

LAMPI MARINE NATIONAL PARK
General Management Plan

2014 - 2018



OIKOS

MOECAF



MINISTRY OF ENVIRONMENTAL
CONSERVATION AND FORESTRY

OIKOS

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Understanding the natural features and social concerns of Lampi Marine National Park, after more than 15 years of isolation, provided considerable challenges.

The plan and the planning process involved all concerned stakeholders, at national and local level, who contributed their time and energy with the intention of preserving the invaluable resources of Lampi Marine National Park.

The process started in 2010 with a data collection campaign financed by EuropeAid (DCI/NSAPVD/2008/167-395) that put together, literally "on the same boat", many researchers and practitioners from Istituto Oikos, Forest Deparment, BANCA, MSAM and Myanmar universities (Birds: Andrea Bonetti, Sein Myo Aung, Saw Moises, San San Nwe and Nila Pwin; Flora: Ei Ei Phyo and Myint Sein; Livelihoods: Lara Beffasti and Saw Mon Theint; Mammals: Khin Maung Soe, Thaw Sin, Pyi Phyo Swe; Mangroves: Moe Min Win; Marine resources: Saw Han Shein, Tint Tun, Tint Wai and Thuang Htut; Crabs: Tat Su Mar; Dugongs: Tint Tun; Reptiles and amphibians: Kyo Soe Lwin, Khin Mar Tin, U Zaw Htoo Aung and U San Lwin Oo; Salone cultural ecology Mya Thidar Aung and Moe Thidar Twe; Sea turtles: Aung Hlaing Win and Htet Myint Aung).

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The final draft of the management plan was prepared by Valeria Galanti and Lara Beffasti under constant guidance and critical feedback provided by the Director of Nature and Wildlife Conservation Division U Win Naing Thaw, and conservation experts U Myint Maung, U Tint Tun, U Tin Maung Win.

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Acronyms used in the text

DoF	Department of Fisheries
EIA	Environmental Impact Assessment
FD	Forest Department
FGD	Focus Group Discussion
GMP	General Management Plan
NWCD	Nature and Wildlife Conservation Division
IBA	Important Bird Areas
IUCN	International Union for Conservation of Nature
LOU	Limits of use
MABR	Mergui Archipelago Biodiversity Research
MEP	Myanmar Environmental Project
MNP	Marine National Park
MOECAF	Ministry of Environmental Conservation and Forestry
MOHT	Ministry of Hotel and Tourism
MPA	Marine Protected Areas
NGO	Non Governmental Organization
NWCD	Nature and Wildlife Conservation Division (of Myanmar Forest Department)
SIA	Social Impact Assessment

Introduction

The Lampi Marine National Park is one of the 43 protected areas of Myanmar and the only marine national park. It is located in the Myeik Archipelago which comprises over 800 islands distributed along 600 km of coastline in the Andaman Sea. Geologically, the Archipelago was formed by a combination of tectonic movement and volcanic activity. The islands, ranging in size from very small to hundreds of square kilometers, are covered by tropical lowland wet evergreen forests with a high biodiversity and surrounded by an extensive coral reef system.

The Lampi MNP is the only protected area in the Myeik Archipelago comprising Lampi island and about 20 smaller islands in its surroundings. It conserves a variety of habitats such as evergreen forest, mangrove, beach and dune forest, coral reefs, seagrass bed and a rich diversity of marine fauna. The Marine National Park provides food, water and energy sources to the local population of about 3,000 people in 5 settlements. Spiritual and cultural values are attributed to the site by Moken sea gypsies who consider Lampi as a "Mother island". Socio-economic and demographic pressures are the main threats to the natural and cultural values of the park. The Marine National Park was declared in 1996 by the Ministry of Forestry under the responsibility conferred by the *Protection of Wildlife and Natural Areas* Law, sub-section (8a) to protect Lampi island and the marine areas extending two miles from the outer small islands. According to the notification N.40/96 from the Minister of Forestry dated 20/08/1996, the objective of establishing the protected area is to preserve its waters, land, forests, hills and environment and to maintain its community pleasantness and beauty. The key protected resources are coral reefs, lesser mouse-deer *Tragulus javanicus subsp. lampensis* and Salone ethnic culture. The location and boundaries of Lampi Marine National Park are presented in Figure 1.

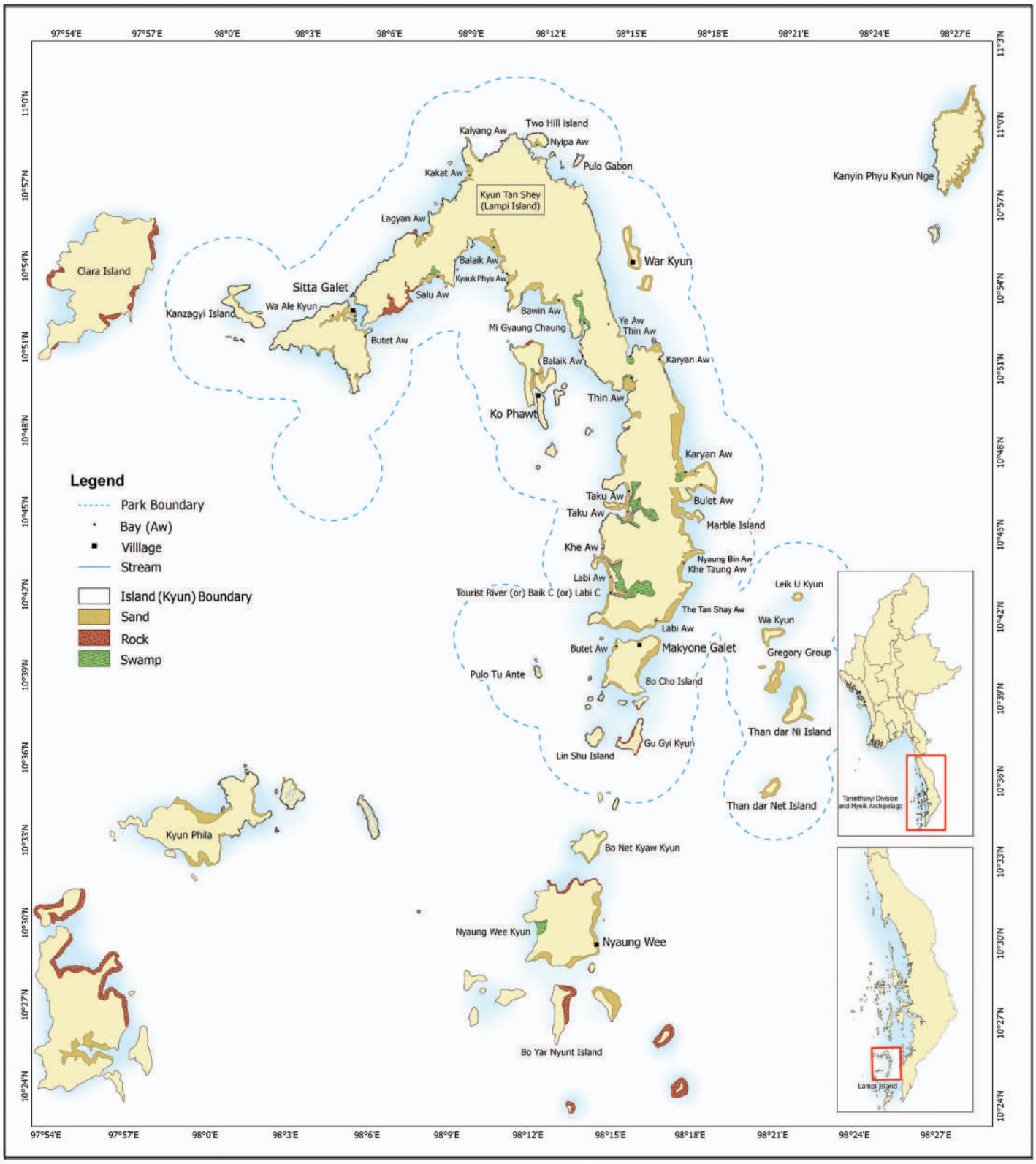
This is the first Management Plan arranged to provide clear guidance for the implementing staff and management partners. It has been prepared in close consultation between the Nature and Wildlife Conservation Division (NWCD) of the Forest Department, Istituto Oikos, local NGOs, and the inhabitants and village authorities of Makyone Galet, Ko Phawt, Sitta Galet, War Kyunn and Nyaung Wee villages.

Consultation meetings with local community, government departments and other stakeholders on management planning process were carried out onsite during 2010. A first consultation workshop was held in Makyone Galet village, in December 2010, to participatory identify threats, values and objectives of the site. The second and third stakeholder consultation workshops, organized in 2012, focused on the development and approval of the zoning plan. The fourth stakeholder consultation workshop was arranged in Yangon in March 2013 to draw an action plan identifying necessary actions to be implemented on site. A final workshop was organized in Yangon in June 2014 to present the final draft of the management plan and achieve a consensus on the management actions, especially on the topic of tourism management inside the park.

The plan was officially submitted to MOECAF for approval in July 2014.

As a continuous process subject to constant review and revision, the Lampi management plan is compiled as a simple form to be able to adjust to changes and come to an understanding by all stakeholders involved.

MAP OF LAMPI ISLAND



CHAPTER 1 NATIONAL CONTEXT

1.1 Myanmar overview

Situated in Southeast Asia, the Republic of the Union of Myanmar lies between latitudes North 9°32' and 28°31' and longitudes East 92°10' and 101°11'. Myanmar is bordered on the north and northeast by China, on the east and southeast by Laos and Thailand, on the south by the Bay of Bengal and the Andaman Sea and on the west by Bangladesh and India. It is the largest country on main land Southeast Asia with a total land area of 676,577 square kilometers. It stretches for 936 km from east to west and 2,051 km from north to south. Myanmar has a tropical monsoon climate with three distinctive seasons: summer (March to May), rainy (June to October) and winter (November to February). Climatic conditions conspicuously vary with the regions. The population of Myanmar in 2011 was estimated about 62 million with a 1.84% annual growth rate. Settled in rural areas, over 70% of the country's peasant population depends their living upon natural resources for their basic needs such as food, fodder, fuel and shelter. The economy of Myanmar is largely based on agricultural sector with more than 36% of gross domestic product (GDP) generating from agriculture. The principal crops are rice, corn, oilseed and sugarcane.

Myanmar has a wide variety of natural systems ranging from snow-capped mountains at the far north, arid dry land at the middle, deciduous and rain forests, and coastal marine ecosystems at the south. These various natural settings are indispensible in providing ecosystem services for the economic and social wellbeing of the people.

Myanmar like other neighboring countries is facing environmental problems such as deforestation, loss of biological resources due to socio-economic pressure and increased urbanization.

1.2 Legislative context

National Environment Policy

As a follow up to United Nation Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil in 1992, the Government of the Union of Myanmar declared to adopt the following policy on 5 December, 1994 with the aim to establish sound environmental policies in the utilization of water, land, forests, mineral, marine and other natural resources in order to conserve the environment and prevent it from deteriorating. "The wealth of a nation is people, its cultural heritage, environment and natural resources. The objective of Myanmar's environmental policy is aimed at achieving harmony and balance between its people and resources through the integration of environmental considerations into the development process to enhance the quality of life of all citizens. Every nation has the sovereign right to utilize its natural resources in accordance with its environmental policies; but great care must be taken not to exceed its jurisdiction or infringe upon the interest of other nations, international waters and international air space. It is the responsibility of the State and every citizen to preserve its natural resources in the interest of present and future generations. Environmental protection should always be the primary objective in seeking development". (FD, MoF; Forestry in Myanmar, October, 2011)

Promulgation of a new environmental law

In 2010, a new environmental law was promulgated with objectives to enable to implement the Myanmar National Environmental Policy, lay down the basic principles and give guidance for systematic integration of the matters of environmental conservation in the sustainable development process. It also envisages the coming forward of a healthy and clean environment conserving natural and cultural heritage for the benefit of present and future generations. The environmental law delegates power to reclaim and preserve ecosystems to the Minister.

It imposes duties to implement for promoting public awareness and cooperation in educational programs for dissemination of environmental perception to the relevant ministries. Besides, promotion of international and regional cooperation in the matters of environmental conservation is also prescribed in the law to be carried out accordingly.

The new law will be substantially instrumental in addressing the changing issues emerged by accelerating infrastructure developments with unexpected impacts on the environment throughout the sectors such as industrial, mining, fishing and agriculture. Inevitably, close cooperation in the enforcement of laws concerning fisheries, international maritime, tourism, general administration and immigration is required, if the area is to be preserved successfully in accordance with the principles laid down in the law.

Marine Conservation in the Law of the Sea Conservation (1994)

The Law of the Sea Conservation-LOSC(1994) imposes marine nations to protect and preserve the marine environment, requires them individually or jointly to take action to prevent, reduce and control pollution of any source. The guided measures specifically include the necessary arrangements to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life. States are also expected to cooperate on a global or regional basis in formulating international standards for the protection and preservation of the marine environment, taking into account characteristic regional features (LOSC, art.197).

Protected Areas under the UNEP Regional Seas Program

The regional sea program of UNEP has taken the comprehensive measures for MPAs. Within the framework of wide-ranging action plans, international conventions impose duties on contracting parties to establish MPAs and describe the kind of measures to be taken in conformity with the rules of international law.



Beach of North Ko Phawt



Dried Puffer fish

CHAPTER 2. BASIC INFORMATION ON LAMPI MARINE NATIONAL PARK

Locality	Tanintharyi Division (Boke Pyin Township)
Coordinates	N 10° 50', E 98° 12'
Size (km²)	205
Altitude (m asl)	0 – 455
Myanmar category	National Park
IUCN category	II National Park
Site Governance	Nature and Wildlife Conservation Division
Boundaries	Demarcated
Year gazetted	1996
Protection level	Total
Main purposes	Conservation
Habitat	Evergreen forest (typical), Mangrove forest, Dune and beach forest, Seagrass beds, Coral reefs
Key resources	Coral reefs, Mouse deer and Primitive life style of Salone ethnic group

2.1 General information

Lampi Marine National Park is located in Boke Pyin Township of Tanintharyi Division. The protected area was designated in 1996 to include an area extending two miles from the outer islands but there is no demarcation buoy or signal. The island of Lampi is the biggest and the core of the site. It is 205 km² and is oriented in a north-south direction, with a length of 48 km and a maximum width of about 6 km. Lampi island is generally hilly (150 – 270 m), presenting a rocky coast with presence of sandy beaches, bays and inlets. The sea depth between Lampi MNP and the mainland is on average 12 m and nowhere deeper than 24m.

2.2 Boundary

According to the notification no. 40/96 (Annex 1), the protection level of Lampi Marine National Park is total and the boundaries are as follows:

North boundary: two nautical miles north from the shoreline of Two Hill Island.

East Boundary: two nautical miles east from the shoreline of Pulo-abon Island, Dolphin Islands, Marble Island, Gregory Group Islands, Palo Taban Islands.

South Boundary: two nautical miles south from the shoreline of Palo tu han Island which is south east of Lampi island, Palo Nalo Island, Palo Kugyi Island, Palo lobiaung Island.

West Boundary: two nautical miles west from the shoreline of Kun zagyi Island, Wa-al—kyun Island, Kubo Island, Palo Tayo Island, Kular Island, Observation Island, Palo-Tu-ante Island, Pulo Lobiaung Island.

2.3 Accessibility

The park can be reached by ferry or boat from Kawthoung (5-7 hours boat drive) or from Aung Ba (2 hours boat drive) to the village of Makyone Galet on Bo Cho island. Transport from/to the smaller islands needs to be arranged with private boats. During the rainy season (May-November) reaching and travelling in and around the park is dangerous because of the heavy rains, fierce winds and rough sea conditions.

2.4 Legislation

In order to fulfill the responsibilities on regional and international sea programs and imposition of the LOSC, in 1996, the Minister of Forestry notified the Lampi area as a marine national park using the power conferred by the Protection of Wildlife and Natural Areas Law(1994), sub-section (8,a). It was followed by the notification of no fishing zone by the DoF and a township level replication by General Administration Department (GAD) respectively. In section (14) of the wildlife law, the Forest Department is assigned duties to carry out in "preservation of marine and related ecosystems and organisms and permitting research and recreation within the Marine National Park, without causing damage to the natural environment". In sub-section (23, d, 2) of the Protection of Wildlife and Protected Areas Rules, referring to the section (14) of the wildlife law, the Forest Department is assigned duties to manage the protected areas for the sustainable use of natural resources by the surrounding people without causing damages to the natural environment and to plan ecotourism. In sub-section (23, c, 2) of the said Rules, the FD is assigned duties to "conserving the long term sustainability of marine ecosystems, permitting the scientific research and educational programs without causing damage to the marine ecosystems, allowing the public recreational opportunities through zoning, and effectively prohibiting the illegal resource extraction and expansion of new human settlements that cause damage to the marine ecosystems and natural environment".

The list of the notifications with dates of issue is as follows:

- Notification letter No. 40/96 from Minister of Forestry Lieutenant Gen. Chit Swe (1996 August 20th)
- Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law, Sect. 8,a, 1994
- Forest Department: Notification letter to DOF, 2004 February 23rd, REF: No fishing within 2 miles offshore from the low water level around Lampi island
- Ministry of Home Affairs, General Administration Office, Boke Pyin: Notification of Lampi Marine National Park, N. 7/96, 1st September 1996

2.5 Significance of Lampi Marine National Park in international context

The LNMP has major international, regional and national relevance to be conserved as a significant Marine Protected Area in central Indian Ocean Marine Region. Since the establishment, the park has been the first Marine National Park of Myanmar, an Important Bird Area (IBA) and also been declared an ASEAN heritage site in 2003. With the possession of important habitats for the variety of aquatic fauna including marine mammals, it is reportedly a home to whale species, dugong and sea turtles.

In 2014 it has been proposed by the Ministry of Environmental Conservation and Forestry as UNESCO world Heritage site.

2.6 Management of Lampi Marine National Park

Lampi Marine National Park is managed as a marine and terrestrial protected area with a zoning approach by the Nature and Wildlife Conservation Division of Forest Department (Ministry of Environmental Conservation and Forestry).

The NWCD park office in Aung Bar is responsible for carrying out the day-to-day management including the policies and prescriptions incorporated in the Lampi Marine National Park Management Plan and for developing and executing annual operational management plans.

Department of Fisheries (DOF) is responsible for management, law enforcement and related activities in relation to fisheries in Lampi MNP. Navy is responsible for patrolling and ensuring the security of the resident population and visitors.

An agreement should be defined among the concerned agencies to enhance cooperation and communication.

