National Action Plan
for Marine Turtles
in French Southwest Indian Ocean Territories 2015-2020
Mayotte, Reunion, Scattered Islands

Information Brochure

Green turtle. © J.-S. Philippe

Ressources, territoires et habitats
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Ministère de l'Écologie, du Développement durable et de l'Énergie

Ministry of Ecology, Sustainable Development and Energy

Contents

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I. THE NATIONAL ACTION PLAN (NAP)

I.1 WHAT IS AN NAP?

The aim of a National Action Plan (NAP) is to preserve endangered species and foster collective interest in stopping the loss of biodiversity. It is set up for one or several animal or plant species and determines the actions to be implemented in order to restore or maintain those species in a favourable preservation condition.
Sponsored and managed by the Ministry of Environment, Sustainable Development and Energy, it is designed and implemented in consultation with all relevant stakeholders: Government services, local authorities, scientists, socio-professional actors, park managers, associations, users, and so on.
An NAP is a non-binding guideline document implemented for a period of 5 years, at the end of which it is evaluated and, as the case may be, renewed.
Species to be protected by an NAP are selected on the basis of criteria including their biological situation, geographical distribution, France's responsibility for their preservation, or our capacity to act.

An NAP includes two key components:
- Collecting available knowledge on species falling under the plan; and
- Defining strategic guidelines for maintaining or restoring those species in good preservation conditions, together with a series of measures to be implemented with a view to meeting those objectives.

Green turtle. © J.-S. Philippe/Biotope

I.2 NAP FOR THE CONSERVATION OF SEA TURTLES IN FRENCH INDIAN OCEAN TERRITORIES

The southwest Indian Ocean sea turtle NAP follows the general NAP objectives and falls within the Overseas Action Plan set up as part of the 2007 French Government environmental objectives (Grenelle de l'Environnement). It is also the local variant of the National Strategy for Biodiversity; as such, it addresses France's commitments to the preservation of nature, and more particularly of endangered species (Rio Convention on Biological Diversity, Memorandum of Understanding on the Preservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia [IOSEA]).

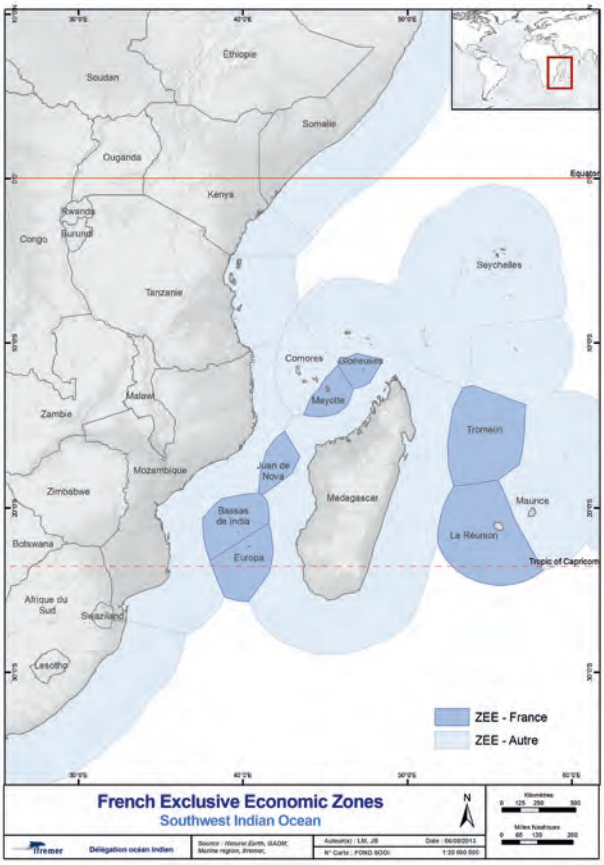
This plan is designed to protect 5 species of sea turtles living in the southwest Indian Ocean. It applies to French territories, including present or past distribution areas of those species in this part of the Indian Ocean.
The Action Plan covers the whole distribution area of those migratory species and includes 3 specific sub-action plans for Mayotte, the "Scattered Islands" (Îles Éparses) and Reunion Island, as well as a "regional" component setting those specific NAPs within a more global context:

- **VOLUME 1** Common Part: Knowledge assessment, operational strategy and regional action plan;
- **VOLUME 2** Action Plan to protect Mayotte sea turtles;
- **VOLUME 3** Action Plan to protect Reunion Island sea turtles;
- **VOLUME 4** Action Plan to protect Scattered Islands sea turtles.

