding the trade in endangered species.

64) Seek cooperation with other Asian Governments to take action to prevent, deter and where possible, eliminate illegal trade.

Activity 2

Enhance mechanisms for cooperation and help promote information gathering and exchange between nations.

Cause

Lack of information about the distribution, abundance, and biology of sub-regional (Viet Nam, Cambodia, Thailand, and South China Sea) marine turtle populations.

Specific actions

65) Work to strengthen existing relationships between relevant authorities in these nations by hosting/supporting international meetings or workshops.

66) Cooperate where possible in the establishment of trans-boundary protected areas, e.g. Spratly Archipelagos, Gulf of Tonkin and Gulf of Thailand.

67) Seek information regarding conservation activities in other countries, learn from their experiences and apply to the Viet Nam situation.

68) Work with sub-regional nations to identify sources of funding from international agencies for marine turtle conservation programmes in Viet Nam and the sub-region.

Activity 3

Strengthen and improve the enforcement of legislation regarding conservation and protection of marine turtles and their habitats.

Cause

National legislation relating to marine turtles in Viet Nam is still insufficient.

Specific actions

69) Review domestic policies and laws to address gaps or impediments to marine turtle conservation in Viet Nam.

70) Co-operate in enforcement of legislation and apply international laws regarding the trade in endangered species with existing national laws.

2.2.6.3. Implementation, monitoring and evaluation

Implementation agencies

Governmental agencies:

The Ministry of Fisheries have responsibility to cooperate with other Government ministries and relating NGOs, arrange marine turtle conservation activities.

International sector

NGO's have been an important driving force behind the existing programmes and have provided support for Government staff to participate in regional workshops, meetings and training courses about turtle conservation.

Monitoring and evaluation

These tasks will be overseen by the PSC. Progress will be monitored by the submission of annual reports containing specific details of all scientific and community based work by each conservation project. The PSC or a person(s) designated by them shall conduct periodic assessment of all mortality assessment projects, and provide a focal point for all information dissemination. A monitoring mechanism will also be initiated to evaluate benefits, participation and conservation efforts.

3. IMPLEMENTING ORGANISATIONS AND STAKEHOLDER'S RESPONSIBILITIES

In order to ensure that the marine turtle conservation plan is effective strong collaboration between government agencies and international organizations is needed, as well as a well defined set of rules and responsibilities for each party.

3.1. Ministry of Fisheries (MoFi)

- Is responsible for the administration of marine turtle conservation activities in Viet Nam at the governmental level.
- Will cooperate with the Ministry of Natural Resources and Environment, the Ministry of Agriculture and Rural Development, the Ministry of Defence, the Ministry of Education and Training, the Ministry of Trade and the Ministry of Science and Technology on carrying out the Marine Turtle Conservation Action Plan until 2010 in Viet Nam.
- Is responsible for monitoring and observing the implementation of Marine Turtle Conservation Action Plan in Viet Nam.
- Will work with other Government bodies to review and strengthen policies and laws regarding marine turtles in Viet Nam.
- Will establish a National Steering Committee to implement Marine Turtle Conservation Action Plan in Viet Nam. This committee has responsibility for coordinating marine turtle project activities in Viet Nam, and to ensure that future projects meet with the aims of this Plan.

3.1.1. NADAREP (National Directorate of Fisheries Resources Exploitation and Protection)

- Will conduct and/or support projects that collect information on bycatch in coastal and offshore fisheries.
- Will conduct and/or support projects that act to minimise bycatch such as TED research or the investigation of other methods.
- Will support non-government organisations on education and awareness campaigns that serve to raise awareness among coastal people and government employees.
- Will support the continued development of, and implementation of, the designed marine turtle education package as part of the school curriculum.
- Will review and strengthen the ban on destructive fishery techniques

- Will encourage communication with regional fisheries management bodies to achieve stronger support of international agreements that aim to protect marine turtles and their habitats.