Lampi MNP is to be managed under this Plan predominantly for conservation, recreation, science and education. Consistent with these strategic objectives, and the purpose for which the park was declared, Lampi MNP is assigned to the IUCN category "national park": IUCN Category II — National Park: Protected Area Managed Mainly for Ecosystem Conservation and Recreation.

2.7 Natural resources

Lampi MNP is characterized by tropical lowland wet evergreen forest in the interior, mangrove forest along rivers and fresh-water sources, and beach and dune forest along the coasts. Other important habitat types are coral reefs, seagrass, freshwater streams and swamps. The whole area of the Myeik Archipelago is rich in coral reefs, seaweed and seagrass beds which serve as important habitats for molluscs, crustaceans, echinoderms and fishes, of which many species are of economic importance as food resources for local use and export.

The seagrass meadows around Lampi MNP also supports threatened species like the green turtle and the dugong that feed on seagrass, and a variety of birds that feed in the intertidal zone and sublittoral zone.

The main island of Lampi has two major perennial rivers and many small seasonal streams. Fresh-water sources are still generally abundant. The variety of habitats supports a high diversity of both terrestrial and marine resources. A list of flora and fauna species recorded in Lampi MNP is provided in Annex 2.

Mangrove forests, found in the park in a very good conservation status, also provide an important habitat for many species of molluscs, crustaceans and fishes.

The evergreen forest, characterized by a high diversity of plants, still has small populations of valuable tree species like *Dipterocarpus, Shorea*, *Vatica* and *Hopea,* although mature exemplars are quite scarce due to illegal selected logging. The interior of Lampi, covered by thick evergreen forest, supports a good variety of amphibians, reptiles, birds and mammals.

The rational management and conservation of the different habitats of Lampi Marine National Park is essential for the conservation of the rich biodiversity of the area.

2.7.1 Habitat types

Evergreen forest type covers 22% of the MNP area, mangrove forest 2%, dune and beach forest 1%; while 75% of the MNP coverage is represented by variety of marine habitats.

Forest habitat

A total of 195 tree species representing 120 genera and 50 families were recorded in the studied area (MEP, 2009-2010), belonging to evergreen forest and beach and dune forest and 61 species were identified in the mangrove forest. The evergreen forest is the dominant vegetation type in Lampi MNP, characterized by large trees that can reach more than 26 meter in height. Common species are *Bouea burmanica, Cinnamonum sp., Dipterocarpus costatus, Dipterocarpus obtusifolius, Firmicana colorata, Homalium griffithianum, Lophopetalum filiforme, Macaranga gigantean, Phoebe tavoyana, Pterospermum acerifolium, Parashorea stellata, Strombosia javanica, Shorea farinose, Vatica dyeri, Xerospermum noronhianum, Wendlandia glabrata.*

The beach and dune forest is found along narrow strips on beaches and dunes throughout the coast in the localities of Baik Aw or Tourist River, Balaik Aw and Bawin Aw. It typically comprises pure stands of *Casuarina equisetifolia* and *Dillenia* and *Calophyllum* species. The mangrove forest, although minor in terms of expansiveness, is almost intact, with high ecological value. The pristine areas are located at Nabi Chaung, Khe Chaung, Mi Gyaung Aw and Thit Wa Aw on the west coast and in Bulet Aw on the east coast of Lampi island. The mangrove survey conducted in Lampi MNP area in February-April 2010 recorded a total of 63 species belonging to 31 families, comprising both woody species (40 species) and mangrove associates (23 species of shrubs and climbers), which is a reflection of the fact that the Myeik Archipelago is located within the Indo-Malayan biogeographic region which has reportedly well-known as the highest diversity of mangroves in the world. Two community types of mangrove forests are found in Lampi MNP, the *Rhizophora apiculata* and the *Bruguiera cylindrica*, both of which are well correlated to the level of tidal zone and the sediment type zone. Dominant species of mangrove are *Rhizophora apiculata* (Byu-che-dauk-apo) and *Rhizophora mucronata* (Byu-che-dauk-ama). Those are the only salinity-resistant species that occur in the seashores constantly flushed by sea water. On the other hand, some mangrove species such as *Sonneratia apuitala* (Kan-pa-la), *Sonneratia cassiolaris* (La-mu), *Xylocarpus mulocensis* (Kya-na) and *Amoora cucullata* (Pan-tha-ka), present in other mangrove areas of Myanmar, are not found in Lampi area, due to high salinity (3.5% - 3.8%) and soil types (loamy sand and sandy loam soils are common).

Marine habitat

Data available on **coral reefs** from Fischer (1985), Reef Check Europe (2001) and GCRMN (2005), affirm that the Myeik Archipelago contains 1,700 km² of coral formations, with the major ones around the smaller islands, especially in the Gregory Group, and relatively poor formations around the main island of Lampi.

The coral formations consists of fringing reefs, submerged pinnacles and seamounts, limestone caves, sheer and sloping rock walls, and boulder-strewn sand bottoms. Reef Check Europe in 2001 identified 61 species and 31 genera of hermatypic corals, and 4 species and 3 genera of ahermatypic corals in the Myeik Archipelago. Reef Check Europe estimated that between 60 and 95 species of hard corals are to be found in the Myeik Archipelago. According to the recent research by the

Department of Marine Science at Mawlamyine University, a total of 512 species of hard corals (Scleractenian and Hydrozoa corals) were identified from 24 island of the Myeik Archipelago. The highest species composition was observed at Pa lei Island (Sir J. Malcolm Island) representing 104 species and 42 *genera*, and followed by Sin Island (High Island), Ka mar Island (Sir E. Owen Island) and Thayawthedangyi Island (Elphinstone Island). Additional coral reef surveys are required, specifically in Lampi MNP, to be able to confirm species composition and verify the conservation status. Although they make up only 0.2% in area of the marine environment, coral reefs are the most biodiverse ecosystems of the ocean, estimated to harbor around one third of all described marine species occur elsewhere.

In the **seagrass meadows** around Lampi MNP, 11 species of seagrass were found, among which *Halophila minor* and *Thalassia hemprichii* (dominant species in Lampi area) are new records for Myanmar. *Cymodocea serrulata* is the rarest species in the area, as it was recorded at only one site on the east of Lampi island. There are fresh evidences that seagrass beds in the park provide feeding habitat for dugongs (*Dugong dugon*) and green turtles (*Chelonia mydas*), both of which are threatened and are at the same time becoming the objects of considerable conservation efforts. *Halophila ovalis* is the dominant species in the seagrass beds grazed by dugongs. The number, size and species composition of the meadows observed in the Lampi MNP are suggesting that there is enough seagrass in the area to support a certain small population of dugongs.

The **plankton** survey of March 2010 recorded 136 species of phytoplankton belonging to 49 genera and 150 species of zooplankton belonging to 93 genera were observed. Eight species of plankton are identified as new records for Myanmar: one phytoplankton species, the pinnate diatom *Pleurosigma nicobaricum*, and seven zooplankton species, namely: *Pegantha sp.* (Hydromedusa), *Pelagia noctiluca* (Jelly fish), *Pleurobranchia rhodopis* (Ctenophore), *Phtisica marina* (Amphipod), *Thallassomysis sewelli* (Mysid), *Salpa maxima* (Salp), *Iasis zonaria (*Salp).

The **seaweed** surveys recorded 73 species belonging to 46 genera, belonging to blue-green algae Cyanophyta (2 species), green algae Chlorophyta (24 species), brown algae Phaeophyta (9 species) and red algae Rhodophyta (38 species).

Some important economically, industrially and medicinally seaweed species were observed. Some green algae, such as *Catenella, Caulerpa* and *Ulva* can be used for the production of health foods and sea vegetables. *Catenella* which is known as "Kyauk Pwint" in Myanmar, is a famous seafood item and it is also used as medicine to cure or prevent gout. Certain species of brown algae, for example, *Dicthyota*, *Padina*, *Turbinaria* and *Sargassum*, could be utilized for the production of alginates, manitol and iodine. Certain species of red algae, such as *Gracilaria* could be used for the production of agar-agar while species of *Catenella*, *Hypnea and Acanthophora* are harvested for the production of carrageenan compounds.

2.7.2 Fauna

The project identified 32 species of **sea cucumbers**, 17 of these were found in the catches of fishermen of Lampi MNP. The diverse sea cucumber fauna supports a small-scale industry that is an important source of income for local fishers. Interviews with local fishers of sea-cucumbers and dry fish revealed that the sea-cucumber market is a very profitable one, both for the local and for the foreign market, with prices ranging from about 10 USD/kg for species like *Holoturia atra* up to more than 35 USD/kg for species like the sandfish *Holothuria scabra,* one of the most valuable species.

The uncontrolled fishing of sea cucumber inside the park is arguably leading to over-exploitation, as is the case with other sea cucumber fisheries in the region. However, the existence of some apparently healthy stocks in some bays of Lampi provides an opportunity to conserve this important fishery through proper management.

The survey of **molluscs** fauna revealed in the water surrounding the MNP, both within and outside the two miles of protection, 50 gastropod species belonging to 27 families and 41 bivalve species belonging to 18 families. Among the Gastropods found in Lampi MNP, many species are of economic importance as food resource and for traditional decoration and shell jewellery: i) *Trochus niloticus* is the most economically important shell, collected for commercial use by local divers; ii) *Strombus canarium* (Strombidae), very common and abundant in mud, muddy sand habitat and algae bottom of south and southeast part of Lampi, is collected for food and traditional decoration, for both local use and export to neighbouring countries; iii) *Cerithidea cingulata* (Potamidae), a shell traditionally used for decoration in other coastal areas of Myanmar but not in Lampi MNP, is abundant in muddy sand, muddy rock and mangrove fringe habitats; iv) *Babylonia areolata* (Buccinidae), harvested on sand and mud grounds near Kophawt Island, for food and traditional decoration, both for local use and for export to Thailand; v) *Turbo marmoratus* is collected for export to Thailand as a food resource and for shell jewellery. Most of the species of Family Cypraeidae, generally known as "Kywe poke kha yu", are very common and inhabit reef areas and sandy habitats among rock environments, tidal pools, branch corals and seaweed of the intertidal and sublittoral zone. Almost all species are collected for the food and shell market. The most famous is *Cypraea* tigris (tiger cowrie), collected for its shell. Only one individual of this species was found in Lampi MNP, suggesting the need for further investigation. Among the Bivalves found in Lampi MNP, the species of economic importance are: i) pearl oyster *Pinctada margaritifera* found on hard substrate in clear water along the coast of Lampi Island and several nearby islands north of Lampi island; ii) three species of hammer oyster (Malleidae), *Malleus malleus*, *Malleus albus*, *Malleus regula,* abundant in rocky and coral reef habitats around the Island, are used by Moken people as traditional food; iii) edible *Polymesoda bangalensis* found in brackish water in mangrove swamps area of Crocodile River bank. Giant clams (*Tridacna spp.*), collected for their flesh and shell, have also high commercial value both for the export market and for local trade.

The **crustaceans** survey concentrated only on crabs, recording 42 crab species belonging to 25 genera and 11 families. Among these, families Grapsidae, Potunidae and Ocypodidae are the most diverse groups represented respectively by 11, 9 and 8 species. The species *Sesarma intermedia* has the highest abundance followed by *Sesarma minutum* and *Sesarma picta*. Highest abundance of crabs were observed in the seagrass habitat type with 15 species (*Charybdids* and *Matuta* species) followed by mangrove, sandy beach and sea habitat types respectively with 10, 8 and 7 species. Many of these crabs are potentially economically important as primary food species such as the mud crab, *Scylla serrata,* and the larger species belonging to the genus *Sesarma*, which is also the most abundant in Lampi MNP. A species with commercial potential is the mangrove stone crab of the genus *Potunus.* Many species, in particular the sesarmines and ocypodids, are ecologically important in mangrove energetics, being involved in nutrient cycling.

A partial preliminary **icthyological** (fish) assessment survey at Lampi MNP recorded a total of 42 fish species belonging to 22 families, including 7 new records for Myanmar belonging to the family Oryziatidae. A more detailed fish suveys is needed, including a fish stock assessment.

The **herpetofauna** surveys was carried out only in the west part of Lampi MNP and adjacent to Bo Cho Island for time and logistic constraints; 10 amphibians and 19 reptiles, out of which one species *Leptolalax heteropus* (amphibians, order Anura) is a new record for Myanmar. Two species of Amphibians (*Ichthyophis spp.* order Gymnophiona and *Occidozyga spp.* Order Anura) could be new to science but still need verification. From local people knowledge, eight more species have been recorded to occur in Lampi MNP but need confirmation.

Most of the amphibians and reptiles found in Lampi MNP are restricted to evergreen and mangrove forests in good conditions, proving the importance of the forests for the diversity of amphibians and reptiles. Mountain streams represent another important habitat for many species like *Limnonectes blythii* and *Leptolalax heteropus*). The species of the genus *Ichthyophis* was found in agriculture habitat of muddy area and beside of stream. Species utilizing the mangrove streams consist mainly of arboreal snakes (*Cryptetytrops purpureomaculatus*) and larger species of giant frogs (*Limnonectes blythii, Limnonectes doriae, Limnonectes hascheanus, Limnonectes cf.macrognathus, Ingerana tenasserimensis* and *Occidozyga s.)* found on fresh water creek and spring. *Cyrtodactylus oldhami* (Slender toe gecko) is found in evergreen forest, while forest crested Lizard *Draco blanfordii* and flying Dragon *Calotes emma* inhabit the mangrove habitat at Tourist River site.

Three species of sea turtles are reported to inhabit Lampi MNP and surroundings, out of the five species considered to be living in the waters of Myanmar, although Hawksbill (*Eretmochelys imbricata*) and Leatherback (*Dermochelys coriacea*) are considered extremely rare.

Carapaces of Green Turtle (*Chelonia mydas*) and Loggerhead Turtle (*Caretta caretta*) were found on the beaches of the park, confirming the existence of these species in the area, while for the Olive Ridley Turtle (*Lepidochelys olivacea*) information are coming only from interviews to local people and no direct observations were done by the survey team.

Several beaches on the main Lampi island and on smaller islands of the MNP were indicated by local people as sea turtle breeding sites. Evidences were found only on a beach close to Sitta Galet village, where two nests with open eggshells were found. Local people reported that the turtles hatchlings occurred between 15 and 20 November.

Several **bird** surveys were carried out in different years and periods of the year, first under the MABR project (2006-2009) and then in the framework of the MEP project (2009-2010).

A total of 228 species were observed in Lampi Marine National Park and surrounding areas. Out of these, 8 species are new records for Myanmar: Malaysian Plover (*Charadrius peronii*), Bar-tailed Godwit (*Limosa lapponica*), Common Tern (*Sterna hirundo*), Rusty-breasted Cuckoo (*Cacomantis sepulcralis*), Short-tailed Babbler (*Malacocincla malaccensis*), Little Curlew (*Numenius minitus*), Grey-chested Jungle Flycatcher (*Rhinomyias umbratilis*), Golden-bellied Gerygone (*Gerygone sulphurea*).19 species are listed as threatened in the IUCN Red List of Threatened Species.

Additional surveys in different periods of the year are needed as well as specific studies on population densities and dynamics for species of conservation concern like the vulnerable Plain-pouched Hornbill (*Aceros subruficollis*) and Wallace's Hawk Eagle (*Spizaetus nanus*).

The assessment survey on **mammals** recorded 19 species of small, medium and large size mammal. Out of these, 7 species are in danger according to the IUCN Red List of Threatened Species (2010).

The Lesser Mouse-deer can be considered abundant on Lampi island since it is very common to find traces of this animal in the forest, but the high incidence of illegal hunting reported by the villagers and directly observed by the project team, poses serious concern about the long term survival of the population of Lesser Mouse-deer in Lampi.

The Lesser Mouse-deer found in Lampi is considered a subspecies (*Tragulus kanchil subsp. lampensis)* although further investigation is required to confirm it.[1]

A large colony of island flying foxes *Pteropus hypomelanus*, between 3500-4000 individuals, was recorded (MABR, MEP) on the small island of Pulau Myang Basa in the Gregory Group, although in recent years only few individuals were observed. The Dugong (*Dugong dugon*) occurs in the area since feeding trails were observed several times starting from 2008, on a dense seagrass meadow in the east coast of Lampi island, where *Halophila ovalis* is the dominant seagrass species (one of the dugong's favourite seagrass species). Occurrence of dugong at some islands of Myeik Archipelago such as Sular Island, La Ngan Island, Bo Lut Island and Wa Kyuun Island was also reported by local people. The feeding trails found in Lampi constitute the first proof of the occurrence of the dugong in the Myeik Archipelago.

Mammal species mentioned by the FAO report (1983) and in the notification letter for the establishment of Lampi MNP, like the Barking Deer (*Muntiacus muntjak*), the capped Langur (*Trachypithecus pileatus*) and the White-headed Gibbon (*Hylobates lar*), were not found during the current surveys and nor had they been observed by local people.



White - fronted Scops Owl



Dolphins

2.8 Cultural resources

An indigenous population arisen from aboriginal Malay stock, the Moken (as they call themselves or "Salone" as they are called in Myanmar) have lived in the Myeik Archipelago since the last century, roaming the sea from island to island, collecting and trading sea products. During the rainy season the sea gypsies used to settle in some islands that offered good shelter and whose forests provided food when the sea was too rough for navigation. They built their huts on stilts very close to the shore, in order to be able to constantly check the sea and their boats. Most live also during the dry season in the huts, except when they have to embark in longer fishing trips. It is estimated that a total population of 4,000 Moken still inhabit the archipelago both on the Myanmar and Thai side.

[1] For a discussion on mouse-deer systematics, see Miller (1903) and Meijaard & Groves (2004).

However, in the surroundings of Lampi Marine National Park the project recorded less than 100 Moken households (about 400 individuals) based at the villages of Makyone Galet, Nyaung Wee and Ko Phawt. A reason for their sedentarisation, is the decrease in number of the traditional Moken big boats kabang in the archipelago. In Lampi area, there are only a few kabangs left and they are either owned by non-Moken fishermen or they are stranded on the shore out of use. Moken nowadays own smaller dug-out canoes and row close to the coastline in search of sea products or have one big boat pulling many canoes to the fishing ground and back.