This NAP was approved by the scientific agencies having jurisdiction for each territory in 2014: Mayotte's Scientific Council for Conservation of Nature (CSPN); Reunion Island's Scientific Council for Conservation of Nature (CSRPN); experts appointed by the TAAF (French Southern & Antarctic Territories) as regards Scattered Islands; and, at national level, the National Council for Conservation of Nature (CNPN). In addition, the opinions of international marine turtle experts and relevant organisations such as IOSEA were taken into account for establishing this NAP.

II. FRENCH SOUTHWEST INDIAN OCEAN TERRITORIES

French territories in the southwest Indian Ocean consist of two overseas departments (Reunion and Mayotte) and the Scattered Islands, which make up the 5th District of the French Southern and Antarctic Territories. All those islands are spread over nearly 15° latitude and surrounded by extensive Exclusive Economic Zones; they have an incredible variety of environments and habitats conducive to the development of the various turtle species at their different stages.



- **MAYOTTE**

Mayotte is part of the Comoros archipelago. It became a French Overseas Department in 2011 and obtained the status of EU Outermost Region (OR) in 2014. Mayotte is surrounded by an extensive lagoon (1,500 sq km) and a multitude of islets. This island is home to remarkable natural habitats such as coral reefs and sea grass beds (over 700 ha). The Mayotte coastline hosts various environments and facies including mangroves. More than a third of all known beaches are sea turtle nesting sites. Urbanization is concentrated along the coast, where population pressure increases. To cope with the territory's rapid development, it is essential to reconcile economic requirements and the preservation of an exceptional natural heritage.

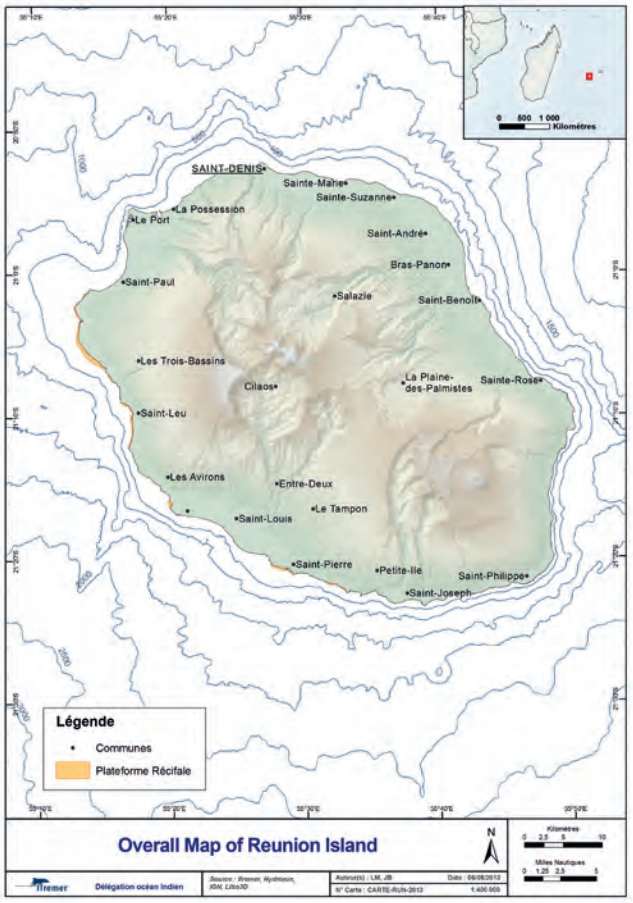
In Mayotte, sea turtles are both subject to heavy poaching and to a growing interest as tourism is developing.

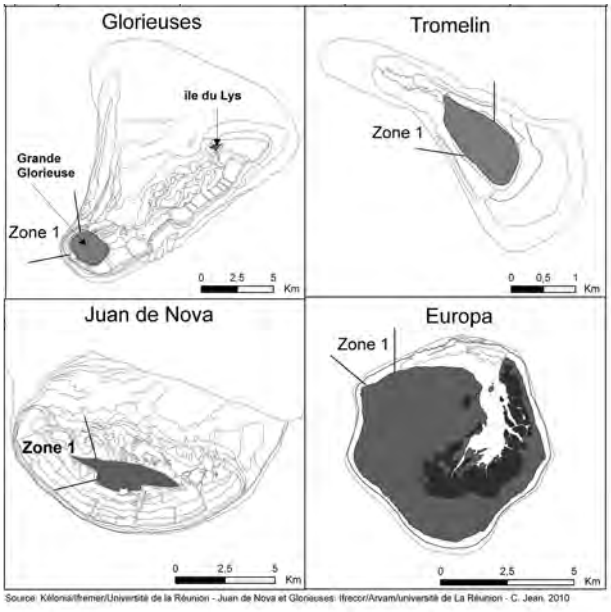
REUNION ISLAND

La Réunion is part of the Mascarene archipelago. It has the highest number of inhabitants of all French Overseas Departments, and its population is growing quickly.