3.1.2. Research Institute of Marine Fisheries (RIMF)

- Together with other departments of MoFi, carry out the research and collect information on the incidental catch of marine turtles and apply TEDs or other methods to minimise bycatch.
- Will standardise the nomenclature of marine turtle common names in Viet Nam
- Will carry out or support pilot studies that aim to broaden the knowledge of marine turtle distribution, abundance and threats in Viet Nam, especially with regard to the offshore islands.
- Will work with other research institutions to identify areas or critical marine turtle habitats and together develop projects that will help protect these areas.
- Will support research activities on marine turtles such as satellite tagging, genetic research, and foraging area research
- Will support education and awareness campaigns that have been developed by NGO groups that serve to raise awareness among coastal people and government employees

3.2. Viet Nam National Centre of Science and Technology

3.2.1. Hai Phong Institute of Oceanography

- Will work with NADAREP and RIMF to support projects that act to minimise bycatch, such as TED research or the investigation of other methods.
- Will continue to conduct monitoring surveys on coral reef, mangrove areas and sea grass pastures in the North (from Quang Ninh to Da Nang), to assess potential changes to their conservation status.
- Will work with other Government agencies and NGO groups to develop locally managed projects that protect key habitat areas.

3.2.2. Nha Trang Institute of Oceanography

- Will work with NADAREP and RIMF to support projects that act to minimise bycatch such as TED research or the investigation of other methods.
- Will continue to conduct monitoring surveys on coral reef, mangrove areas and sea grass pastures in the South (from Quang Nam to Kien Giang), to assess potential changes to their conservation status.

- Will work with other Government agencies and NGO groups to develop locally managed projects that protect key habitat areas.

3.3. Ministry of Agriculture and Rural Development

3.3.1. Forest Protection Department (FPD)

- Will review and strengthen policies and laws regarding marine turtles in Viet Nam and including improving law enforcement.
- Will support education and awareness campaigns that have been developed by NGO groups that serve to raise awareness among coastal people and government employees.
- Will work with other agencies to enforce legislation regarding the illegal sale of marine turtle products, and the eventual confiscation and destruction of these materials.

3.3.2. *Con Dao and Nui Chua National Parks*

- Will work with MoFi and the National Steering Committee to establish hatchery and beach management guidelines.
- Will design an annual training course for beach rangers to promote the value of marine turtles and marine turtle habitat conservation.
- Will assess the current success of beach and hatchery programmes and adjust where necessary.
- Will continue the capture-mark-recapture tagging project on nesting turtles.
- Will support and/or conduct research activities on hatchling production, hatchling sex ratios, female inter-nesting and migration areas and genetic profiling.
- Will examine possibilities for raising funds to support future marine turtle activities in the National Park.
- Will provide annual reports to the National Steering Committee showcasing results from the years' marine turtle surveys.

3.3.3. *Bai Tu Long and Cat Ba National Parks*

- Will work with MoFi and the National Steering Committee to establish hatchery and beach management guidelines.
- Will design an annual training course for beach rangers to promote the value of marine turtles and marine turtle habitat conservation.
- Will assess the current success of beach and hatchery programmes and adjust where necessary.

- Will develop the capture-mark-recapture tagging project on nesting turtles.
- Will manage the fishery activities and bycatch turtle fishing in their regions
- Will support and/or conduct research activities on hatchling production, hatchling sex ratios, female inter-nesting and migration areas and genetic profiling.
- Will examine possibilities for raising funds to support future marine turtle activities in the National Park.
- Will provide annual reports to the National Steering Committee showcasing results from the years' marine turtle surveys.

3.4. Ministry of Natural Resources and Environment

3.4.1. Viet Nam Environment Protection Agency

- Will assist other agencies in the review, and strengthening of policies and laws regarding marine turtles and their habitats in Viet Nam
- Will assist in education and awareness campaigns that have been developed by NGO groups that serve to raise awareness among coastal people, government employees and enforcement officers

3.4.2. Department of Science, Technology and Environment of Ninh Thuan Province

- Will continue to support the nesting beach project at Nui Chua National Park
- Will support research work on hatchling production, hatchling sex ratios, female inter-nesting and migration areas and genetic profiling
- Will examine possibilities for raising funds to support future marine turtle activities in the Nui Chua National Park
- Will provide annual reports to the Marine Turtle Project Steering Committee showcasing results from the years marine turtle surveys

3.5. Ministry of Defence

3.5.1 Marine Defence Force

- Will promote the collection of information on marine turtle distribution, abundance, threats and key habitats on offshore islands
- Will train, or arrange for the training of island personnel to conduct marine turtle monitoring surveys
- Will promote the elimination of egg and turtle harvest, via education and awareness programmes

3.6. Ministry of Education and Training

- Will support the continued development and implementation of the designed marine turtle education package into the school curriculum.
- Will support the education of scientists at all levels.