2.9 Threats

Lampi Marine National Park was declared in 1996 but the lack of effective management intervention has caused an increasing illegal human activities and settlements over time. The main island of Lampi is the only one where also local people have the perception that activities conducted there are in a sort of illegality framework, while on the minor islands, although included in the boundaries of the park, there is an unwritten consensus about the possibility to exercise different types of activity and to establish temporary or even permanent settlements. As human population increases in its immediate vicinity, there is a corresponding increase in the use of natural resources also inside the protected area to satisfy the growing human needs in terms of illegal hunting (mousedeer, wildpig, monkeys, civet), illegal fishing, overharvesting of marine flora and fauna (including sea cucumbers, sea shells, etc.) and illegal logging for house and boat construction. Yet the most pressing threats come from the commercial exploitation of the resources, such as forest clearing for the establishment of plantations (rubber, beetle nut, cashew nut, etc.) in the minor islands, dynamite fishing and trawlers that have damaged consistently the coral reefs inside and outside the park, heavy commercial fishing in the water surrounding the MNP, illegal trade of freshwater to the fishing boats, withdrawal of water from main Lampi island for commercial use (ice factory).

2.10 Park resources

Staff

Permanent staff has been allocated to Lampi MNP in May 2013 consisting of:

Park warden	Range officer	Rangers	Foresters	Forest guards	Clerks	Daily wages labourers
1	1	2	3	1	1	4

Since the area has no or very basic services, there is the need to have park staff assigned with leadership skills and experience together with those who are well trained in boat handling and maintenance procedures. Short-term trainings such as swimming, diving, first aid and basic life saving techniques should also be given to all staff. Warden and rangers should be specifically trained on field surveys and monitoring techniques, especially on marine ecosystem management. Furthermore, park staff organization should prioritize a functional patrol system and a community outreach program in implementing annual work plan as recommended by participants of consultation workshops.

Infrastructure

In 2010 Istituto Oikos and BANCA supported the construction of a field camp at Makyone Galet village on Bo Cho Island which is very near to the southern coast of Lampi island. The camp includes a basic office and a rest house and is equipped with 1 motorboat, 3 GPS, 2 binoculars, 1 laptop, 1 printer, 3 field guides (birds, fish, reptiles).

In 2013 the park headquarters were established by NWCD in the coastal town of Aung Ba, at 2 hours of navigation to Lampi.

Four ranger posts will be necessary to facilitate patrolling especially in the proximity of human settlements, equipped with a 48 miles radar station.

2.11 Land use

Until 1997 the Myeik Archipelago was almost completely isolated and its only inhabitants wereMoken sea gypsies in majority and a few migrants from the mainland of Myanmar. In 1987 the fishing company Annawarsoe opened an ice factory and a fish processing plant on the small island of War Kyun and established a new village for the fishermen. The business seems to be regularly growing profitable and is still running operations today exporting internationally.

During the 1990s the archipelago had security problems, due to the presence of pirates and insurgents who often caught Thai and Malaysian fishing boats after a chase to collect ransom or illegal tax. With the increased presence of the army and navy, the archipelago became safer and since then it has attracted more migrants and additional fishing boats.

Four permanent human settlements (Makyone Galet, War Kyunn, Ko Phawt and Sittat Galet) are located inside Lampi MNP boundaries and another settlement (Nyaung Wee village) is located in the proposed buffer zone. Only Makyone Galet is an officially recognised village, War Kyunn is a private work camp and Ko Phawt, Sittat Galet and Nyaung Wee were until 2008 only temporary camps. Since the area has been opened to tourism and business in 1996, the population size of the area has dramatically increased through several flows of migration in the last 15 years. Although human settlements are officially not allowed in the park, this rule has been applied so far only to Lampi main island, for instance the former Moken settlement has been moved from southern Lampi island to Bo Cho Island (still inside park boundaries). The proposal of field report 1995 to move War Kyunn fish factory to the coast has been discarded.

Human activities

Fishery is still the most important economic activity of the area. The number of fishing boats, both in-shore and off-shore, has increased, as well as the type of catches and fishing gear and techniques. Although fishing is prohibited inside the park boundaries, a variety of fishing gears are being used by subsistence and commercial fishermen for different catches. Line net and set gillnet are used for prawn fishing especially in War Kyunn area; traps, bag and artificial prawn baits are used to catch squid in the area of Makyone Galet, Ko Phawt, Sitta Galet and War Kyunn. A very small minority of fishermen has the necessary collection and carrying license from the Department of Fisheries.

Local fishers use fishing vessels of small to medium size dimension and they have frequent disputes with large fishing vessels illegally coming to catch near the shore destroying their traps and nets as well as the spawning grounds. The collection of molluscs and sea-cucumbers is a routine activity

amongst the Moken and Karen people. The main market for the Lampi catches is neighboring Thailand. The illegal practice of dynamite fishing (or blast fishing) is common in the area like a permitted method and its destructive effects are evidently visible on the corals.

Secondary occupations

Grocery, general stores and tea shops are commonly found in the entire five human settlements. Shopkeepers buy food supplies directly from Kawthoung (border town in Myanmar) and/or Ranong (border town in Thailand) and resell to the local inhabitants and fishers from passing fishing boats. Hunting, especially done by Karen migrants, is an illegal business yet seems to be a very lucrative livelihood. A single hunter can reportedly kill daily 10 to 20 animals such as mouse-deer, pangolin, giant lizard and wild-pigs, which he sells to the local fishermen or preserves in cool box and then sends to Makyone Galet market. Although on small scale with basic equipment, hunting in Lampi area can have severe consequences on the biodiversity of the site unless mitigation measures are put in time. Horticulture is practiced only in Makyone Galet village and War Kyunn work camp. Cashew, betel and rubber are the main crops of Makyone Galet and cashew, betel and mango are primary cash crops in War Kyunn. The vegetables consumed in the area are mainly imported from Kawthoung. Plantations: Very recently, due to the State policy encouraging rubber plantations under an agricultural-based economic development scheme, local people of Makyone Galet started to convert the natural forests of Bo Cho Island into private owned rubber plantations. Logging is illegal but rampant on the sites, especially during rainy season when the transportation of logs from the forest to the boats is made easier by water streams. The most common trees felled in the forest are *Shorea* sp., *Dipterocarpus* sp., *Firmiana* sp., *Syzygium* sp., *Cinnamomum* sp., *Shorea farinose* Fischer Mitra, *Heritiera javanica* (Blume), *Artocarpus calophyllus* Kurz, *Hopea sangol* Korth, *Hopea odorata* Roxb., *Strombosia javanica* Blume.

2.12 Tourism

Ecotourism is identified as one of the main vocation of Lampi MNP. The Myeik Archipelago has received nearly 3000 visitors per year during the last three years, according to MOHT.

Interests of tourists in the time being are limited to sailing and cruises along seascapes for sightseeing including snorkeling and diving. The boats allowed to bring tourists into the Myeik Archipelago need a special license that must be renewed every year at the Ministry of Tourism. Many of these boats come from Ranong and Phuket (Thailand).

At present, there are no accommodation and facilities in the nearby of Lampi LMNP.

The closest operating tourist accommodations are:

- Andaman Resort- Kha Yin Gwa (MacLeod Island)
- Andaman Club – Thu Htay Island
- Treasure Island Resort – Pakchan river, off Kawthaung

Foods available at local tea shops are not yet appropriate to cater tourists in terms of health and hygiene standards. There are no recreational facilities on the islands. Neither community-based tourism activities, nor in the form of guided walks and boat trips, have been experimented in the area yet.

Local authority and major stakeholders unanimously agreed that if properly arranged, ecotourism can become effective management tool not only in protecting resources, but also in boosting local economy.



Fish processing in Makyone Galet



Local shop in Makyone Galet

CHAPTER 3. VISION

3.1 Vision statement

To preserve the unique terrestrial and marine environment, supporting sustainable human development and recognizing cultural and spiritual values

3.2 Values, Pressures and Objectives

During several rounds of consultations between 2010 and 2012, attended by representatives of local communities, staff from NWCD and facilitators from Oikos, the values, pressures and objectives of Lampi MNP were jointly identified and reviewed, and are reported below.

Values

The main values identified in the area are classified according to the Total Economic Value (TEV) approach recommended by IUCN.

Direct-use Values

- Timber for boats and housing
- Non-Wood-Forest Products (edible fruits, medicinal plants and rattan, etc.)
- Fisheries (Fish, crab, squid, mollusks and sea cucumbers)
- Tourism and recreation (coral reef, wildlife)

Indirect-use Values

- Protection from natural disasters (mangroves, coral reefs and seagrass)
- Watershed protection

Option Values

- Cultural tourism (Salone cultural heritage)

Existence Values

- Biodiversity (forest, mangroves, marine resources, wildlife)
- Cultural and Spiritual Values (Salon traditions)

Pressure/Threats

The main threats identified in the area are classified according to the IUCN and the Conservation Measures Partnership (CMP) classification of threats:

IUCN-CMP THREATS CLASSIFICATION	THREATS IDENTIFIED IN LAMPI MNP
1 Residential & Commercial Development	Population increase inside and in the immediate vicinity of the park. Increasing number of fishing boats
2 Agriculture & Aquaculture	Forest Habitat loss due to the establishment of commercial plantations (rubber, mango, cashew, etc.)
5 Biological Resource Use	Hunting Illegal logging Mangrove degradation

	Illegal and destructive fishing methods damaging coral reefs, fishing grounds and aquatic habitats Overharvesting of marine flora and fauna (including sea-cucumbers and sea-shells)
7 Natural System Modifications	Decline of freshwater sources due to domestic and commercial use
9 Pollution	Waste disposal from settlements and ships
11 Climate Change & Severe Weather	Storms Change in sea currents Coral bleaching Sea level rise

Objectives

Taken into consideration the above threats and challenges, and fully acknowledged public suggestions and consultation, management objectives of LMNP were selected as to:

- Control and restrict illegal hunting according to the law
- Completely protect from illegal cutting and illegal extraction of Non-Timber-Forest-Products
- Completely protect from illegal and destructive fishing methods
- Encourage appropriate legal fishing techniques
- Increase awareness of local people about conservation and sustainable use of natural resources and increase participation in the activities



Mangroves in Tourist River

CHAPTER 4. ZONING

Based on the information on resources, values and threats identified during surveys and stakeholder consultations, Lampi MNP has been zoned into 4 categories reviewed and approved by the participants of the 3rd stakeholder consultation workshop with the aims of seeking to separate conflicting human activities, protect natural or cultural qualities while allowing reasonable human uses, and enable damaged areas to be set aside to recover or be restored.

The 4 zones are namely: 1) Key resource zone, 2) Wilderness zone, 3) Cultural zone, 4) Local use zone. A Buffer zone was proposed at the time of the designation of LMNP but it is not officially recognized.

The Zoning Map is printed in A2 and attached to the management plan.

A list of activities allowed, not allowed and that require a permit, is reported in the table below. Limits of Use (LOU) are defined for each activity allowed.

ZONING ACTIVITIES MATRIX

Activities Guide	**Key resources zone**	**Wilderness zone**	**Local use zone**	**Cultural zone**
Boating	✓*	✓	✓	✓
Research	✓*	✓*	✓*	✓*
Ecotourism	Permit	Permit	Permit	Permit
Limited fishing	✕	✓*	✓*	✓*
Limited collecting	✕	✓*	✓*	✓*
Aquaculture	✕	✕	Permit	✕
Agriculture and livestock breeding	✕	✕	✓*	✕
Limited logging	✕	✕	Permit	✕
Human settlements	✕	✕	✓*	✕

- **Legend**
- ✓ Activity Allowed
- ✓* Restrictions apply
- Permit: Official permit from a government department is needed
- ✕ Activity Prohibited

4.1 Key resources zone

Objective

"Conservation of mangroves, sandy beaches, seagrass and coral reefs for protection of breeding sites and nursery of aquatic fauna, for climate change mitigation and for protection from natural disaster, and protection of breeding and roosting sites of endangered species"

Selected as key resource zones are ecologically fragile areas where indiscriminate use might have detrimental effects on marine habitats and resources. This zone contains important natural areas which should be given priority for protection such as sandy beach where marine turtles nest, mangrove, seagrass, wetlands, salt marshes, estuaries, key marine areas such as spawning grounds, roosting sites of plain-pouched hornbill and *Pteropus hypomelanus* .

Activities Guide	Status	Limits of Use
Boating	✓*	• All vessels restricted to under 10 knots or less. • Anchoring is prohibited outside of public mooring places and time limit of max 2 hours. • Motorised water sports are prohibited.
Research	✓*	Research must be approved by NWCD. Special permits must be issued for collecting specimens.
Ecotourism	Permit	• No infrastructure (lodge, jetty, gazebo, etc.) • No walking trails in the forest • No disturbance at hornbill roosting sites. • Max 20 persons/day at turtle nesting sites, accompanied by a trained, professional guide. • 50 persons/day accompanied by park rangers, only small boats with paddles to avoid disturbance to wildlife, disembarkment to the mangroves forbidden. LOU for ecotourism will be defined jointly with MOHT during the first year of implementation of the management plan as prescribed in the action plan.
Limited fishing	✗	
Limited collecting	✗	
Aquaculture	✗	
Agriculture and livestock breeding	✗	
Limited logging	✗	
Human settlements	✗	

4.2 Wilderness Zone

Objective

"Conservation of evergreen forest to maintain natural processes, protect watershed and mitigate climate change"

It is the wider contiguous zone of the MNP enabling maintenance of natural system processes. It is especially important for protecting the watersheds and wildlife habitats. Development in this zone will be limited to building simple structures, trails and a few, basic camping sites and campgrounds for patrol staff, scientists and tourists. But their nature, number and extent will be strictly controlled. In this zone, roads and infrastructure development will be banned except trails for wildlife viewing and patrolling.

Activities Guide	Status	Limits of Use
Boating	✓	• Anchoring with time limit of max 12 hours.
Research	✓*	Research must be approved by NWCD. Special permits must be issued for collecting specimens.
Ecotourism	Permit	• 1 Ecolodge permitted in Wa Ale Kyunn island, Infrastructures subject to EIA and SIA, max 30 guests per day. • Hiking only on designated walking trails LOU for ecotourism will be defined jointly with MOHT during the first year of implementation of the management plan as prescribed in the action plan.
Limited fishing	✓*	Trawling is strictly prohibited inside the park. LOU for legal fishing will be defined jointly with DOF during the first year of implementation of the management plan as prescribed in the action plan.
Limited collecting	✓*	LOU for legal collecting of marine resources will be defined jointly with DOF during the first year of implementation of the management plan as prescribed in the action plan.
Aquaculture	✗	
Agriculture and livestock breeding	✗	
Limited logging	✗	
Human settlements	✗	

4.3 Local Use Zone

Objective

"Promoting the sustainable use of resources for the immediate users residing inside the protected area"

This includes the existing villages and surrounding areas. Limited development will be permitted in this zone, but must not be detrimental to the special or unique values of the park. An important purpose of this zone is to cater for certain types of resource uses, thereby relieving pressures on key resources zone or wilderness areas. In all cases the development should have minimal impact and serve only the immediate users of the designated area. The area of local use zone will be demarcated through further coordination with stakeholders and community leaders.

Activities Guide	Status	Limits of Use
Boating	✓	
Research	✓*	Research must be communicated to Park Warden and local authorities.
Ecotourism	Permit	LOU for ecotourism in the villages will be defined jointly with MOHT during the first year of implementation of the management plan as prescribed in the action plan.
Limited fishing	✓*	Trawling is forbidden inside the park. LOU for legal fishing will be defined jointly with DOF during the first year of implementation of the management plan as prescribed in the action plan.
Limited collecting	✓*	LOU for legal collecting will be defined jointly with DOF during the first year of implementation of the management plan as prescribed in the action plan.
Aquaculture	Permit	Permits must be issued by DOF. The culture of exotic species is prohibited.
Agriculture and livestock breeding	✓*	Organic farming is encouraged at household level. Backyard farm animals are allowed.
Limited logging	Permit	Permits must be issued by FD.
Human settlements	✓*	Human settlements are allowed only in the villages of Makyone Galet and War Kyun. Temporary settlements are allowed in Ko Phawt and Sitta Galet. Village maps and land use plan will be defined during the implementation of the management plan as prescribed in the action plan.

4.4 Cultural Zone

Objective

"Preservation of Salone culture"

This zone comprises sacred sites for the Salone people and areas where they traditionally perform ceremonies. The areas will be demarcated in order to limit or ban unwanted visitation.

ZONING ACTIVITIES MATRIX

Activities Guide	Status	Limits of Use
Boating	✓	
Research	✓*	Research must be approved by the Salone committee.
Ecotourism	Permit	Access regulated by special permits and only in the presence of a Salone guide registered by the park.
Limited fishing	✓*	LOU for legal fishing will be defined jointly with DOF during the first year of implementation of the management plan as prescribed in the action plan.
Limited collecting	✓*	LOU for legal collecting will be defined jointly with DOF during the first year of implementation of the management plan as prescribed in the action plan.
Aquaculture	✕	
Agriculture and livestock breeding	✕	
Limited logging	✕	
Human settlements	✕	

CHAPTER 5 - ACTION PLAN

General Management Plans typically define the long–term vision for a protected area but often fail to provide practical and concrete actions to undertake in the short-term to achieve this vision. To address this need, a 4-year Action Plan has been formulated to provide a guide for those who manage Lampi MNP on a daily basis.

The Action Plan is organized according to the Zoning Plan (Chapter 4) and the objective of each zone. Management actions are organised in four main categories:

1) Park operations

2) Ecosystem management

3) Community outreach

4) Tourism management

(Annex 3 Excel file)

This chapter of the plan offers specific indications regarding the actions required to manage Lampi MNP and the programmes proposed to regulate residential and commercial uses, tourism development in particular.

1) Park operations

This category comprises all actions related to the maintenance of park infrastructure, vehicles and tools, staff management and relations with other departments, the maintenance of security and the enforcement of park regulations. Consultations and research to identify sustainable revenue mechanisms, Payments for Ecosystem Services, the establishment of a park fund, public-private partnerships are also included at the preliminary stage.

2) Ecosystem management

This category includes all actions related to the conservation and management of natural resources such as: biodiversity inventory and monitoring, research, management of water resources, management of exotic species, climate change preparedness.

İn particular, the research plan will be drawn and developed indicating currently required research activities on flora and fauna of Lampi MNP in collaboration with universities and other partners. It is recommended that annual bird/mammal and reptiles surveys and biennial marine resources surveys are implemented. All information including books, files of publication on all topics including records of weather, vegetation, boundary demarcation buoys and GPS points, major wildlife and marine species listed and researched, visitor use and illegal use shall be kept at the park office.

3) Community outreach

Inside the boundaries of Lampi Marine National Park, the plan has identified four areas where residential settlements are present and included in the Local Use Zone. Park staff is in charge of regulating and monitoring human settlements and the impact of their activities. The official registration of residents should be encouraged in collaboration with General Administration Department and Immigration Department. No human settlements should be allowed outside of the Local Use Zone.