Because of its mountainous terrain, urban areas are densely concentrated along the coast and at low altitudes. Urban sprawl has actually caused the destruction of two-thirds of native wildlife habitats. The island is classified as a global biodiversity hot spot. Its shoreline consists mainly of beaches, cliffs and basalt coasts.

Coral formations can be found in the west and south of the island; they are favourable habitats for the development of marine turtles. Eggs were laid in plenty before the arrival of man, but nesting is now very rare.





Overall map of the four coral islands making up the Scattered Islands District. (C. Jean, 2010)

SCATTERED ISLANDS

The Scattered Islands were incorporated into the TAAF in 2007 and are classified as French Overseas Lands and Territories (PTOM). They include five islands: Bassas da India (an atoll mostly submerged even at low tide), Europa, Juan de Nova, Glorieuses and Tromelin (four coral islands). These islands have restricted and targeted human activity (weather stations and military detachments). After 40 years with no human impact, they are a real sanctuary for marine and land biodiversity. The island of Europa, in particular, has a pristine mangrove with natural exceptional value. These islands are propitious habitats for sea turtles, sheltering an exceptional number of nesting females and hatchlings. Green turtles can be seen laying eggs in abundance on all Scattered Islands, but hawksbill turtles lay eggs only on Juan de Nova and Glorieuses.

III. THE 5 SPECIES OF MARINE TURTLES

III.1 SPECIES DESCRIPTION

- **Green Turtle (*Chelonia mydas*)**

The green turtle is found in all tropical seas. It is abundant in the southwest Indian Ocean, and is fond of coral habitats, mangroves and sea grass beds. As an adult, it is mainly herbivorous. Its average length and weight are 110 cm and 145 kg. Its olive green shell has 4 pairs of costal scutes. Breeding takes place every 3-5 years with seasonal variations according to latitude.

- **Hawksbill Turtle (*Eretmochelys imbricata*)**

The hawksbill turtle is the most equatorial of all turtle species. It enjoys coral reefs and shallow waters. When adult it is mainly carnivorous, feeding on sponges, sea anemones, etc. Its average length and weight are 90 cm and 60 kg. Reproduction generally takes place during the hotter periods of the year.

- **Loggerhead Turtle (*Caretta caretta*)**

The loggerhead turtle is found in temperate and tropical areas. It lives in the ocean, with a basically carnivorous diet when adult. It has a reddish brown shell; its average length and weight are 100 cm and 110 kg. The main Indian Ocean nesting sites are located along the coasts of Oman, South Africa and south Mozambique.

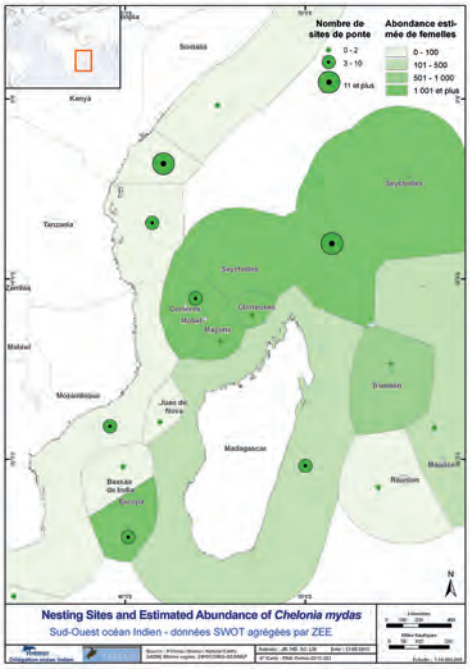
- **Olive Ridley Turtle (*Lepidochelys olivacea*)**

The olive ridley turtle is found in Indo-Pacific and Atlantic inter-tropical zones. It mainly lives offshore, along continental shelves. It is omnivorous when adult, feeding on algae, crabs, jellyfish, etc. Its average length and weight are 70 cm and 45 kg. Its shell is olive green. Very little data is available on this species in the southwest Indian Ocean, where no regular nesting site has been observed.