3.7. Ministry of Trade

3.7.1. Market Administration Department

- Will control and administer marine turtle products in the market (eggs, meat, handicrafts, specimens etc.).
- Will enforce the prohibition on the use of marine turtles and their products under Decree 48/CP and associated penalties for illegal trade, storage and manipulation of turtle products.
- Will confiscate and destroy all marine turtle products after a fixed time.
- Will participate in training and awareness courses on the importance of conservation of marine turtles and their habitats and relating legislation.

3.7.2. Import and export administration department

- Will control import and export of any form of trans-shipments of turtle products through Viet Nam
- Will participate in training and awareness courses on the importance of conservation of marine turtles and their habitats and relating legislation.

3.8. General Department of Customs

- Will control and prevent illegal trade and transport activities of turtle products through border gates and across borders.
- Will participate in training and awareness courses on the importance of conservation of marine turtles and their habitats and relating legislation.

3.9. General Department of Tourism Administration

3.9.1. Department of Tourism Administration in Quang Ninh, Hai Phong, Da Nang, Kien Giang, Ba Ria–Vung Tau Provinces

- Will closely manage tourism activities in marine turtle foraging or nesting areas as mentioned in the Marine Turtle Conservation Action Plan.
- Will make appropriate adjustments on the tourism development planning in marine turtle foraging or nesting areas as mentioned in the Marine Turtle Conservation Action Plan.

- Will establish and promote eco-friendly turtle activities as a means of attracting financial support for conservation projects.
- Will develop or support focussed awareness campaigns aimed at all stakeholder groups (local people, tour operators and tourist) about the important role of environmental protection.

3.10. Ministry of Science and Technology

- Will expand international co-operation with regard to developing marine turtle conservation in Viet Nam and the sub-region.
- Will implement research on marine turtle habitats and mechanisms to preserve and improve these habitats.

3.11. International Organisations

3.11.1. The World Conservation Union (IUCN – Viet Nam)

- Will assist the National Marine Turtle Steering Committee to identify potential donors, and develop proposals to gain financial support for marine turtles and marine turtle habitat conservation.
- Will support the Government on developing marine conservation policies and strategies in general and for marine turtles in particular.
- Will support the development of marine conservation programmes in Viet Nam, especially with regard to locally managed protected areas.
- Will support the development and implementation the marine turtle education package into the school curriculum.
- Will provide technical support for the implementation of the Marine Turtle Conservation Action Plan in Viet Nam and improve enforcement capacity.

4.10.2. World Wide Fund for Nature - Indochina Programme (WWF Indochina)

- Will continue to assist the field projects at Con Dao and Nui Chua develop funding proposals so that they can continue to undertake tagging studies on nesting turtles
- Will continue to support MoFI (Kien Giang) to develop community based marine conservation programmes in the Phu Quoc area.
- Will support the development of marine conservation programmes in Viet Nam, especially with regard to locally managed protected areas.

- Will assist the National Marine Turtle Steering Committee to identify potential donors, and develop proposals to gain financial support for marine turtle and marine turtle habitat conservation.
- Will design the education and awareness campaigns regarding to marine turtle conservation in local communities.

3.11.3. TRAFFIC – Southeast Asia, Indochina

- Will assist FPD, MoFi, WWF and IUCN in education and awareness campaigns that have been developed to raise awareness among coastal people, government employees and enforcement officers about illegal trade of endangered wild species, including marine turtles.
- Will work with Government agencies to assist in the enforcement of legislation regarding the illegal sale of marine turtle products, and the eventual confiscation and destruction of these materials
- Will work with other regional TRAFFIC staff to help promote wider recognition and enforcement of CITES legislation.

3.11.4. Education for Nature Viet Nam (ENV)

- Will work together with the Ministry of Education and other international organisations to help promote the continued development and implementation of the marine turtle and marine turtle habitat education package in pilot sites such as Con Dao, Kien Giang, Ninh Thuan, Quang Ninh, Da Nang etc.
- Will assist where possible in the development of additional educational and awareness raising projects for marine conservation in Viet Nam.

3.11.6. Other NGOs

- Will continue to support the national marine turtle project by supporting proposals for existing and future marine protected areas, and community based marine conservation programmes.
- Will promote the signing of international treaties by the Vietnamese, and other regional governments.