Specific land use plan for the four villages included in the Local Use Zone need to be jointly developed with the local communities to define what human activities and what level are allowed inside the park. Collaboration and outreach actions are to be encouraged in terms of environmental education, upgrade of social services (water/waste management, clinic), promotion of employment and of sustainable income-generating activities.

4) Tourism

This category includes the measures to regulate visitor use and impact, to develop and enhance visitor experience, to improve information on Lampi MNP and ultimately to improve tourism management in collaboration with Ministry of Tourism and Hotels.

During the Development of Management Plan Workshop, the participants made crucial suggestions such as building of infrastructure and facilities, demarcation of visitor use zones, creation of community participation, uploading about Lampi MNP to social network sites to be more widely known, and establishment of independent finance mechanism such as charging zone entry fees and tax collection from other available sources.

The provision of tourism activities needs to be consistent with the objective of the management plan and the zoning plan. In particular, tourism management actions and activities are listed in the Tourism Management category of the Action Plan (Annex 3) and rules and regulations for the planning and monitoring of tourism development inside Lampi MNP are included in the Guidelines for Tourism Development in Lampi MNP (under preparation).

In particular, Tourism development inside Lampi MNP must follow current Myanmar legislation. To match international criteria, it is strongly recommended that any tourism development project is subject to a prior Environmental and Social Impact Assessment conducted by a third and independent party according to the process and criteria listed in Annex 4.



Makyone Galet

CHAPTER 6. CONSULTATIONS AND REVISIONS

6.1 Stakeholder consultation at each phase

The development of the present management plan was carried out with a participatory approach that involved all relevant stakeholders (NWCD, FD Kawthoung, local communities, NGOs) in several consultations started in December 2010.

Continuous consultation during 2010

Due to unique particular administrative and geographical setting, the population of Lampi is extremely heterogeneous and presents low levels of social cohesion and trust towards the authorities. In order to ensure productive discussion during multi-stakeholder workshops, focus group discussions (FGDs) were conducted in 2010 to obtain a better insight into local perceptions of the status of the environment, threats, problems and solutions, as they emerge while a small number of people with the same livelihood strategy interacts. Every focus group has elected a representative who would participate at subsequent consultation workshops.

1st consultation - December 2010

The first general workshop on "Conservation and Sustainable Management of Lampi Marine National Park" took place in the village of Makyone Galet on 8th and 9th December 2010 with representatives from authorities, communities and NGOs.

The objective of the workshop was to identify and prioritize values, threats and objectives of the MNP, through interactive and participatory techniques, where all stakeholders took part in mixed group discussions.

2nd consultation – March 2012

A pre-workshop meeting was held in Makyone Galet on 25 March 2012 to review the values, threats and objective of Lampi MNP identified during the first workshop.

The second workshop was held on 28 and 29, March, 2012 at Makyone Galet village, with the objective to define a zoning scheme for the park.

Participants divided in groups were asked to map the identified values and threats on a Lampi MNP topographic map. Afterwards, the participants worked in groups to identify and delineate different zones for Lampi MNP according to previous mapped values. For each defined zone, a list of the objectives and activities allowed/not allowed were identified.

3rd consultation – June 2012

The results of the previous consultations with local stakeholders were consolidated in a draft park management plan. A workshop was organized in Yangon in June 2012, with 26 representatives of Forest Department, Department of Fisheries, General Administration Department, Survey and Land Record Department, Myanmar Hotel and Tourism Services, local NGOs, International NGOs and MakyoneGalet villagers.

The zoning plan was presented and discussed and the matrix of activities allowed and not allowed in the different zones was reviewed and approved. A complete report of the third consultation has been submitted.

4th consultation – March 2013

A 4th workshop was organized in Yangon with experts and representatives of Forest Department, Department of Fisheries, General Administration Department, Survey and Land Record Department, Myanmar Hotel and Tourism Services, local NGOs and International NGOs.

The objective of the workshop was to define a draft Action Plan on management of park operations, ecosystem, community outreach and tourism, defining strategic actions to be implemented during the project period. The working groups also selected the input requirements, partners and time frames for implementation.

5th consultation – June 2014

A final workshop was organized in Yangon with all relevant stakeholders to present the final draft of the management plan. The objective was to achieve a consensus on the management actions and especially on the topic of tourism management inside the park. Following this workshop the plan was officially submitted to MOECAF for approval.

6.2 Plan amendment and review

Following finalization and approval, this management plan will operate for four years.

The Myanmar Protected Area System currently lacks a performance assessment framework. Therefore, the management of Lampi MNP will be monitored and evaluated according to the values and pressures presented in Ch.3 and to the actions identified in the Action Plan (Ch. 5).

The implementation of the management plan will be monitored every year through the establishment of a committee composed by representatives of Forest Department, Oikos and the local stakeholders (authorities and communities). The committee will meet to jointly check the progress of the actions and their impact on the values and pressures present in the park as indicated in the monitoring plan.

A review of the plan will be commenced approximately two years before the date of termination. The review will objectively examine the appropriateness of the management prescriptions in the light of any new information concerning the biodiversity, technical advances, environmental safety and the needs of the community.

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ANNEX 1

LAMPI MNP NOTIFICATION

Government of the Union of Myanmar

Ministry of Forestry

Minister's Office

Notification No. (40/96)

Yangon

The 6th Waxing of Warkhaung, 1358 M.E. 20th August, 1996

Notification for Protected Area Establishment

The Minister, Ministry of Forestry, Government of the Union of Myanmar, in exercise of the powers conferred on it under sub-section (a) of section 8 of the Protection of Wildlife and Conservation of Natural Areas Law, 1994, to conserve Environment and Biodiversity , notified that the area including Lampi island and its surrounding small islands which is 79.09 square miles, situated in Bokpyin Township, Taninthayi Division, at N $10°41' - 10°59' and\ E\ 98°04' - 98°18'$, and encompassed by the following prescribed boundaries as the "Lampi Marine National Park" from the date of 20th August,1996(the 6th Waxing of Warkhaung,1358 M.E.)

(1) Description of the Reserve Boundary

North: two nautical miles north from the low-water-level shoreline(to seaward side) of Lampi island and its northern-most Two Hill island.

East: two nautical miles east from the low-water-level shoreline(to seaward side) of Lampi island and its eastward Pulo-Gabon island, Dolphin islands, Marble island, Gregory Group islands and Pulo Tuhan island.

South: two nautical miles south from the low-water-level shoreline(to seaward side) of Pulo Tuhan island at south-east of Lampi island, Pulo Nalo Archipelago, Pulo Kugyi island and Pulo Lobiaung island.

West: : two nautical miles west from the low-water-level shoreline(to seaward side) of Lampi island and its westward isles such as Kanzagyi island, Wa Ale Kyun island, Kubo island,

Pulo Toyu island, Kular Archipelago, Observation isles, Pulo Tu Ante Archipelago and Pulo Lobiaung island.

(2) Prohibitions

The following conditions are prohibited within the area defined as the " Lampi Marine National Park ";

(A) Fishing around the two nautical miles from Lampi island low water level shoreline by any vessel
(B) Destroying ecosystems or any natural setting in the protected area,
(C) Trespassing and encroaching
(D) Grazing or permitting domestic animals to trespass
(E) Causing damage to a water-course or poisoning water, using chemicals or explosives in the water
(F) Breaking up any land, clearing, digging or causing damage to the original condition of the land
(G) Capturing wildlife and hunting
(H) Kindling, keeping and carrying fire or leaving any fire burning which may set fire to the forests
(I) Felling, cutting, girdling, marking, lopping, tapping or injuring by other means any tree

(3) Rights and privileges

There are no permitted rights and privileges within the Lampi Marine National Park. (The objective of establishing the protected area is to preserve its waters, land, forests, hills and environment and to maintain its community, pleasantness and beauty. Any kind of extraction of forest products will not be allowed, and also mining and fishing within the Lampi protected area will not be allowed.)

(4) Whoever commits any of the prescribed prohibitions in this notification shall, on conviction, be punished according to the rules and regulations of the Protection of Wildlife and Protected Areas Law.

(Sd.)

Lieutenant-General Chit Swe

Minister

Ministry of Forestry

Government of the Union of Myanmar

ANNEX 2 BIODIVERSITY INVENTORY OF LAMPI MNP

Annex 2 Biodiversity Inventory

Species that are new records for Myanmar or possible new species, are indicated in blue.

PHYTOPLANKTON

#	Scientific Name
1	*Bacillaria paradoxa*
2	*Bacteriastrum comosum*
3	*Bacteriastrum elongatum*
4	*Bacteriastrum hyalinum*
5	*Bacteriastrum varians*
6	*Bellerochea malleus*
7	*Biddulphia sinensis*
8	*Campylodiscus undulatus*
9	*Cerataulina bergoni*
10	*Ceratium candelabrum*
11	*Ceratium deflexum*
12	*Ceratium dens*
13	*Ceratium extensum*
14	*Ceratium fusus*
15	*Ceratium macroceros*
16	*Ceratium pennatum*
17	*Ceratium ponectum*
18	*Ceratium pulchellum*
19	*Ceratium sumatranum*
20	*Ceratium tenue*
21	*Ceratium trichoceros*
22	*Ceratium tripos*
23	*Ceratium turca*
24	*Ceratium vulture*
25	*Chaetoceros affinis*
26	*Chaetoceros coarctatus*
27	*Chaetoceros compressus*
28	*Chaetoceros curvisetus*
29	*Chaetoceros decipiens*
30	*Chaetoceros denticulatum*
31	*Chaetoceros lauderi*
32	*Chaetoceros lorenzianus*
33	*Chaetoceros paradoxum*
34	*Chaetoceros peruvianus*
35	*Chaetoceros pseudicrinatus*
36	*Chaetoceros pseudicurvisetus*
37	*Chaetoceros rostratus*
38	*Chaetoceros siamensis*
39	*Chaetoceros subtilis*
40	*Chaetoceros tortissimus*
41	*Chaetoceros weisfiogii*
42	*Climacodium biconcavum*
43	*Climacodium frauenfeldianum*
44	*Cocconeid pediculus*
45	*Coscinodiscus astromphalus*
46	*Coscinodiscus cintrales*
47	*Coscinodiscus concinnus*
48	*Coscinodiscus excentricus*
49	*Coscinodiscus gigas*
50	*Coscinodiscus janesianus*
51	*Coscinodiscus lineatus*
52	*Coscinodiscus nodulifer*
53	*Coscinodiscus oculus-iridis*
54	*Coscinodiscus radiatus*
55	*Coscinodiscus subtilis*
56	*Cyclotella comta*
57	*Dictyocha fibula*
58	*Dinophysis homunculus*
59	*Dinophysis miles*
60	*Diplosalis lenticulata*
61	*Ditylum brightwelll*
62	*Ditylum sol*
63	*Eucampia cornuta*
64	*Eucampia zoodiacus*
65	*Frgilaria oceanica*
66	*Gonyaulax polygramma*
67	*Gonyaulax sp.*
68	*Guinardia flaccida*
69	*Gymnodinium sp*
70	*Gyrosigma sp*
71	*Hemiaulus indica*
72	*Hemiaulus sinensis*
73	*Hemidiscus cuneiformis*
74	*Hyalodiscus stelliger*
75	*Lauderia borealis(annulata)*
76	*Leptocylindrus danicus*
77	*Melosira borreri*
78	*Navicula cuspidata*
79	*Navicula sp.1*

80	*Navicula sp.2*
81	*Nitzschia closterium*
82	*Nitzschia seriata*
83	*Nitzschia sigma*
84	*Nitzschia sp*
85	*Noctiluca scintillans*
86	*Ornithocercus magnificus*
87	*Ornithocercus steini*
88	*Peridinum (Protoperidinium) catenatum*
89	*Peridinum (Protoperidinium) cerasus*
90	*Peridinum (Protoperidinium) conicum*
91	*Peridinum (Protoperidinium) depressum*
92	*Peridinum (Protoperidinium) divergens*
93	*Peridinum (Protoperidinium) oceanicum*
94	*Peridinum (Protoperidinium) steini*
95	*Pinnularia sp.*
96	*Pleurosigma aesturii*
97	*Pleurosigma intermedia*
98	*Pleurosigma nicobaricum*
99	*Pleurosigma normani*
100	*Pleurosigma sp.1*
101	*Pleurosigma sp.2*
102	*Podolampas biped*
103	*Pyrocystis fusiformis*
104	*Pyrocystis lunula*
105	*Pyrocystis noctiluca*
106	*Pyrophacus horologicum*
107	*Rhizosolenia (Proboscia)alata*
108	*Rhizosolenia (Pseudosolinia) calcaravis*
109	*Rhizosolenia alata f. innermis*

110	*Rhizosolenia alata f. indica*
111	*Rhizosolenia bergoni*
112	*Rhizosolenia castracenei*
113	*Rhizosolenia clevei*
114	*Rhizosolenia imbricata*
115	*Rhizosolenia rhombus*
116	*Rhizosolenia robusta*
117	*Rhizosolenia setigera*
118	*Rhizosolenia stoltertofothii*
119	*Rhizosolenia styliformis*
120	*Schrodirella delicatula*
121	*Skeletonema costatum*
122	*Stephanopyxis palmeriana*
123	*Streptotheca thamensis*
124	*Thalassiaosira sp.1*
125	*Thalassioira gravida*
126	*Thalassionema nitzschioides*
127	*Thalassiosira rotula*
128	*Thalassiosira subtilis*
129	*Thalassiothrix frauenfeldii*
130	*Thallassiothrix longissima*
131	*Thallassiothrix mediterranea*
132	*Triceratium favus*
133	*Triceratium reticulatum*
134	*Triceratium revale*
135	*Trichodesmium theibauti*
136	*Trichodesmiun (Oscillatoria) erythraeum*

ZOOPLANKTON

#	Scientific Name
1	*Abyla hakaeli*
2	*Abylopsis eschscholtzi*
3	*Acartia centula*
4	*Acartia erythraea*
5	*Acartia spinicauda*
6	*Acetes indicus*
7	*Acrocalanus gibbe*
8	*Acrocalanus gracilis*
9	*Aequorea macrodactyla*
10	*Aequorea sp.*
11	*Alciopa sp.*

12	*Aulophaera sp.*
13	*Aurellia sp.*
14	*Beroe cucumis*
15	*Beroe forskali*
16	*Bolivina sp.*
17	*Bougainvilea pyramidata*
18	*Brachycelus sp.*
19	*Calanopia elliptica*
20	*Calanus sp.*
21	*Callizona sp.*
22	*Candacia bradyi*
23	*Canthocalanus pouper*

24	*Cavolinia longirostris*
25	*Centropages furcatus*
26	*Clytemnestra rostrata*
27	*Clytemnestra scutellata*
28	*Codonellopsis morchella*
29	*Codonellopsis ostenfeldi*
30	*Codonellopsis parva*
31	*Conchoecia elegans*
32	*Conchoecia sp.*
33	*Corycaeus andrewsi*
34	*Corycaeus catus*
35	*Corycaeus latus*
36	*Corycaeus sp.1*
37	*Corycaeus sp.2*
38	*Corycaeus speciosus*
39	*Creseis acicula*
40	*Cypridina noctiluca*
41	*Dactylometra pacifica*
42	*Diphyes appendiculata*
43	*Diphyes chamisonis*
44	*Diphyes dispar*
45	*Disoma sp.*
46	*Doliolum denticulatum*
47	*Doliolum nationalis*
48	*Dromosphoera sp.*
49	*Eirene sp.*
50	*Eucalanus crassus*
51	*Eucalanus minachus*
52	*Eucalanus subcrassus*
53	*Euchaeta concinna*
54	*Euphysa bigelowi*
55	*Euterpona acutifrons*
56	*Eutintinnus lusus-undae*
57	*Evadne teroestina*
58	*Fritillaria formica*
59	*Fritillaria haplostoma*
60	*Fritillaria pellucid*
61	*Fritillaria venusta*
62	*Gammaris sp.*
63	*Gastrosaccus sp.*
64	*Globigerina bulloides*
65	*Globoquadrina sp.*
66	*Heliocladus sp.*
67	*Hyperia sp.*

68	*Iasis zonaria* (solitary forms)
69	*Krohnitta subtilis*
70	*Labidocera acuta*
71	*Labidocera bengaliensis*
72	*Labidocera euchaeta*
73	*Labidocera minuta*
74	*Labidocera pectinata*
75	*Laophonte sp.*
76	*Lensia conoidea*
77	*Lensia sp.*
78	*Leprotintinnus nordqvisti*
79	*Leucosolenia(spicules) sp.*
80	*Liriope tetraphylla*
81	*Lopadorhynchus sp.*
82	*Lucicutia flavicornis*
83	*Lucifer penicilifer*
84	*Macrosetella gracilis*
85	*Mastigias papua*
86	*Metacalanus sp.*
87	*Microsetella morvigeca*
88	*Microsetella rosea*
89	*Notholca sp.* (Loricas)
90	*Obelia sp.*
91	*Oikopleura cophocerca*
92	*Oikopleura dioica*
93	*Oikopleura longicauda*
94	*Oithona brevicornis*
95	*Oithona linearis*
96	*Oithona nana*
97	*Oithona plumefera*
98	*Oithona rigesa*
99	*Oithona similis*
100	*Oncaea conifer*
101	*Oncaea venusta*
102	*Paracalanus aculetus*
103	*Paracalanus crassirostris*
104	*Paracalanus parvus*
105	*Pegantha sp.*
106	*Pegea confoederata*
107	*Pelagia noctiluca*
108	*Pelagobia longicirrata*
109	*Penilia avirostris*
110	*Phialidium discoid*
111	*Phtisica marina*

112	*Pleurobranchia pileus*
113	*Pleurobranchia rhodopis*
114	*Pontella andersoni*
115	*Pontella danae*
116	*Pontellopsis scotti*
117	*Pseudodiaptomus aurivilli*
118	*Pterosagitta draco*
119	*Pyrocypris sp.*
120	*Rhopilema asamushi*
121	*Rhopilema esculenta*
122	*Sagitta bedoti*
123	*Sagitta crassa*
124	*Sagitta enflata*
125	*Sagitta hexaptera*
126	*Sagitta neglecta*
127	*Sagitta pulchra*
128	*Sagitta terox*
129	*Salpa fusiformis* (solitary and aggregate forms)
130	*Salpa maxima* (solitary form)
131	*Saphirella sp.*