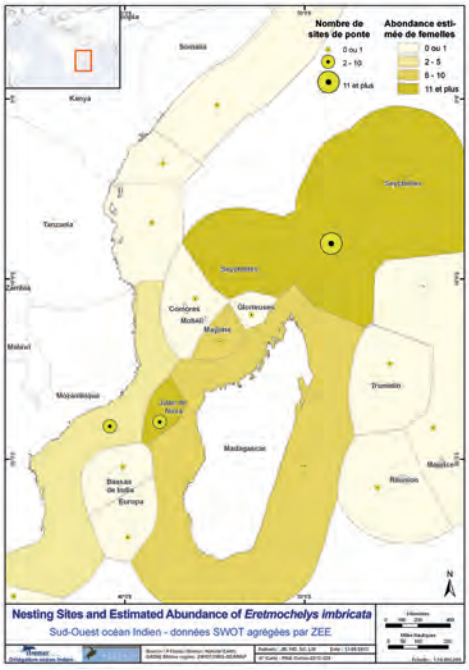
- **Leatherback Turtle (*Dermochelys coriacea*)**

The leatherback turtle is found in all tropical and temperate areas. As a pelagic turtle, it feeds mainly on gelatinous preys of the jellyfish type. Its average adult length and weight are 170 cm and 450 kg. Its shell is bluish black, with no scutes. Nesting sites are mainly located along the coasts of South Africa and south Mozambique.

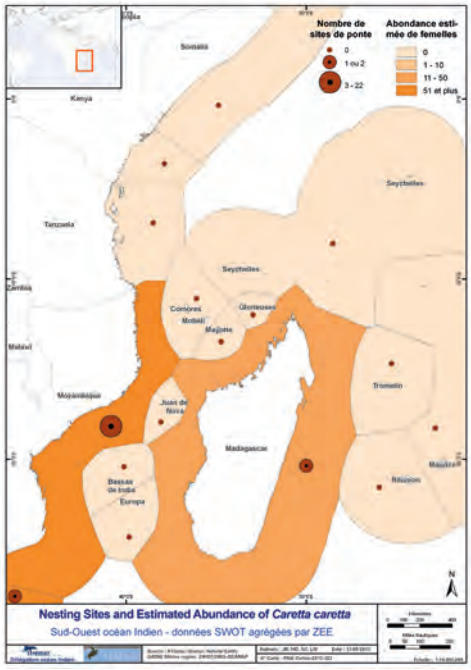
Green Turtle



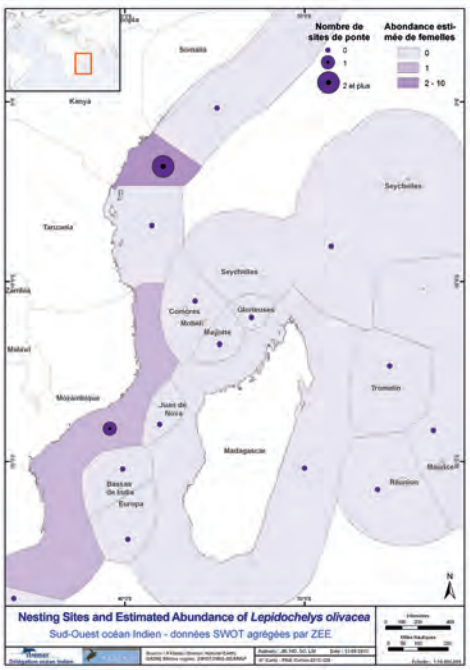
Hawksbill Turtle



Loggerhead Turtle



Olive Ridley Turtle



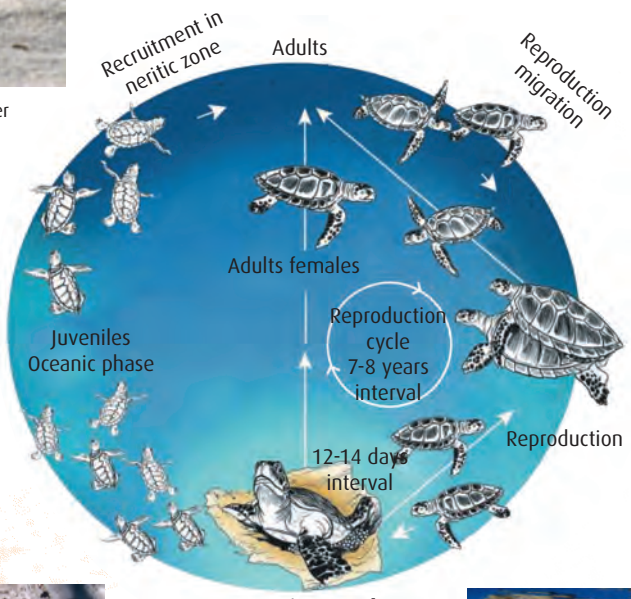
Leatherback Turtle

III.2 A SPECIFIC BIOLOGICAL CYCLE

Marine turtles are long-lived species. They use and occupy very different habitats during their various life cycle. Incubation lasts 50 to 90 days according to the season. Temperature is essential for embryonic development; in particular, nest temperature determines the sex of newborns. Emergence usually takes place in late afternoon or at night when sand temperature drops. Very vulnerable hatchlings begin a "swim frenzy" away from the coast towards the sea. A sea drift period begins, during which juveniles feed on plankton. This phase can last several years; turtles are then carried by ocean currents. In coastal species, juveniles reach shallow habitats to feed and continue their development. Turtles generally remain close to feeding areas. At sexual maturity, they start migrating towards the breeding sites where they were born. Mating takes place near the nesting beaches. The female lays 100 to 200 eggs in a nest dug in the higher part of the beach. It can lay eggs several times 12 to 15 days apart during one same season. When adult, turtles go to their feeding grounds to build up their fat reserves before starting a new spawning migration 3 to 4 years later. The degree of loyalty to the nesting site depends on the species.

Baby turtles leaving the nest. © J. Bourjea/Ifremer

Overall marine turtle lifecycle
(modified, after Lanyon *et al.*, 1989 in FAO, 2009).



Emergence of small turtles. © S. Ciccione/Kelonia

Mating. © J. Bourjea/Ifremer

III.3 REMARKABLE AND ENDANGERED SPECIES

Legal protection status
International conventions
Washington (CITES - Annex 1) – International Trade
Bonn (CMS) – Migratory Species
Berne – Wildlife
RAMSAR – Wetlands
Rio – Biological Diversity
Regional conventions
Nairobi – Western Indian Ocean Marine Environment
IOSEA – Indian Ocean South East Asia (IOSEA) Memorandum of Understanding on Marine Turtles
IOTC Resolution 12/04 – Marine Turtles-Fisheries Interaction
National (French) regulations
Order 14 October 2005 setting the list of protected marine turtles
Articles L.411-0 to L.411-2 of the Environment Code (Protection of species)
Main regulatory texts – Mayotte
Prefectoral Order No. 518/SG 8 April 1991 – Protection of Marine Turtles
Prefectoral Order No. 347/DAF 7 August 2000 *Chelonia mydas/Eretmochelys imbricata*
Prefectoral Order No. 40/DAF 11 June 2001 (Sanctuary)
Prefectoral Order No. 42/DAF 5 August 2005 (Habitat)
Order 18 January 2010 providing for the creation of the Park
Main regulatory texts - Reunion Island
Interdepartmental Decree No. 2007-237 providing for the creation of the Reunion Island Marine Reserve
Main regulatory texts - Scattered Islands
Prefectoral Order No. 13/DG/IOI 18 November 1975 listing Tromelin, Glorieuses, Europa and Bassas da India as Natural Reserves
2011 listing of Europa as a Ramsar Site
Decree No. 2012-245 22 February 2012 providing for the creation of the Glorieuses National Marine Park
Prefectoral Order No. 2010-151 9 December 2010 prohibiting fishing in Scattered Islands territorial waters and within 10 nautical miles around Banc du Geyser
Prefectoral Order No. 2014-51 23 April 2014 providing for the fishing of tuna and other pelagic fish in the Scattered Islands EEZ and including regulatory provisions aimed at limiting the impact on marine turtles

Both worldwide and in the Indian Ocean, **sea turtle populations face many threats** with different forms depending on the area concerned:

- Human population growth;
- Development of human activities impacting coastal nesting habitats (human presence, stray animals, development of invasive alien species, light pollution, etc.) and water quality;
- Turtle and turtle egg poaching;
- Accidental or deliberate impact of fishing;
- Marine pollution and solid waste;
- Climate change.

The five NAP-targeted turtle species are threatened and included in the International Union for Conservation of Nature (IUCN) red list as Critically Endangered (CR), Endangered (EN) and Vulnerable (VU). The preservation condition of each species in each territory was assessed according to a method developed by the French National Museum of Natural History (MNHN). Two species are in an unfavourable preservation condition: the Green Turtle and the Hawksbill Turtle. Information on other species is insufficient to allow proper evaluation.

Summary Table of Conservation Condition Assessment for the 5 NAP-targeted Species

	Chelonia mydas	*Eretmochelys imbricata*	*Caretta caretta*	*Lepidochelys olivacea*	*Dermochelys coriacea*
UICN International	Endangered	Critically endangered	Endangered	Vulnerable	Critically endangered
Mayotte	UNFAVOURABLE TO BAD	UNFAVOURABLE TO BAD	UNDETERMINED	UNDETERMINED	UNDETERMINED
Reunion	UNFAVOURABLE TO BAD	UNFAVOURABLE TO BAD	UNDETERMINED	UNDETERMINED	UNDETERMINED
Scattered Islands	UNFAVOURABLE INADEQUATE	UNFAVOURABLE INADEQUATE	UNDETERMINED	UNDETERMINED	UNDETERMINED