132	*Sapphirina nigromaculata*
133	*Stegosoma magnum*
134	*Stomolophus sp*
135	*Sulculeoria biloba*
136	*Temora discaudata*
137	*Temora turbinate*
138	*Thalassomysis sewelli*
139	*Thalia democratica* (solitary form)
140	*Tintinnopsis aperta*
141	*Tintinnopsis beroidea*
142	*Tintinnopsis butschlii*
143	*Tintinnopsis cylindrical*
144	*Tintinnopsis gracilis*
145	*Tintinnopsis mortenseni*
146	*Tintinnopsis nana*
147	*Tintinnopsis radix*
148	*Tortanus forcipatus*
149	*Undinula vulgaris*
150	*Vorticella oceanica*

MEROPLANKTON

#	Scientific Name
1	*Actinotrocha of Phoronids*
2	*Alim of Stomatopods (various)*
3	*Arachnactis larva of anthozoa*
4	*Auricularia of Holothurouds*
5	*Bipinnaria of Starfish*
6	*Copepodite of various taxa of Copepods (various development states 1-4)*
7	*Cydippid larva of ctenophore*
8	*Cypris of Acorn barnacle*
9	*Echinopluteus of Echinoids*
10	*Juvenile of Acetes*
11	*Juvenile of Cryptonisidis*
12	*Juvenile of Leptochela*
13	*Lanice larva*
14	*Larvae of Alciopids*
15	*Larvae of alpheid caridean (various)*
16	*Larvae of Anomuran (Pagurid)*
17	*Larvae of Megalonids*
18	*Larvae of Nereid* (various)
19	*Larvae of Palae monid caridean* (various)
20	*Larvae of Processid caridean* (various)

21	*Larvae of Savellarids*
22	*Larvae of Spionids*
23	*Larvae of Tuberellids*
24	*Megalopa of brachyuran* (various)
25	*Metanectochaete* (late) *larvae* (various)
26	*Mitraria larvae*
27	*Mysis of Penaeids* (various)
28	*Nauplius of Acorn barnacle*
29	*Nauplius of Calanoids* (various)
30	*Nauplius of Cyclopoids* (various)
31	*Nauplius of Goose barnacle*
32	*Nauplius of Pontillids* (various)
33	*Nectochaete larvae* (various)
34	*Ophipluteus* of Brittle Star
35	*Pilidium larvae*
36	*Planktonic fish eggs*
37	*Planktonic fish larvae*
38	*Planula larva of hydrozoa*
39	*Polydora larva*
40	*Trochophora larvae* (various)
41	*Veligers of gastropods* (various)
42	*Viligers of bivalves* (various)
43	*Young nematodes* (unidentified)

44	*Zoea and juveniles of Lucifer*
45	*Zoea of brachyuran* (various)
46	*Zoea of Penaeids* (various)
47	*Zoea of Porcellanids* (various)

SEAGRASS

#	Scientific name
1	*Cymodocea rotundata*
2	*Cymodocea serrulata*
3	*Cyringodium isotifolium*
4	*Enhalus accoroides*
5	*Halodule pinifolia*
6	*Halodule uninervis*
7	*Halophila baccarii*
8	*Halophila minor*
9	*Halophila ovalis*
10	*Halophila decipiens*
11	*Thalassia hemprichii*

SEAWEEDS

#	Family Scientific name
	Blue-green algae (Phylum : Cyanophyta)
1	*Lyngbya sp.*
2	*Oscillatoria sp.*
	Green algae (Phyum : Chlorophyta)
1	*Anadyomene stellata*
2	*Avrainvillea erecta*
3	*Boergesenia forbesii*
4	*Boodlea composite*
5	*Caulerpa racemosa*
6	*Caulerpa serrulata*
7	*Caulerpa sertulariodes*
8	*Caulerpa taxifolia*
9	*Caulerpa verticillata*
10	*Chaetomorpha gracilis*
11	*Chaetomorpha sp1.*
12	*Chaetomorpha sp2.*
13	*Cladophora sp1.*
14	*Cladophora sp2.*
15	*Codium arabicum*
16	*Codium edule*
17	*Codium geppei*
18	*Halimeda discoidea*
19	*Halimeda macroloba*
20	*Halimeda opuntia*
21	*Rhizoclonium sp.*
22	*Ulva intestinalis*
23	*Ulva reticulata*
24	*Ulva sp.*
	Brown algae (Phylum: Phaeophyta)
1	*Dictyota bartayresiana*
2	*Dictyota divaricata*
3	*Lobophora variegata*
4	*Padina minor*
5	*Padina australis*
6	*Padina sp.*
7	*Sargassum stolonifolium*
8	*Sargassum polycystum*
9	*Turbinaria ornata*
	Red algae (Phylum: Rhodophyta)
1	*Acanthophora spicifera*
2	*Actinotrichia fragilis*
3	*Amphiroa fragilissima*
4	*Asterocystes ornate*
5	*Bostrychia binderii*
6	*Catenella nipae*
7	*Centroceras clavulatum*
8	*Ceramium sp1.*
9	*Ceramium sp2.*
10	*Dichotomaria marginata*
11	*Dichotomaria obtusata*
12	*Endosiphonia clavigera*
13	*Galaxaura filamentosa*
14	*Galaxaura rugosa*
15	*Gelidiella acerosa*
16	*Gelidium arenarium*
17	*Gracilaria*
18	*Gracilaria canaliculata*
19	*Grateloupia durvillaei*
20	*Grateloupia filicina*
21	*Hydropuntia eucheumoides*
22	*Hypnea pannosa*
23	*Hypnea charoides*
24	*Hypnea musciformis* var. *Hippuriodes*
25	*Hypnea saidana*

26	*Jania sp.*
27	*Martensia fragilis*
28	*Phyllophora sp.*
29	*Plocamium cartilagineum*
30	*Polysiphonia sp1.*
31	*Polysiphonia subtilissima*
32	*Portieria hornemanii*

33	*Rhodymenia sp.*
34	*Spondylothamnion sp.*
35	*Tolypiocladia calodictyon*
36	*Tolypiocladia glomerulata*
37	*Vanvoorstia spectabilis*
38	*Wrangelia hainanensis*

SPECIES OF THE EVERGREEN FOREST & DUNE AND BEACH FOREST

#	Scientific Name	Myanmar Name
1	*Abarema bigemina* (L.) Kosterm.	Hin-cho-gyi
2	*Actinodaphne sesquipetalis*	Me-daung
3	*Adenanthera pavonina* L.	Ywe-gyi
4	*Albizia odoratissima* (L.f.) Benth.	Taung-ma-gyi
5	*Albizia sp.*	Sit_myaw
6	*Alstonia scholaris* (L.) R. Br.	Taung-mayo
7	*Anacardium occidentale* L.	Thiho-thayet
8	*Anisoptera curtisii* Dyer	Kaung-hmu
9	*Anthocephalus chinensis* Rich	Ma-U
10	*Antiaris toxicaria* (Pers.) Lesch.	Hmya-seik
11	*Aporusa frutescens* Blume	Liyo
12	*Aporusa villosula* Kurz.	Thit-khauk
13	*Aporusa wallichii* Hook.f.	Ka-dauk
14	*Aquilania agallocha* Roxb.	Akyaw
15	*Archidendron jiringa* Jack	Da-nyin
16	*Ardisia polycephala* Wall.	Kyet-ma-oke
17	*Artocarpus calophyllus* Kurz	Taung-bein
18	*Artocarpus chaplasha* Roxb.	Taung-peinne
19	*Baccaurea parviflora* Muell. Arg.	Kana-so
20	*Baccaurea sapida* Muell. Arg.	Sha-yu-tar
21	*Barringtonia racemosa* (L.) Spreng	Ye-kyi
22	*Bischofia javanica* Blume	Ye-pa-don
23	*Bombax insigne* Wall	Taung-let-pan
24	*Bouea burmanica* Griff.	Ma-yan
25	*Bridelia sp.*	Not known
26	*Bruguiera conjugata* (L.) Merr.	Byu-u-talon
27	*Bruguiera gymnorhiza* (L.) Lamk.	Byu-oak-song
28	*Calophyllum amoenum* Wall.	Tha-ra-phi
29	*Calophylum inophyllum* L.	Pon-nyet
30	*Carallia brachiata* (Lour.) Merr.	Yap-pin
31	*Carallia sp.*	Ma-ni-awl-za
32	*Castanopsis argyrophylla* King	Thit-tat
33	*Casuarina equisetifolia* Forst.	Lae-tha-pin
34	*Celtis sp.*	Thit-pok-taing
35	*Cerbera manghas* L.	Ye-za-lat
36	*Cinnamomum iners*	Hman-thin
37	*Cinnamomum sp.* (1)	Taung-pa-yon
38	*Cinnamomum sp.* (2)	Kara-way-yaing
39	*Cinnamomum sp.* (3)	Kyam-bo
40	*Cinnamomum verum* Pres	Thit-kya-bo
41	*Citrus hystrix* DC.	Bya-thi
42	*Coccoceras plicatum* Muell. Arg.	Yaung-ban
43	*Crateva sp.*	Not known
44	*Croton robustus* Kurz.	Tha-yin-phyu
45	*Crptocarya griffithina* Wight	Ka-lak-thiang
46	*Crypteronia sp.*	Yon-bin
47	*Cynometra ramiflora* L.	Myin-ga
48	*Dalbergia rimosa* Roxb.	Not known
49	*Derris indica* Burrel	Than-that
50	*Dialium indum* L.	Taung-ka-ye
51	*Dillenia parviflora* Griff.	Zin-byun
52	*Dillenia sp.*	Thaung-thami-laung
53	*Diospyros peregrina* (Gaertn) Gurte	Bot-the
54	*Diospyros crumentata* Thwaites	Taung-bok
55	*Diospyros ehretioides* Wall.	Auk-chin-sa
56	*Dipterocarpus alatus* Roxb.	Ka-nyin-phyu
57	*Dipterocarpus costatus* Gaertm.f.	Ka-nyin-ni
58	*Dipterocarpus dyeri* Pierre	Ka-nyin
59	*Dipterocarpus grandiflorus* Blanco	Kanyin
60	*Dipterocarpus obtusifolius* Teysm	Ka-nyin
61	*Dipterocarpus tuberculatus* Roxb.	In
62	*Dipterocarpus turbinatus* Gaertn.f.	Ka-nyin
63	*Dolichandrone serrulata* L.f.	Tha-kut
64	*Dolichandrone sp.*	Ye-tha-kut
65	*Dracontomelon sp.*	Payar-koe-su-pin
66	*Duabanga grandiflora* Walp.	Myauk-ngo

67	*Elaeocarpus sp.*	Moo-ti-ya
68	*Engelhardtia spicata* Blume	Taung-min-sok
69	*Eriolaena sp.*	Taung-tha-yaw
70	*Erythrina stricta* Roxb.	Taung-kathit
71	*Exoecaria agallocha* L.	Ta-yaw
72	*Ficus glomerata* Roxb.	Taung-tha-phan
73	*Ficus hispida* L.	Kha-aung
74	*Ficus pisocarpa*	Nyaung
75	*Ficus sp.*(1)	Pa-aung
76	*Ficus sp.*(2)	Ye-tha-phan
77	*Ficus sp.*(3)	Ka-dut-pho
78	*Firmiana colorata* (Roxb.) R. Br.	Gant-phyu
79	*Firmiana sp.*	Gan-ni
80	*Garcinia cowa* Roxb.	Taung-tha-le
81	*Garcinia heterandra* Wall.	Taung-min-gut
82	*Glycosmis cyanocarpa* Spreng.	Mat-paw
83	*Gmelina arborea* Roxb.	Ye-ma-nae
84	*Heritiera fomes* Buch._ham.	Ye-ka-na-zo
85	*Heritiera javanica* (Blume) Kosterm.	Kant-so
86	*Heritiera sp.*(1)	Taung-ka-naso-phyu
87	*Heritiera sp.*(2)	Taung-ka-naso-ani
88	*Hibiscus tiliaceus* L.	Pin-le-shaw
89	*Holigarna kurzii King*	Che-po
90	*Homalium griffithianum Kurz.*	Taung-ka-byaw
91	*Homalium tomentosun Benth.*	Myauk-chaw
92	*Hopea helferi (Dyer) Brandis*	Thingan-kyauk
93	*Hopea odorata Roxb.*	Thin-gan
94	*Hopea sangal Korth.*	Thingan-magale
95	*Hopea sp.*	Thinganwar
96	*Hypobathrum racemosum Kurz*	Pinle-kyetyo
97	*Lagerstroemia floribunda Jack*	Pyinma
98	*Lagerstroemia sp.*	Tha-beik-kyan
99	*Lagerstroemia speciosa (L.) Pers.*	Pyin-ma
100	*Lagerstroemia tomentosa Presl.*	Le-sa
101	*Lannea coromandelica (Houtt.) Merr.*	Ye-kyaung-sha
102	*Lepisanthes tetraphylla (Vabl) Radlk*	Myauk-nyo
103	*Limonia acidissima L.*	Thee-pin
104	*Linociera terniflora Wall.*	San-sae-pin
105	*Litsea grandis (Nees) Hook. F.*	Tha-ku-mae-nal
106	*Litsea lancifolia*	On-don
107	*Litsea sp.*	Taung-ta-gu
108	*Lophopetalum filiforme Laws.*	Yemane-ani
109	*Lophopetalum fimbriatum Wight*	Yemane-aphyu
110	*Lophopetalum sp.*	Yae-ma-nae-chauk
111	*Macaranga denticulata Muell. Arg.*	Not known
112	*Macaranga gigantea*	Phet-wun
113	*Maesa ramentacea A.DC.*	Nga-nwa
114	*Mallotus floribundus Muell. Arg.*	Taung-ka-do
115	*Mallotus oblongifolius Mull.Arg.*	Not known
116	*Mallotus sp.*	Not known
117	*Manglietia insignis (Wall.) Blume*	Taung-saga-wa
118	*Melanorrhoea glabra Wall.*	Thit-sae
119	*Memecylon grande Retz.*	Taung-phyu
120	*Mesua nervosa Planch.&Triana*	Gan-gaw
121	*Mesua sp.*	Gant-gwe-paung
122	*Michelia champaca L.*	Sa-ga-pin
123	*Millettia atropurpurea Dunn.*	Kywe-da-nyin
124	*Mitragyna rotundifoliaKuntze*	Bin-ga
125	*Morinda angustifolia Roxb.*	Nibase
126	*Myristica angustifolia Roxb.*	Kywe-thwe
127	*Myrsine sp.*	Min-ka-zaw
128	*Opuntia dillenii (Ker Gawl.) Haw.*	Ka-la-zaung
129	*Ormosia watsonii Fisch*	Le-zin
130	*Palaquium obovatum (Griff.) Engl.*	Pinle-byin
131	*Parashorea stellata Kurz*	Lay-tha-yet
132	*Payena paralleloneura Kurz*	Zin-zwel
133	*Pemphis acidula Forst.*	Not-known
134	*Phoebe tavoyana Hook. F.*	Kye-se
135	*Podocarpus neriifolicus D.Don*	Thit-min
136	*Prismatomeris albidiflora Thwaites*	Kyet-yon
137	*Pterocarpus sp.*	Pa-dauk-pho
138	*Pterospermum acerifolium Willd.*	Taung-phet-wun
139	*Pterospermum jackiamun*	Nwa-ba-byin
140	*Pterygota alata (Roxb.) R.Br.*	Khok-thin-nya
141	*Quercus sp.*	Not known
142	*Rhizophora candelaria DC.*	Byu-chidauk-apo
143	*Rhizophora mucronata Lam.*	Byu-chidauk-ama
144	*Samadera lucida Wall*	Ka-the
145	*Sandoricum koetjape (Burm.f) Merr.*	Thit-to
146	*Sapium baccatum Roxb.*	Aw-le
147	*Sapium insigne (Muell.Arg.) Trimen*	Taung-kala
148	*Scaevola taccada (Gaertn.) Roxb.*	Not known
149	*Semecarpus heterophyllus Blume*	Kyae-pin
150	*Senna timoriensis DC.*	Taw-me-za-li
151	*Shorea cinerea Fisher*	Ka-dut-ni

152	*Shorea farinosa Fischer*	U-ban
153	*Shorea gratissima Dyner*	U-ban-hput
154	*Shorea sp.(1)*	Not known
155	*Shorea sp.(2)*	Hput-ma-tet
156	*Shorea sp.(3)*	Ka-dut-phyu
157	*Spondias sp.(1)*	Taw-gwe
158	*Spondias sp.(2)*	Not known
159	*Sterculia foetida Linn.*	Let-khok
160	*Sterculia sp.*	Not known
161	*Sterculia urens Roxb.*	Shaw
162	*Strombosia javanica Blume*	Ban-na-tha
163	*Swintonia floribunda Griff.*	Taung-tha-yet
164	*Syzygium cymosum DC.*	Thabye-kyetter
165	*Syzygium formosum (Wall) Masam.*	Tha-bye-phyu
166	*Syzygium fruticosum*	Kyet-yoe_tha-bye
167	*Syzygium grande (ight) Walp.*	Thabye-ywet-gyi
168	*Syzygium gratum (Wight) SN. Mitra*	Thebye-pauk-pauk
169	*Syzygium inophyllum DC.*	Thabye-satche
170	*Syzygium polyanthum (Wight) Walp.*	Mat-la-ga
171	*Syzygium sp.(1)*	Tha-bye
172	*Syzygium sp.(2)*	Thabyae-khun-bya
173	*Syzygium zeylanicum (L.) DC.*	Thabye-ni
174	*Tamarindus indica L.*	Ma-gyi
175	*Tarennoidea wallichii (Hook.f.) D.*	Khat-mya
176	*Terminalia catappa L.*	Ban-da
177	*Ternstroemia penangiana Choisy*	Let-put-thi-pin
178	*Tetrameles nudiflora R. Br.*	Thit-pok
179	*Trema orientalis (L.) Blume*	Kywe-sa
180	*Tristania merguensis Griff.*	Mya-kamaung
181	*Unknown*	Not-known
182	*Unknown*	Not-known
183	*Unknown 1*	Pin-sein
184	*Unknown 2*	Man-bar
185	*Unknown 3*	Pan-da-nyin
186	*Unknown 4*	Sanwin-pok
187	*Vatica dyeri King*	Kanyin-Kyaung-che
188	*Vitex pubescens Vahl.*	Kyet-yo
189	*Wendlandia tinctoria DC.*	Thit-me
190	*Wendlandia glabrata DC.*	Thit-phyu
191	*Wendlandia sp.(1)*	Kywe-nan
192	*Wendlandia sp.(2)*	Sa-kit-pin
193	*Xerospermum noronhianum Blume*	Taung-kyetmauk
194	*Xylocarpus gangeticus C.E.Park.*	Pinle-on
195	*Ziziphus sp.*	Not known