Waste accumulation on a beach used by sea turtles.© J. Bourjea/Ifremer

Shells from poaching. © R. Ravon

Stomach content found in a turtle. © Kélonia

Poaching evidence; shells found on backshore destroyed after registration. © T. Crocetta

X-ray of turtle caught accidentally by fishery.
© Kélonia

Turtle entangled by plastic waste at sea. © J. Bourjea/Ifremer

III.4 EMBLEMATIC SPECIES WITH SOCIAL AND ECONOMIC SIGNIFICANCE

Sea turtles used to be appreciated for the economic value of their scales in jewel-making or for their flesh and eggs as food; they are now seen more as a symbol of coastal and island tourism and as tokens of exceptional wildlife. Customary, cultural and economic practices of the territories have witnessed major changes since the mid-20th century. In Mayotte, although poaching is still present, turtles are increasingly seen as a dynamic vector of a new development strategy.

III.5 ACTIONS ALREADY UNDERTAKEN FOR THE CONSERVATION OF TURTLE SPECIES

Several actions have been taken in favour of sea turtles, both at local and regional level. They are generally aimed at awareness and education, protection and restoration, knowledge increase and scientific monitoring. In the various territories, many actions have been implemented and are ongoing. Some examples of actions implemented at regional level are presented below.

- **Examples of actions implemented at regional level**
  - **Limiting the impact of tropical tuna fishing on sea turtles.** This action is part of Indian Ocean Tuna Commission (IOTC) Resolution 12/04 and applies to all of its member states. It includes consideration of turtles by fishing crews, in particular through information on methods for identifying, unhooking and handling turtles. As a general rule, the resolution asks countries to develop fishing gear that reduces impacts on sea turtles.
  - **Implementing the management plan set up as part of the IOSEA Agreement** (Memorandum). This includes 24 programs and 105 activities (e.g. Prog 2.1: Establish the necessary measures to protect and conserve marine turtle habitats).

Sea turtle identification booklet and handling guidelines in case of accidental catch (IOTC, 2012). © Bourjea/Ifremer

IV. OPERATIONAL STRATEGIES AND GUIDELINES

IV.1 SPECIES CONSERVATION NEEDS AND ISSUES

Sea turtle conservation involves protection of land and marine environments including all habitats used by those migratory species in their biological cycle. Conservation needs vary depending on the specificities of every territory, be they ecological, cultural or economic, and are based on common principles:

1. Preserving the various lifecycle habitats;
2. Reducing anthropogenic threats;
3. Deepening knowledge about the dynamics of the various species, their biology and conservation condition.

IV.2 LONG TERM STRATEGIES BY SPECIES

The main objective of this NAP is to increase the populations of each species of sea turtles. For that purpose, a strategy is adopted for each species on the basis of its conservation condition and the local context in each territory. Actions for the **green turtle and hawksbill turtle** (coastal species) will be initially aimed at the protection and conservation of coastal areas and shorelines, in particular to reduce threats and **promote nesting on islands** in the region. Priority is given to these two species because they are the most abundant and they reproduce on French Indian Ocean territories. The strategy for the more pelagic species—**loggerhead, leatherback and olive ridley turtles**—will be mainly focused on **reducing threats at sea**, particularly in connection with fishing (accidental catches, etc.). Knowledge of those species is still incomplete and will have to be deepened at regional level.

IV. 3 MAIN REGIONAL AND LOCAL OPERATIONAL STRATEGIES

In the southwest Indian Ocean, turtle conservation and protection strategy is defined through five specific objectives including several key actions with guidelines (ranking differently according to each territory).

- **In the southwest Indian Ocean as a whole**

1. Identify and reduce threats (both primary and secondary);
2. Inform and communicate on turtle and habitat conservation;
3. Increase knowledge of turtle population ecology and structure;
4. Identify and assess conservation conditions;
5. Strengthen regional cooperation.

- **On Mayotte**
  - Reduce cases of human-induced mortality (poaching);
  - Ensure that sea turtles can access the island through protection, management and/or restoration of habitats of major interest and maintain ecological connectivity;
  - Sensitise communities (public awareness strategies);
  - Regularly monitor sea turtle populations and threats through protocols standardized and harmonized at regional level;
  - Improve knowledge of marine turtle biology and ecology;
  - Further the local conservation strategy by implementing the regional conservation plan (IOSEA) and strengthening regional cooperation.

- **On Reunion Island**
  - Protect and restore habitats of major interest;
  - Sensitise communities and communicate on the issues;
  - Strengthen regional cooperation;
  - Increase knowledge about distribution of and threats to species.