SPECIES OF THE MANGROVE FOREST

#	Scientific Name	Myanmar Name
1	*Acanthus illicifolius*	Kha-ya
2	*Acrostichum aureum*	Nyet-kyi-taung-gyi
3	*Acrostichum speciosum*	Nyet-kyi-taung-thay
4	*Aegialitis rotundifolia*	Sar-pin
5	*Aegialitis annulata*	
6	*Aegiceras corniculatum*	Yae-kha-ya
7	*Aegiceras iripa*	-
8	*Avicennia alba*	Tha-me-kyet-tet
9	*Avicennia marina*	Tha-me-phyu
10	*Avicennia officinalis*	Tha-me-gyi
11	*Barringtonia asiatica*	-
12	*Brownlowia tersa*	Yae-tha-man
13	*Bruguiera cylindrica*	Bue-khar-kyeik-leim
14	*Bruguiera gymnorhiza*	Byu-oak-sung
15	*Bruguiera parviflora*	Hni-phyu
16	*Bruguiera sexangula*	Byu-shwe-war
17	*Caesalpinia crista*	Alo-lay-new
18	*Calamus arborescens*	Da-non
19	*Calophyllum inophyllum*	Pon-nyet
20	*Calycopteris floribunda*	Kywet-new
21	*Cerbera manghas*	-
22	*Cerbera odollam*	-
23	*Ceriops decandra*	Ma-da-ma
24	*Ceriops targal*	Ma-da-ma-myaw
25	*Clerodendrum inerme*	Taw-kyaung-pan
26	*Cynometra iripa*	-
27	*Derris indica*	Thin-win-phyu
28	*Derris trifoliata*	New-net
29	*Diospyros embryopteris*	Tae
30	*Dolichandrone spathacea*	Yae-tha-kut
31	*Ecoecaria agallocha*	Tha-yaw
32	*Erythrina indica*	Pin-le-ka-thit
33	*Finlaysonia maritima*	Byauk-new
34	*Flagellaria indica*	Myauk-kyein
35	*Heritiera fomes*	Ye-ka-na-so

36	*Heritiera littoralis*	Kon-ka-na-so
37	*Hibscus tiliaceus*	Tha-man-shaw
38	*Intsia bijuge*	Sa-gar-lun
39	*Ipomoea pes-caprae*	Pin-le-kazun
40	*Lumnitzera littorea*	Eik-ma-thwe-ni
41	*Lumnitzera racemosa*	Eik-ma-thwe-phyu
42	*Merope angulata*	Taw-shauk
43	*Nypa fruticans*	Da-ni
44	*Oncoperma tigillarium*	Ka-zaung
45	*Pandanas foetidus*	Tha-baw
46	*Pandanas tectorius*	-
47	*Pemphis acidula*	-
48	*Phoemix paludosa*	-
49	*Premna obtusifolia*	Taw-taung-tan-gyi
50	*Rhizophora apiculata*	Byu-chae-dauk-pho
51	*Rhizophora mucronata*	Byu-chae-dauk-ma
52	*Sarcolobus carinatus*	Sut-kha-mon-new
53	*Scaevola taccada*	-
54	*Scyphiphora hydrophyllaceae*	-
55	*Sesuvium portulacastrum*	-
56	*Sonneratia alba*	La-mu-ka-thet
57	*Sonneratia griffithii*	La-ba
58	*Terminalia catappa*	Ban-da
59	*Thespesia populnea*	-
60	*Xylocarpus moluccensis*	
61	*Xylocarpus granatum*	Pin-le-ohn
62	*Xylocarpus rumphii*	-
63	*Morinda citrifolia*	-

GASTROPODS (MOLLUSCS)

#	Scientific name	Common name
1	*Architectonica maxima* (Philippi, 1849)	Giant Sundial
2	*Babylonia areolata* (Link, 1807)	Maculated Ivory Whelk
3	*Casis cornuta* (Linnaeus, 1758)	Horned Helmet
4	*Rhinoclavis vertagus* (Linnaeus, 1758)	Common Vertagus
5	*Conus suratensis* Hwass,1792	Suratan Cone
6	*Conus litteratus* Linnaeus, 1758	Lettered Cone
7	*Cypraea tigris* Linnaeus, 1758	Tiger Cowrie
8	*Cypraea vitellus* Linnaeus, 1758	Pacific Deer Cowrie
9	*Cypraea talpa* Linnaeus, 1758	Mole Cowrie
10	*Cypraea eglantine* Duclos, 1833	Eglamtine Cowrie
11	*Cypraea mauritiana* Linnaeus, 1758	Humpback Cowrie
12	*Pleuroplaea trapezium* (Linnaeus, 1758)	Rapizium Horse Conch
13	*Fusinus colus* (Linnaeus,1758)	Distaff Spidle
14	*Ficus subintermedia* (Orbigny,1852)	Underlined Fig Shell
15	*Marginella ventricosa*	
16	*Ellobium aurismidae (Linnaeus, 1758)*	
17	*Pugilina cochlidium* (Linnaeus,1758)	Spiral Melongena
18	*Chicireus torrefactus* (Sowerby, 1841)	Firebrand Murex
19	*Chicoreus ramosus* (Linnaeus,1758)	Ramose Murex
20	*Murex ternispina* Lamaeck, 1822	Black Spined Murex
21	*Thais alouina* (Roding, 1798)	Alou Rock Shell
22	*Nassarius dorsatus* (Roding, 1798)	Channeled Nassa
23	*Polinices mammilla* (Linnaeus,1758)	Pear Shaped Moon Snail
24	*Natica lineate* (Roding, 1798)	Lined Moon Anail
25	*Natica vitellus (Linnaeus,1758)*	Calf Moon Snail
26	*Nerita costata* Gmelin, 1791	Costate Nerite
27	*Nerita polita* Linnaeus, 1758	Polished Nerite
28	*Nerita albicilla* Linnaeus, 1758	Oxpalate Nerite
29	*Nerita chameleon* Linnaeus, 1758	Chamelon Nerite
30	*Oliva miniacea* (Roding, 1798)	Redmouth Oliver
31	*Cellana rota* (Gmelin, 1791)	Rayed Limpet
32	*Cerithidea cingulata* (Gmelin, 1791)	Girdled Horn Shell

33	*Cymatium sp.*	Triton Shell
34	*Strombus canarium* Linnaeus, 1758	Dog Conch
35	*Strombus luhuanus* Linnaeus, 1758	Strawberry Conch
36	*Strombus variabilis* Swainson, 1820	Variable Conch
37	*Strombus urceus* Linnaeus, 1758	Little Pitcher Conch
38	*Lambis lambis* (Linnaeus,1758)	Common Spider Conch
39	*Lambis chiragra chiragra* (Linnaeus,1758)	Chiragra Spider Conch
40	*Terebra areolata* (Link, 1807)	Fly Spotted Auger
41	*Tonna dolium* (Linnaeus, 1758)	Spotted Tun
42	*Tonna olearium* (Linnaeus, 1758)	Oily Tun
43	*Trochus niloticus* Linnaeus, 1767	Commercial Top
44	*Tectus pyramis* (Born, 1778)	Pyramid Top
45	*Turbo argyrostomus* Linnaeus, 1758	Silvermouth Turban
46	*Turbo marmoratus* Linnaeus, 1758	Green Turban
47	*Turritella duplicate* (Linnaeus, 1758)	Duplicate Turret
48	*Turritella terebra* (Linnaeus,1758)	Screw Turret
49	*Melo melo* (Lightfoot, 1786)	Indian Volute
50	*Xenophora solaris* (Linnaeus, 1764)	Sunburust Carrier Shell

BIVALVES (MOLLUSCS)

#	Scientific name	Common name
1	*Scapharca inaequivalvis* (Bruguiere,1789)	Inequivalve Ark
2	*Arca ventricosa* Lamarck,1819	Ventricose Ark
3	*Barbatia foliate* (Firsskal,1775)	Decussate Ark
4	*Scapharca indica* (Gmelin,1791)	Rudder Ark
5	*Fragum unedo* (Linnaeus,1758)	Pacific Strawberry Cockle
6	*Fragum fragum* (Linnaeus,1758)	White Strawberry Cockle
7	*Trachycardium rugosum* (Lamarck,1819)	Pacific Yellow Cockle
8	*Fulvia papyraea* (Bruguiere,1789)	Paper Cockle
9	*Polymesoda bangalensis* (Larmarck,1818)	Bengali Geloina
10	*Donax socortum* (Linnaeus, 1758)	Leather Donax
11	*Donax faba* Gmelin, 1791	Pacific Bean Donax
12	*Hyotissa hyotis* (Linneaus, 1758)	Honeycomb Oyster
13	*Isognomon isognomum* (Linnaeus, 1758)	Wader Tree Oyster
14	*Anondontia edentula* (Linnaeus, 1758)	Toothless Lucine
15	*Mactra sp.*	Trough Shell
16	*Malleus malleus* (Linnaeus, 1758)	Black Hummer Oyster
17	*Malleus regula* (Fosskal, 1775)	Straight Hummer Oyster
18	*Malleus albus* (Lamarck,1819)	White Hammer Oyster
19	*Septifer bilocularis* (Linnaeus, 1758)	Box Mussel
20	*Modiolus aratus* (Dunker,1857)	Furrowed Horse Mussel
21	*Modiolus metcafei* (Hanley,1843)	Yellow Banded Horse Mussel
22	*Minnivola pyxidata* (Born, 1778)	Box Scallop
23	*Gloripallium pallium* (Linnaeus, 1758)	Royal Cloak Scallop
24	*Atlrina vexillum* (Born,1778)	Flag Pen Shell
25	*Placuna ephippium* (Philipsson,1788)	Saddle Oyster
26	*Pinctada margaritifera* (Linnaeus,1758)	Blacklip Pearl Oyster
27	*Pinctada maculate* (Gould, 1850)	Spotted Pearl Oyster
28	*Solen grandis* Dunker, 1861	Grand Razer Shell
29	*Solen roseomaculatus* Pilsbry, 1901	Spotted Razer Shell
30	*Siliqua radiate*	Radar Clam
31	*Spondylus barbatus* Reeve, 1856	Bearded Thorny Oyster
32	*Spondylus sp.1*	Thorny Oyster
33	*Spondylus sp.2*	Thorny Oyster
34	*Tridacna crocea* Lamarck, 1819	Crocus Giant Clam
35	*Paphia textile* (Gmelin,1791)	Textile Venus
36	*Placamen tiara* (Dillwyn, 1817)	Tiar Venus
37	*Katelysia hiantina* (Lamarck, 1818)	Hiant Venus
38	*Paphia sp.1*	Venus

39	*Periglypta puerpera* (Linnaeus, 1771)	Youthful Venus
40	*Cyclina sinensis* (Gmelin, 1791)	Oriential Cyclina
41	*Sunetta menstruali* (Menke,1843),	Mauve Sunetta

CRAB (CRUSTACEAN)

#	Scientific name	Common name
1	*Dorippe astuta*	
2	*Philyra pisum*	
3	*Matuta lunaris*	
4	*Matuta planipes*	
5	*Matuta cuetispina*	
6	*Calappi japonica*	
7	*Calappi lophos*	
8	*Doclea andersoni*	
9	*Dromia dehaani*	
10	*Scylla serrata*	
11	*Potunus pelagicus*	
12	*Potunus sanguinolentus*	
13	*Charybdids cruciata*	
14	*Charybdids annulata*	
15	*Charybdids merguiensis*	Mangrove crab
16	*Charybdids rivers-andersoni*	
17	*Charybdids callianassa*	
18	*Thalamita prymna*	
19	*Leptodicus exaratus*	
20	*Etisus laevimanus*	
21	*Etisus rhynchophorus*	
22	*Pilumnus vespertilio*	
23	*Geocarcinus logostoma*	
24	*Ocypoda routandus*	
25	*Ocypoda stimpsons*	
26	*Gelasimus annulipes*	Venigar crab
27	*Gelasimus tetragonun*	Venigar crab
28	*Macrophthalamus depressus*	Venigar crab
29	*Scopimera globosa*	Mangrove crab
30	*Dottila myctiroides*	
31	*Grapsus strigosus*	Mangrove crab
32	*Pseudograpsus intermedius*	Mangrove crab
33	*Clistocoeloma*	Mangrove crab
34	*Varuna littreta*	Hairy crab
35	*Sesarma quadratum*	Paddler crab
36	*Sesarma biden*	-
37	*Sesarma singaporensis*	
38	*Sesarma andersoni*	
39	*Sesarma picta*	
40	*Sesarma intermedia*	
41	*Sesarma minutum*	
42	*Raninia ranina*	

FISH

#	Scientific name
1	*Albula neoguinaica*
2	*Alepes djeddaba*
3	*Ambassis interruptus*
4	*Ambassis vachelli*
5	*Atherinomorus endrachtensis*
6	*Atherinomorus ogilbyi*
7	*Blenny*
8	*Carangoides chrysophrys*
9	*Carangoides ferdau*
10	*Epinephelus areolatus*
11	*Epinephelus sp.*
12	*Gerres abbreviatus*
13	*Gerres oyena*
14	*Gerres filamentosus*
15	*Half beak larvae (Hemirhamphus sp.)*
16	*Hemirhamphus far*
17	*Hyporhamphus offinis*
18	*Ilisha melastoma*
19	*Leiognathus equulus*
20	*Liza tade*
21	*Liza vaigiensis*
22	*Megalaspis cordyla*
23	*Megalops cyprinoids*
24	*Opisthopterus tardoore*
25	*Opisthopterus valenciennesi*

26	*Oryzias sp.*
27	*Pentaprion longimanus*
28	*Periophthalmus koelreuteri*
29	*Platybelone platyura*
30	*Pomadasys olivaceun*
31	*Rastrelliger karnagurta*
32	*Rhoniscus sp.*
33	*Saurida micropectoralis*
34	*Scomberoides tol*
35	*Selar crumenophthalmus*

36	*Selaroides leptolepis*
37	*Siganus canaliculatus*
38	*Siganus lineatus*
39	*Sillago sihama*
40	*Tetraodon sp.*
41	*Therapon jarbua*
42	*Tylosurus gavialoides*

AMPHIBIAN

#	Scientific Name	Common name
1	*Bufo melanostictus*	Common Toad
2	*Leptolalax heteropus*	Variable Slender Frog
3	*Ingerana tenasserimensis*	Tanintharyi Frog
4	*Limnonectes blythii*	Blyth's Giant Frog
5	*Limnonectes doriae*	Frog
6	*Limnonectes hascheanus*	Frog
7	*Limnonectes macrognathus*	Big-headed Frog
8	*Occidozyga spp.*	Floating Frog
9	*Polypedates leucomystax*	Common Tree Frog
10	*Ichthyophis spp.*	Caecilians

REPTILE

#	Scientific Name	Common name
1	*Caretta caretta*	Loggerhead Turtle
2	*Chelonia mydas*	Green Turtle
3	*Lepidochelys olivacea*	Olive Ridley Turtle
4	*Indotestudo elongata*	Yellow Tortoise
5	*Calotes emma*	Forest Creasted Lizard
6	*Draco blanfordii*	Flying Dragon
7	*Cyrtodactylus oldhami*	Slender Toe Gecko
8	*Gekko gecko*	Tocky
9	*Hemidactylus spp.*	House Gecko
10	*Dasia olivacea*	Olive Tree Skink
11	*Eutropis multifasciata*	Common Sun Skink
12	*Sphenomorphus maculatus*	Streamside Skink
13	*Tropidophorus spp.*	Water Skink
14	*Varanus salvator*	Water Monitor Lizard
15	*Python reticulatus*	Reticulated Python
16	*Ahaetulla prasina*	Oriental Whip Snake
17	*Boiga cyanea*	Green Cat Snake
18	*Dendrelaphis spp.*	Bronzebacks Snake
19	*Trimeresurus purpureomaculatus*	Mangrove Pit-viper

BIRD

#	Scientific name	Common name
1	*Rollulus rouloul*	Crested Partridge
2	*Caloperdix oculea*	Ferruginous Partridge
3	*Dinopium javanense*	Common Flameback
4	*Chrysocolaptes lucidus*	Greater Flameback
5	*Hemicircus canente*	Heart-spotted Woodpecker
6	*Mulleripicus pulverulentus*	Great Slaty Woodpecker
7	*Megalaima haemacephala*	Coppersmith Barbet
8	*Megalaima australis*	Blue-eared Barbet
9	*Megalaima asiatica*	Blue-throated Barbet
10	*Megalaima mystacophanos*	Red-throated Barbet
11	*Buceros bicornis*	Great Hornbill
12	*Anthracoceros albirostris*	Oriental Pied Hornbill
13	*Anorrhinus galeritus*	Bushy-crested Hornbill
14	*Aceros subruficollis*	Plain-pouched Hornbill
15	*Harpactes oreskios*	Orange-breasted Trogon
16	*Eurystomus orientalis*	Dollarbird
17	*Alcedo atthis*	Common Kingfisher
18	*Ceyx rufidorsa*	Rufous-backed Kingfisher
19	*Halcyon amauroptera*	Brown-winged Kingfisher
20	*Halcyon capensis*	Stork-billed Kingfisher
21	*Halcyon smyrnensis*	White-throated Kingfisher
22	*Halcyon pileata*	Black-capped Kingfisher
23	*Halcyon coromanda*	Ruddy Kingfisher