- **On Scattered Islands**
  - Maintain research and conservation partnerships;
  - Improve scientific knowledge on marine turtles and ensure permanent monitoring;
  - Strengthen regional cooperation and active involvement in regional networks;
  - Continue efforts for the protection and listing of the Scattered Islands and implement management measures adapted to the specificities of the territory;
  - Sensitise users.

Hawksbill turtle. © J. Bourjea/Ifremer

V. THE 4 ACTION PLANS

V.1 A COMMON FRAMEWORK FOR THE VARIOUS PLANS

A vast network of partners and stakeholders acting at various levels (local to international) was engaged in the development of the NAP. Monitoring structures made consultation possible at all design stages of this document: a regional steering committee and local monitoring committees. In addition, international and local opinions provided experience from various partners (experts and specialists, institutions and associations, etc.).
Specific indicators updated every year are used to track the implementation of actions and assess their relevance.
An overall assessment tool will be designed for each species at the end of the NAP to determine its conservation target performance level.

V.2 MAJOR COMMON OBJECTIVES

Regional actions under the NAP have a specific objective in view: **contribute to the study and conservation of marine turtles and their habitats at regional level.**
In addition to being connected to the regional plan, local action plans have five major common specific objectives:
1) Ensure proper implementation of the NAP;
2) Reduce marine turtle mortality (resulting from human or other activities);
3) Protect and restore key habitats of marine turtles;
4) Advance knowledge of marine turtle population and habitat biology and ecology;
5) Make the population aware of conservation challenges regarding marine turtles and their habitats.

Each objective is divided into several operational lines, along which actions are defined.

Turtle release. © L. Beche/Imagessaime

Predation by frigatebirds. © J. Bourjea/Ifremer

V.3 REGIONAL ACTION PLAN

In all, **12 regional actions** have been defined, for a **total cost** of **€800,000 over 5 years**. The amount requested as part of this NAP is €660,000 over 5 years.

NAME OF ACTION	PRIORITY	ACTION FIELD
Objectif: Contribute to the study and conservation of marine turtles and their habitats on the regional scale		
REG1.1.1. Monitor the regional plan in line with local plans and promote its implementation	1	Protection
REG1.2.1. Energize and sustain a network of actors in the conservation and management of marine turtles on regional scale	1	Protection
REG1.2.2. Develop and optimize interoperable regional data banking	1	Protection - Study
REG1.3.1. Define and apply a French regional communication plan	3	Communication
REG1.4.1. Develop partnerships and research and management projects at regional level	2	Protection - Study
REG1.4.2. Contribute to the development of regional research and management capacities	3	Formation - Study
REG1.5.1. Study interactions with longline fisheries	2	Study
REG.1.5.2. Study interactions with small-scale fisheries	2	Study
REG.1.5.3. Study the genetic structure of marine turtles in the SWIO	2	Study
REG1.5.4. Study migratory connectivity of marine turtles in the SWIO	2	Study
REG1.5.5. Study the influence of climate change on turtle habitats and resilience measures	3	Study
REG1.5.6. Draw up a regional summary of marine turtle knowledge	2	Study

Loggerhead turtle with beacon. © J. Bourjea/Ifremer

Seminar on marine turtles. © Kélonia

FOCUS ON ONE REGIONAL ACTION

ACTION 1.4.1: « Develop partnerships and research and management projects at regional level »

Context and overall description:

Regional cooperation is crucial for the preservation and sustainable management of these migratory species, with support from existing institutions such as members of the IOSEA Memorandum.

Action content:

1/ Increase internal French cooperation in the Indian Ocean

- Continue and structure collaboration between the stakeholders of the three different French territories (operating procedures, annual schedule, technical meetings, seminars, etc.)

2/ Foster exchanges and set up regional partnerships and projects

- Continue and develop collaborations and projects at regional and international levels, and adjust exchanges and partnerships accordingly.

This action with an overall Indian Ocean reach is to be implemented in line with France's various commitments to sea turtle conservation.

Various actors and stakeholders are to take part in this action (Governments, local authorities, research institutes, protected marine areas, IOSEA's WIO-MTTF, etc.).

V.4 FOCUS ON ONE REGIONAL ACTION

15 actions have been defined for Mayotte, with a total cost of **€ 1,478,800 over 5 years**.