24	*Todiramphus chloris*	Collared Kingfisher
25	*Merops leschenaulti*	Chestnut-eeaded Bee-eater
26	*Cacomantis sepulcralis*	Rusty-breasted Cuckoo
27	*Hiercoccyx fugax*	Malaysian Hawk Cuckoo
28	*Eudynamys scolopacea*	Asian Koel
29	*Phaenicophaeus diardi*	Black-bellied Malkoha
30	*Phaenicophaeus tristis*	Green-billed Malkoha
31	*Phaenicophaeus sumatranus*	Chestnut-bellied Malkoha
32	*Centropus sinensis*	Greater Coucal
33	*Loriculus vernalis*	Vernal Hanging Parrot
34	*Loriculus galgulus*	Blue-crowned Hanging Parrot
35	*Collocalia esculenta*	Glossy Swiftlet
36	*Collocalia maxima*	Black-nest Swiftlet
37	*Collocalia fuciphaga*	Edible Nest Swiftlet
38	*Collocallia germane*	Germain Swiftlet
39	*Hirundapus giganteus*	Brown-backed Needletail
40	*Rhaphidura leucopygialis*	Silver-rumped Needletail
41	*Apus affinis*	House Swift
42	*Hemiprocne longipennis*	Grey-rumped Treeswift
43	*Hemiprocne comate*	Whiskered Treeswift
44	*Otus sunia*	Oriental Scops Owl
45	*Otus bakkamoena*	Collared Scops Owl
46	*Bubo sumatranus*	Barred Eagle Owl
47	*Glaucidium cuculoides*	Asian Barred Owlet
48	*Glaucidium brodiei*	Collared Owlet
49	*Ninox scutulata*	Brown Hawk Owl
50	*Tyto alba*	Barn Owl
51	*Strix leptogrammica*	Brown Wood Owl
52	*Caprimulgus macrurus*	Large-tailed Nightjar
53	*Eurostopodus macrotis*	Great Eared Nightjar
54	*Columba livia*	Rock Pigeon
55	*Streptopelia chinensis*	Spotted Dove
56	*Chalcophaps indica*	Emerald Dove
57	*Caloenas nicobarica*	Nicobar Pigeon
58	*Treron vernans*	Pink-necked Green Pigeon
59	*Treron bicincta*	Orange-breasted Green Pigeon
60	*Treron pompadora*	Pompadour Green Pigeon
61	*Treron curvirostra*	Thick-billed Green Pigeon
62	*Treron fulvicollis*	Cinnamon-Headed Green Pigeon
63	*Ducula bicolar*	Pied Imperial Pigeon
64	*Ducula aenea*	Green Imperial Pigeon
65	*Ducula badia*	Mountain Imperial Pigeon
66	*Rallina spp*	Crake
67	*Lymnocryptes minimus*	Jack Snipe
68	*Limosa limosa*	Black-tailed Godwit
69	*Limosa lapponica*	Bar-tailed Godwit
70	*Numenius minutus*	Little Curlew
71	*Numenius phaeopus*	Whimbrel
72	*Numenius arquata*	Eurasian Curlew
73	*Tringa totanus*	Common Redshank
74	*Tringa nebularia*	Common Greenshank
75	*Tringa ochropus*	Green Sandpiper
76	*Actitis hypoleucos*	Common Sandpiper
77	*Arenaria interpres*	Ruddy Turnstone
78	*Esacus recurvirostris*	Great Thick-knee
79	*Esacus neglectus*	Beach Thick-knee
80	*Charadrius peronii*	Malaysian Plover
81	*Pluvialis squatarola*	Grey Plover
82	*Charadrius leschenaultii*	Greater Sand Plover
83	*Gelocbelidon nilotica*	Gull-billed Tern
84	*Sterna anaethetus*	Bridled Tern
85	*Sterna aurantia*	River Tern
86	*Sterna bengalensis*	Lesser Crested Tern
87	*Sterna bergii*	Great Creasted Tern
88	*Sterna hirundo*	Common Tern
89	*Sterna albifrons*	Little Tern
90	*Sterna dougallii*	Roseate Tern
91	*Sterna sumatrana*	Black-naped Tern
92	*Chlidonias hybridus*	Whiskered Tern
93	*Chlidonias leucopterus*	White-winged Tern
94	*Pandion haliaetus*	Osprey
95	*Pernis ptilorhyncus*	Oriental Honey Buzzard
96	*Milvus migrans*	Black Kite
97	*Aviceda jerdoni*	Jerdon's Baza
98	*Haliastur indus*	Brahminy Kite
99	*Haliaeetus leucogaster*	White-bellied Sea Eagle
100	*Ichthyophaga ichthyaetus*	Grey-headed Fish Eagle
101	*Accipiter trivirgatus*	Crested Goshawk
102	*Accipiter badius*	Shikra
103	*Accipiter Soloensis*	Chinese Sparrowhawk
104	*Accipiter gularis*	Japanese Sparrowhawk
105	*Accipiter virgatus*	Besra

106	*Butastur teesa*	White-eyed Buzzard
107	*Butastur indicus*	Grey-faced Buzzard
108	*Buteo buteo*	Common Buzzard
109	*Spizaetus cirrhatus*	Changeable Hawk Eagle
110	*Spizaetus nanus*	Wallace's Hawk Eagle
111	*Spilornis cheela*	Crested Serpent Eagle
112	*Hieraaetus pennatus*	Booted Eagle
113	*Falco tinnunculus*	Common Kestrel
114	*Falco Peregrinus*	Peregrine Falcon
115	*Egretta sacra*	Pacific Reef Egret
116	*Ardea sumatrana*	Great-billed Heron
117	*Ardea cinerea*	Grey Heron
118	*Casmerodius albus*	Great Egret
119	*Mesophoyx intermedia*	Intermediate Egret
120	*Bubulcus ibis*	Cattle Egret
121	*Ardeola spp*	Pond Heron
122	*Butorides striatus*	Little Heron
123	*Gorsa chius melano lophus*	Malayan Night Haron
124	*Nycticorax nycticorax*	Black-crowned Night Heron
125	*Ixobrychus cinnamomeus*	Cinnamon Bittern
126	*Calyptomena viridis*	Green Broadbill
127	*Pitta cyanea*	Blue Pitta
128	*Pitta sordid*	Hooded Pitta
129	*Pitta megarhyncha*	Mangrove Pitta
130	*Irena puella*	Asian Fairy Bluebird
131	*Chloropsis sonnerati*	Greater Green Leafbird
132	*Chloropsis cyanopogon*	Lesser Green Leafbird
133	*Lanius cristatussuperciliosus*	Brown Shrike
134	*Lanius cristatus*	Brown Shrike
135	*Corvus macrorhynchos*	Large-Billed Crow
136	*Platysmurus leucopterus*	Black Magpie
137	*Cissa chinensis*	Common Green Magpie
138	*Oriolus chinensis*	Black-naped Oriole
139	*Pericrocotus cantonensis*	Swinhoe's Minivet
140	*Pericrocotus divaricatus*	Ashy Minivet
141	*Pericrocotus igneus*	Fiery Minivet
142	*Pericrocotus flammeus*	Scarlet Minivet
143	*Rhipidura albicollis*	White-throated Fantail
144	*Rhipidura javanica*	Pied Fantail
145	*Dicrurus macrocercus*	Black Drongo

146	*Dicrurus leucophaeus*	Ashy Drongo
147	*Dicrurus remifer*	Lesser Racket-tailed Drongo
148	*Dicrurus paradiseus*	Greater Racket-tailed Drongo
149	*Pachycephala grisola*	Mangrove Whistler
150	*Hypothymis azurea*	Black-naped Monarch
151	*Terpsiphone paradisi*	Asian Paradise Flycatcher
152	*Philentoma pyrhopterum*	Rufous-winged Philentoma
153	*Aegithina tiphia*	Common Iora
154	*Aegithina viridissima*	Green Iora
155	*Tephrodornis gularis*	Large Woodshrike
156	*Monticola solitarius*	Blue Rock Thrush
157	*Zoothera citrina*	Orange-headed Thrush
158	*Rhinomyias umbratilis*	Grey-chested Jungle Flycatcher
159	*Muscicapa sibirica*	Dark-sided Flycatcher
160	*Muscicapa dauurica*	Asian Brown Flycatcher
161	*Ficedula parva*	Red-throated Flycatcher
162	*Copsychus saularis*	Oriental Magpie Robin
163	*Copsychus malabaricus*	White-rumped Shama
164	*Acridotheres tristis*	Common Myna
165	*Gracula religiosa*	Hill Myna
166	*Acridotheres fuscus*	Jungle Myna
167	*Riparia paludicola*	Plain Martin
168	*Riparia riparia*	Sand Martin
169	*Hirundo rustica*	Barn Swallow
170	*Hirundo daurica*	Red-rumped Swallow
171	*Delichon dasypus*	Asian House Martin
172	*Hirundo tahitica*	Pacific Swallow
173	*Pycnonotus atriceps*	Black-headed Bulbul
174	*Pycnonotus finlaysoni*	Stripe-throated Bulbul
175	*Pycnonotus goiavier*	Yellow-vented Bulbul
176	*Pycnonotus brunneus*	Red-eyed Bulbul
177	*Pycnonotus plumosus*	Olive-winged Bulbul
178	*Alophoixus pallidus*	Puff-throated Bulbul
179	*Alophoixus ochraceus*	Ochraceous Bulbul
180	*Alophoixus bres*	Grey-cheeked Bulbul
181	*Iole virescens*	Olive Bulbul
182	*Iole propinqua*	Grey-Eyed Bulbul
183	*Prinia hodgsonii*	Grey-breasted Prinia
184	*Zosterops palpebrosus*	Oriental White-eye
185	*Zosterops everetti*	Everett's White-eye
186	*Gerygone sulphurea*	Golden-bellied Gerygone

187	*Acrocephalus aedon*	Thick-billed Warbler
188	*Orthotomus sutorius*	Common Tailorbird
189	*Orthotomus atrogularis*	Dark-necked Tailorbird
190	*Orthotomus sericeus*	Rufous-tailed Tailorbird
191	*Phylloscopus fuscatus*	Dusky Warbler
192	*Phylloscopus inornatus*	Yellow-browed Warbler
193	*Phylloscopus borealis*	Arctic Warbler
194	*Phylloscopus trochiloides*	Greenish Warbler
195	*Phylloscopus magnirostris*	Large-billed Leaf Warbler
196	*Phylloscopus tenellipes*	Pale-legged Warbler
197	*Phylloscopus coronatus*	Eastern Crowned Warbler
198	*Garrulax pectoralis*	Greater Necklaced Laughingthrush
199	*Malacocincla abbotti*	Abbott's Babbler
200	*Pellorneum tickelli*	Buff-breasted Babbler
201	*Pellorneum ruficeps*	Puff-throated Babbler
202	*Macronous gularis*	Striped Tit Babbler
203	*Alcippe poioicephala*	Brown-cheeked Fulvetta
204	*Malacocincla malaccensis*	Short-tailed Babbler
205	*Pellorneum capistratum*	Black-capped Babbler
206	*Trichastoma bicolor*	Ferruginous Babbler
207	*Malacopteron magnirostre*	Moustached Babbler
208	*Malacopteron magnum*	Rufous-crowned Babbler
209	*Stachyris erythroptera*	Chest-nut Winged Babbler
210	*Erpornis zantholeuca*	White-bellied Erpornis
211	*Dicaeum agile*	Thick-billed Flowerpecker
212	*Dicaeum trigonostigma*	Orange-bellied Flowerpecker
213	*Dicaeum concolor*	Plain Flowerpecker
214	*Dicaeum cruentatum*	Scarlet-backed Flowerpecker
215	*Anthreptes simplex*	Plain Sunbird
216	*Anthreptes malacensis*	Brown-throated Sunbird
217	*Anthreptes rhodolaema*	Red-throated Sunbird
218	*Nectarinia sperata*	Purple-throated Sunbird
219	*Nectarinia calcostetha*	Copper-throated Sunbird
220	*Nectarinia asiatica*	Purple Sunbird
221	*Nectarinia jugularis*	Olive-backed Sunbird
222	*Aethopyga saturata*	Black-throated Sunbird
223	*Aethopyga siparaja*	Crimson Sunbird
224	*Arachnothera longirostra*	Little Spiderhunter
225	*Dendronanthus indicus*	Forest Wagtail
226	*Motacilla citreola*	Citrine Wagtail
227	*Motacilla flava*	Yellow Wagtail
228	*Motacilla cinerea*	Grey Wagtail

MAMMAL

#	Scientific name	Common name
1	*Elephas maximus*	Asian Elephant
2	*Dugong dugon*	Dugong
3	*Ratufa bicolor*	Black Giant Squirrel
4	*Callosciurus erythraeus*	Pallas's Squirrel
5	*Galeopterus variegatus*	Sunda Colugo
6	*Macaca fascicularis*	Long-Tailed Macacque (Crab Eating Monkey)
7	*Macaca nemestrina*	Southern Pig-Tailed Macaque
8	*Trachypithecus obscurus*	Dusky Langur
9	*Tragulus kanchil*	Lesser Mouse-Deer
10	*Sus scrofa*	Eurasian Wild Pig
11	*Tursiops aduncus*	Indo-Pacific Bottlenose Dolphin
12	*Aonyx cinerea*	Oriental Small Clawed-Otter
13	*Paradoxurus hermaphroditus*	Common Palm Civet
14	*Arctogalidia trivirgata*	Small-Toothed Palm Civet (Three Stripe Palm Civet)
15	*Pteropus hypomelanus*	Island Flying Fox
16	*Cynopterus sphinx*	Greater Short-Nosed Fruit Bat
17	*Megaderma lyra*	Greater False Vampire
18	*Taphozous longimanus*	Long-Winged Tomb Bat
19	*Manis javanica*	Sunda Pangolin

ANNEX 3 ACTION PLAN

Lampi Marine National Park - Action Plan
1. Park Operations

Priority action	Zone	Management actions/Activities	Input requirements	Other actors	Year			
		1 Strengthen park operations in collaboration with communities and other stakeholders						
		Establish park HQs in Bokpeyin	2/3 acres land, construction materials, furniture,					
PRIORITY		Recruit staff - staff rotation at MakyoneGalet	25 staff planned					
	LU	Maintain ranger post in Makyone Galet and upgrade as education centre for communities and visitors	Construction materials, basic equipment (mobile phone)	Oikos				
PRIORITY	**LU**	Build two new ranger posts in key areas for resources and threats (Sitta Galet, War Kyunn)	construction materials, basic equipment (mobile phone)	private sector				
PRIORITY	**ALL**	Ensure that Park boundary is properly identified and clearly demarcated.	buoys, floating signs	Oikos, private sector				
PRIORITY	KR	Prepare and hang on site billboards about key resources (hornbills, sea turtles, corals, mangroves, seagrass)	billboards	OIKOS				
		Establish communications office in Kawthoung	1/2 staff, room rent, equipment					
		2 Motivate and build capacity of staff						
		Assess training needs, motivation packages and working equipment	Plan, staff selection , allocation of field allowance and life					
		Implement the training scheme	trainers, venue, materials	Oikos, other NGOs				
		Provide relevant working equipment - boat to each guard post - radiocommunication equipment (ICON)	Allocation of budget	Oikos, other NGOs				
		3 Manage all infrastructure and equipment						
		Periodically maintain buildings and other infrastructure (jetty, etc.)	Maintenance instructions, allocation of budget					

		Regularly maintain boats and machines (generators, solar panels), dispose all wastes as appropriate	Maintenance instructions, allocation of budget					
PRIORITY	LU	Set up internet point in Makyone Galet - radio signal	Allocation of fund					
		4 Develop and enhance Park Revenue Generation						
		Identify mechanisms for sustainable revenue generation (payment for ecosystem services PES - ecotourism)	Enact Law for 50% allocation of revenue collected in the park Environmental conservation law	NWCD, Oikos&other NGOs of				
		Test most promising PES in collaboration with stakeholders	Funding, training	Oikos, other NGOs				
		Build partnership with private sector to support park operations	Set up a coordination mechanism	Oikos, other NGOs				
		5 Build stakeholder collaboration						
		Establish and strengthen collaboration both with national and international stakeholders (NGOs, universities, private sector)	Publishing materials on LMNP and a supervisory committee inclusive of major stakeholders	Oikos, other NGOs				
		Coordinate the role and functions of stakeholders to avoid overlapping	Regular stakeholder consultations and contacts	Oikos, other NGOs				
		Workshop to establish the Limits of Use for the zoning plan	workshop venue and per diem	Oikos				
		Develop exchange programmes with other protected areas	Plan mutual staff visits	Oikos, other NGOs				
		Develop and strengthen transboundary cooperation with Thailand	Exchange information with ASEAN-WEN	Oikos, other NGOs				
		6 Strenghten surveillance patrols in priority areas						
PRIORITY	**ALL**	Develop and test efficient patrol system to monitor threats by rangers (identify routes for monthly patrolling, compile forms)	rangers	Navy, Coast guard, Police				
PRIORITY	**ALL**	Execute patrolling operations	rangers	FD, DOF, Navy, Coast guard, Police				

PRIORITY		Collaborate with Navy and DOF to carry out joint mobile patrolling operations start negotiation at ministerial level 1st year	(3) fast boat and fuel	Regional authorities				
	S	Reinforce protection measures of the cultural sites to avoid theft	Enforce Law in accordance with Patrol Plan	Local authorities				
	LU	Provide training to community groups for joint patrolling the local use zone LMAA	Training Schedule & selection of trainees	Oikos, other NGOs				
		Database system for patrolling illegal activities	GIS expert	Oikos, other NGOs				

Lampi Marine National Park - Action Plan
2. Ecosystem Management programme

Priority action	Zone	Management actions/Activities	Input requirements	Other actors	Year			
					1	2	3	4
		1 Biodiversity inventory and monitoring						
PRIORITY	**ALL**	Preparation of handbook with monitoring protocols for birds, amphibians, reptiles, mammals, mangroves, vegetation, marine resources,seagrass, corals, sea turtles, cetaceans.	Biodiversity experts, boat and fuel, binoculars, GPS, field guide	Oikos, DOF, Experts, Universities				
	ALL	Annual bird survey	2-3 bird experts, boat and fuel, binoculars, GPS, field guide					
	ALL	Annual Amphibians/reptiles survey	2-3 experts, boat and fuel, field equipment (formaline, stick, GPS), fieldguide					
	ALL	Annual Mammal survey	3 experts, boat and fuel, field equipment, field guide					
	ALL	Biennial survey of marine resources every three years	3 experts, Boat and fuel, field guides, snorkeling/diving equipment?	DOF, universities NGOS				
	ALL	Biennial vegetation survey(10 permanent sample plots)	10 people (taxonomists, foresters, laboureres), boat and fuel, field guides, field equipment	FRI				
PRIORITY	**KR**	Biennial mangrove rapid survey	2 rangers, boat and fuel, visual aid	Experts + 2 rangers				
PRIORITY	**KR**	Biennial Reefcheck	4 divers, diving equipment, diving boat, visual aid	DOF, Universities, Navy, other NGOs (FFI, etc.)				
	KR	Annual seagrass rapid survey	2 rangers, boat and fuel, squares, GPS					
	ALL	Update Lampi database with survey results	GIS expert, ArcGIS software					
		2 Research						
	ALL	Develop the park research plan and indicate research priorities.	HQ staff, Universities, DoF					

	ALL	Develop partnerships with universities and NGOs for research activities, regulating type of research (collection of samples, etc.) and ensuring that records are kept in the park database	HQ staff, Universities, NGO					
PRIORITY	KR	Mapping nesting sites of sea turtles and understand timing	2 DOF experts, 2 rangers, boat and fuel, GPS	DOF				
PRIORITY	KR	Collaborate with local communities and DOF to protect and monitor the sea turtle nesting sites during hatching period	2 rangers, boat and fuel, GPS	DOF				
PRIORITY	KR	Counting of plain-pouched hornbill at Ko Phawt roosting site	2 rangers, 1 binocular, 1 GPS, boat and fuel					
PRIORITY	KR	Map and monitor other roosting sites in the park						
	KR	Monitor the presence of feeding tracks of dugong in Lampi East coast	2 rangers, boat and fuel, squares, GPS	universities, NGOS				
	KR	Interviews with local fishermen about dugong and cetaceans	2 rangers, boat and fuel, GPS	universities, NGOS, DoF				
		3 Conserve the hydrological system in the Park						
	ALL	Map and monitor water sources	rangers, GPS, boat and fuel, basic equipment for measuring (hydrometer)					
		4 Exotic species						
	ALL	Eradicate invasive exotic species from the Park and prevent any introduction or re-introduction	Park staff	universities, NGOS				
	ALL	Monitor introduced exotic species	Park staff	universities, NGOS				
		5 Climate change						
	ALL	Install metereological station at Makyone Galet	field equipment	Oikos				
	ALL	Monitor water level and temperature in 5 sites (MG, KP, SG, WK and Leik Kyun)	2 rangers, boat and fuel, Meter, thermometer	universities, NGOS				

Lampi Marine National Park - Action Plan
3. Community Outreach

Priority action	Zones	Management actions/Activities	Input requirements	Other actors	Year			
					1	2	3	4
		1 Improve collaboration and interaction between the Park, the districts, the local communities, fishing boats.						
PRIORITY	**ALL**	Prepare brochure about Lampi park to distribute to stakeholders	Brochure, post costs	Oikos, DOF				
PRIORITY	**ALL**	Bill board set up at the respective Township		DOF/Local authority				
PRIORITY	**LU**	Facilitate regular meetings (combined with education) with resident population	Permanent rangers (Warden+Local)	Oikos/Community				
PRIORITY	**LU**	Initiate and support village conservation groups (VCGs)	rangers, NGOs facilitators, T-shirts (IEC)	Oikos/Community				
	ALL	Organise annual stakeholder meeting (also with NGOs and private sector)		All Stakeholders				
	ALL	Orientation of project to regional government		Govt Stakeholders				
		2 Regulate human settlements and impact						
PRIORITY	**LU**	Collect information and monitor the population trend (migration in and out, ethnicity, livelihoods, etc.)	rangers, village authorities	Immigration/L.Authority, GAD				
PRIORITY	**W**	Control and prevent new human settlements temporary or permanent and illegal human activities	rangers, boat and fuel and communication equipments	Local authorities				
	LU	Support official registration of residents		Immigration				
	LU	Jointly develop land use plans in village area and clearly define what human activities and what level are allowed	maps, GPS, GIS	Oikos, local groups, local authorities				
		3 Environmental Education						
PRIORITY	**LU**	Prepare or adapt education materials to local needs	(Education Tools) posters, powerpoint presentations	OIkos/DOF/University				
PRIORITY	**LU**	In collaboration with local teachers organise seminars at schools and for the adult population at monastery or suitable place	rangers, educators, boat and fuel, projector, stationery for children	Oikos				
	LU	Organise park visits for children and traditional leaders/village leader	rangers, boat and fuel	Oikos				
	LU	Awareness meeting on fisheries methods and tools	DOF officers	DOF				

	BZ	Develop a realistic plan for gradually expanding education and awareness activities in key locations surrounding the park	educator, rangers, boat and fuel					
	BZ	Implement education program in surrounding villages	poster, projector for ppt, rangers					
		4 Upgrade social services in the local use zone						
PRIORITY	LU	Implement appropriate and cost effective water supply infrastructure improvements in collaboration with relevant water user	water expert, local group, village authorities, rangers, materials	Oikos				
	LU	Support to village clinic/dispensary / mobile clinic team	health&sanitation expert, local group, village authorities	Township health department				
	LU	Promote environmental-friendly pit latrines (Fly proof latrines)	health&sanitation expert, local group, village authorities IEC	Oikos				
PRIORITY	LU	Agree with communities on waste management options, division of responsibilities	health&sanitation expert, local group, village authorities (IEC)	Oikos				
		5 Promote the employment and income generation of local people in the park						
	LU	Employ at least 5 local people as Lampi MNP staff	budget FD	FD				
	LU	Identify local products or activities that have income potential and low environmental impact with market approach	assessment by experts	Oikos				
	LU	Provide training course for local tour guides	10 trainees, 1 trainer, training materials, (First aid, Health Care, Emergency response, communication) MOHT Master Plan	Oikos,MOHT, consultants				
	LU	Provide training and support to establish pilot experiences in hospitality (restaurants, souvenir shops, etc.)	experts, trainings, materials	Oikos				

	LU	Support the establishment of a community-based lodge or campsite in line with the MOHT Standard	Construction materials, furniture, tents, water system, solar panels/ Wind turbines	Oikos,MOHT, consultants				
		6 Support Salone people to improve their situation						
	S-LU	Inform Salone people about their rights in the park and support the official registration and citizenship status		Local authorities				
PRIORITY	S-LU	Support initiatives to improve education of Salone people in collaboration with NGOs	teacher, education materials	Oikos				
	S-LU	Support Salon museum and library to be established		other NGOs, donors				
	S	Support the identification, qualification and prioritisation of sites and ceremonies that Salone people are eager to show to tourism	surveys, study mission	Anthropologists, Ministry of Culture, Oikos, other NGOs				
	S	Support with appropriate interpretation signboards/displays for visitors and local community	Standard, Printing materials	Oikos				
	S	Support to form the Salon Local committee for tourism development		Local Authorities				

Lampi Marine National Park - Action Plan
4. Tourism Management

Priority action	Zones	Management actions/Activities	Input requirements	Other actors	Year			
					1	2	3	4
		1 Regulate and manage tourism fees and revenue						
		Meeting between MOECAF and MOHT to define fees and revenues allocation for Lampi MNP	meeting at HQs level	Oikos, other consultants				
		2 Regulate visitor use and impact						
PRIORITY	**ALL**	Carry out awareness raising with public and private sectores on zoning boundaries and park prescriptions	meetings with TOs in Kawthoung and Yangon	Oikos Local Goverment				
PRIORITY	**ALL**	Collaborate with MOHT in developing guidelines for tourism inside Lampi MNP to ensure visitor use is within limits of acceptable use	Model from CBD,tourism Master Plan	Oikos,other consultants				
	ALL	Establish environmental impact standards (incl. water, waste and energy management) for Lampi tourism facilities	Rules,Regulations,Instructions	External EIA company				
	ALL	Ensure that the tourism facilities and infrastructures are developed and maintained according to required standards	Training Shop/restaurant owners, MOHT Master Plan	Local Administration MOHT, Oikos				
	ALL	Facilitate promotion of eco-tourism and partnerships of hotels/lodges with the Park	MOHT Master Plan, Meetings or Workshops	MOHT, Private sector				
		3 Develop and enhance visitor use and access						
	ALL	Collaborate with MOHT in identifying appropriate tour itineraries according to zonal and park-wide prescriptions (including night tours with regulations, rangers)	maps, GPS, Travel Itineraries of tour operators	MOHT, Oikos				
	W	Develop short interpretive trail walks from designated points and appropriate areas for viewpoints	tourism expert, rangers	Oikos, other consultants				

	W	Develop and implement standards for signposts and other facilities and ensure that they are properly located and distributed	tourism expert, rangers	Oikos, other consultants				
	ALL	**4 Improve supply of information on Lampi MNP**						
	ALL	Prepare and print guidebook and map (upload to the Website-Social Network, etc.)	Standard, Printing materials	Oikos, MTF, MOHT				
	ALL	Built visitor centre inside Lampi MNP	Standard, Printing materials	Oikos				
	ALL	**5 Improve tourism management in collaboration with MOHT and Regional Government**						
	ALL	Develop information system to provide park managers with information on visitor numbers and itineraries	Communicatio n system	MOHT, Immigration				
	ALL	Develop simple record keeping by park staff	rangers, computer, internet or phone	Oikos				
	ALL	Questionnaires to visitors about Lampi experience	Staff, computer, phone,forms, social network	Oikos,MOHT, consultants				
	ALL	Develop and test booking system and fees for guided tours and special campsites/lodges	admin officer, computer, forms,Tour operators	Oikos,MOHT, consultants				

ANNEX 4 VISITORS USE AND DEVELOPMENT

Process of Impact Assessment

- Proposers of tourism developments or activities are responsible for undertaking an environmental impact assessment (EIA) and Social Impact Assessment (SIA) to evaluate the impacts of the proposed project or development on the environment and biodiversity, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse. Proposers should provide information to Government.
- Government will undertake evaluation of the adequacy of impact assessments submitted by proposers of tourism developments or activities. This evaluation will need to be undertaken by an appropriately qualified team, drawing on a range of expertise, including expertise in tourism and in biodiversity management, and also involving those indigenous and local communities that would be affected by the proposals. There should be public access to the documentation.
- If the information provided is not sufficient, or the impact assessment inadequate, then further impact assessment studies may need to be undertaken. The proposer may be requested to undertake such studies, or the Government may decide to undertake these studies, and may request funds from the proposer for this purpose, as appropriate. Other stakeholders, including biodiversity managers and indigenous and local communities that may be affected by a proposed development, may also provide their assessments of impacts associated with specific proposals for tourism developments or activities, and provisions may be needed to ensure that any such assessments are taken into account by decision-makers.
- Sufficient time should be allowed considering the different conditions and circumstances to ensure that all stakeholders are able to participate effectively in the decision-making process for any project using information provided by the impact assessment. Such information should be provided in forms that are accessible and comprehensible to all the various stakeholders involved.

BOX 1 Environmental parameters

(a) Use of land and resources for accommodation, tourism facilities and other infrastructure provision, including road, airstrips and seaports;

(b) Extraction and use of building materials (e.g., use of sand from beaches, reef limestone and wood);

(c) Damage to or destruction of ecosystems and habitats, including deforestation, draining of wetlands, and intensified or unsustainable use of land;

(d) Increased risk of erosion;

(e) Disturbance of wild species, disrupting normal behaviour and potentially affecting mortality and reproductive success;

(f) Alterations to habitats and ecosystems;

(g) Increased risk of fires;

(h) Unsustainable consumption of flora and fauna by tourists (e.g., through picking of plants; or purchase of souvenirs manufactured from wildlife, in particular such endangered species as corals and turtle shells; or through unregulated hunting, shooting and fishing);

(i) Increased risk of introduction of alien species;

(j) Intensive water demand from tourism;

(k) Extraction of groundwater;

(l) Deterioration in water quality (freshwater, coastal waters) and sewage pollution;

(m) Eutrophication of aquatic habitats;

(n) Introduction of pathogens;

(o) Generation, handling and disposal of sewage and waste-water;

(p) Chemical wastes, toxic substances and pollutants;

(q) Solid waste (garbage or rubbish);

(r) Contamination of land, freshwater and seawater resources;

(s) Pollution and production of greenhouse gases, resulting from travel by air or sea, at local, national and regional levels;

(t) Noise.

Box 2 Social Parameters

(a) Influx of people and social degradation (e.g. local prostitution, drug abuse, etc.);

(b) Impacts on children and youth;

(c) Vulnerability to the changes in the flow of tourist arrivals which may result in sudden loss of income and jobs in times of downturn;

(d) Impacts on indigenous and local communities and cultural values;

(e) Impacts on health and the integrity of local cultural systems;

(f) Intergenerational conflicts and changed gender relationships;

(g) Erosion of traditional practices and lifestyles;

(h) Loss of access by indigenous and local communities to their land and resources as well as sacred sites, which are integral to the maintenance of traditional knowledge systems and traditional lifestyles.

TENTATIVE BUDGET FOR LAMPI MNP 2014-2017

	FD	OIKOS
PARK OPERATIONS		
NWCD project officer salary	6000	
Park warden salary	12600	
rangers salary	32400	
field assistants salary (from local residents)		18000
per diem park warden and NWCD HQ staff		11250
per diem rangers for patrolling		8100
boat drivers		10800
Two new ranger posts		
Build Education and Visitor Centre in Makyone Galet		35500
solar panels EVC		2000
generator EVC		1000
Furniture EVC		6000
buoys for boundary demarcation		
new motor boat		30000
old motor boats (in kind)	48000	
motorcycles		3000
other public transport		10800
boat rent		6000
Billboards on key resources		5250
training for park staff		10000
trainer fee		1000
training materials		3200
staff equipment		4000
office library		3600
Building maintenance Makyone Galet		2000
Boat maintenance		12000
Fuel for boat (for patroliing)		4000
Internet point / radio		
Training park sustainable management/park fund		2500
trainer fee		250
training materials		800
stakeholder meetings, facilitators per diem		300
stakeholder meetings, participants per diem		5250
meeting materials		1500
exchange programme with Italy		
flights for 2 people		2400

travels inside Italy		3900
insurance x 2		400
hotels/food/per diem x 2		6000
transboundary cooperation with Thailand		
flights to Thailand for 3 people		900
insurance x 3		600
hotels/food/per diem x 3		4200
SUBTOTAL	**99000**	**216500**
ECOSYSTEM MANAGEMENT		
International experts Oikos		49000
National experts		30000
per diem rangers		8100
flights yangon_kawthoung		19600
Fuel for boat		4000
Field equipment		3000
Camping equipment		1000
GIS software		
SUBTOTAL		**114700**
COMMUNITY OUTREACH		
Preparation of village maps		1200
meeting for land use facilitator		450
meeting for land use participants/venue		2250
meeting materials		2250
Environmental educator		2700
poster Environmental Education		1000
Fuel for boat		2500
facilitator 30 seminars		1500
Water supply works		22000
clinic improvement works		
Latrines		4200
waste management		6000
WATSAN expert		4800
WATSAN education brochure		1500
WATSAN education poster		1000
facilitator 30 seminars		1500
5 Training courses for establishing tourism initiatives		12500
Trainers fee		1250

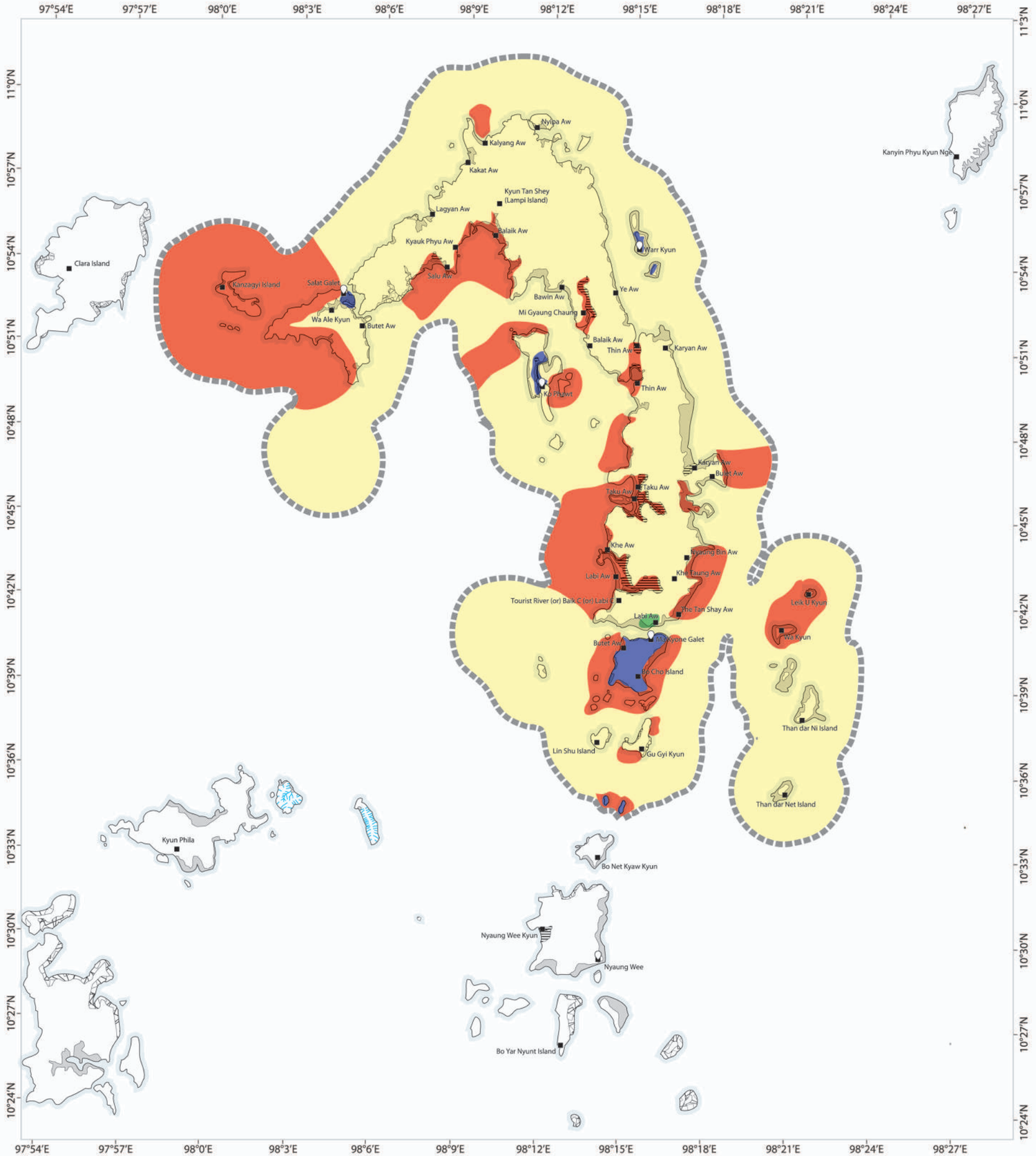
Training materials		4000
Salone museum and library		
SUBTOTAL		**72600**
TOURISM MANAGEMENT		
International tourism expert Oikos		14000
National tourism expert		4800
3 meeting MOECAFT MOHT participants per diem		1500
3 meeting MOECAFT MOHT facilitators per diem		150
3 meeting materials		750
International Communication expert Oikos		22800
guidebook and map		10000
map brochure		5000
website		4000
film documentary on Lampi MNP		30000
SUBTOTAL		**93000**
TOTAL	**99000**	**496800**

MINISTRY OF ENVIRONMENTAL CONSERVATION AND FORESTRY

OIKOS

Draft Zoning Plan for Lampi Marine National Park

1 3 6 12 18 24 kilometres







Legend

- Island Boundaries
- Sand
- Swamp
- Rock
- Stream
- Park Boundaries
- Wilderness zone
- Key resource zone
- Local use zone
- Cultural zone
- Human settlement