NAME OF ACTION	PRIORITY	ACTION FIELD
Objectif 1: Ensure proper implementation of the National Action Plan		
MAY1.1.1. Promote implementation of the NAP and enhance its actions	1	Protection - Communication
Objectif 2: Reduce marine turtle mortality		
MAY2.1.1. Assess and communicate on the direct causes of turtle mortality	1	Study - Communication - Protection
MAY2.1.2. Strengthen monitoring and control actions	1	Protection
MAY2.1.3. Contribute to changing fishing practices	1	Protection - Communication - Study
MAY2.1.4. Control stray dogs	1	Protection, Communication
MAY2.1.5. Control physical shoreline and lagoon pollution	1	Protection - Communication
MAY2.2.1. Improve supervision and management of stranded turtles	2	Protection - Study
Objectif 3: Protect and restore key habitats of marine turtles		
MAY3.1.1. Carry out ecological monitoring of turtle populations and relevant habitats	1	Study - Communication
MAY3.2.1. Minimise man-induced impacts within marine turtle habitats	1	Protection - Communication Study
MAY3.2.2. Understand man-induced impacts	2	Study
Objectif 4: Advance knowledge of marine turtle population and habitat biology and ecology		
MAY4.1.1. Study turtle food ecology	2	Study
MAY4.1.2. Study turtle reproduction ecology	3	Study
MAY4.1.3. Study turtle population connectivity	3	Study
MAY4.2.1. Identify diseases and health risks	3	Study - Protection
Objectif 5: Make the population aware of conservation challenges regarding marine turtles and their habitats		
MAY5.1.1. Familiarise Mayotte population with turtlesahoraise	2	Study - Communication
MAY5.2.1. Improve, enhance and diversify eco-tourism products	3	Communication
MAY5.2.2. Study the place of marine turtles in Mayotte community	2	Study

FOCUS ON ONE MAYOTTE ACTION

ACTION MAY2.1.2 «Strengthen monitoring and control actions»

Context and overall description:

Today, insufficient or sometimes non-existent controls at sea and on nesting beaches are one of the most limiting factors of the local sea turtle conservation program. Involvement of local communities in a conservation management program can usefully complement police control actions.

Action content:

1/ Step up surveillance and police control activities
- Seashore (nesting beaches) or offshore control, fishery product monitoring, and sensitisation of stakeholders (users, judicial institutions, etc.).

2/ Maintain anti-poaching surveillance on key nesting sites
- Continue monitoring of sensitive Moya and Saziley hatching sites, combining control and sensitisation.

3/ Train village relay points
- Train coastal villagers to become local relay/contact points for the preservation of sea turtles and their habitats.

Various stakeholders are to contribute jointly to marine turtle conservation, awareness, control and monitoring on Mayotte (French Government, Department Council, Mayotte Marine Natural Park, authorities having jurisdiction for surveillance or villages concerned, etc.).

This action will depend on the amount of human and financial resources allocated to it; it is also to be considered in connection with the difficult social and economic context of the Comoros archipelago.

Poaching of sea turtles in Mayotte (shell). © K. Ballorain

V.5 REUNION ISLAND ACTION PLAN

21 actions have been defined for Reunion Island, with a t**otal cost** of **€1,663,250 over 5 years** (amount requested as part of this NAP for Reunion Island: Ð1,000,750).

NAME OF ACTION	PRIORITY	ACTION FIELD
Objectif 1: Ensure proper implementation of the National Action Plan		
RUN1.1.1. Ensure coordination of plan actions and consolidate funding of priority actions	1	Protection
RUN1.2.1. Disseminate a summary of the plan	2	Communication
Objectif 2: Reduce marine turtle mortality		
RUN2.1.1. Give fisheries advice on turtle conservation	2	Protection/ Communication
RUN2.1.2. Control stray animals	1	Protection
RUN2.2.1. Ensure that injured turtles will always be treated at the Kelonia care centre	1	Protection
RUN2.3.1. Ensure that injured turtles will always be treated at the Kelonia care centre	1	Protection
Objectif 3: Protect and restore key habitats of marine turtles		
RUN3.1.1. Control organic, physical and chemical pollution (catchment area, water masses, lagoon, etc.)	2	Protection Communication
RUN3.2.1. Limit turtle disturbance on nesting beaches	1	Protection
RUN3.2.2. Restore nesting beaches	1	protection
RUN3.3.1. Define and implement protection of current nesting sites	1	Protection
RUN3.4.1. Sensitise and train managers and communities/authorities; Set up a guide for shoreline development	2	Protection Communication
Objectif 4: Advance knowledge of marine turtle population and habitat biology and ecology		
RUN4.1.1. Study feeding habits and strategies of marine turtles and their impact on species reproduction	2	Study
RUN4.1.2. Study the functional role of species in their ecosystems	1	Study
RUN4.1.3. Study the consequences of human presence on feeding habitats	3	Study
RUN4.2.1. Study marine turtle reproduction strategies	1	Study
RUN4.3.1. Carry out genetic study of females and juveniles	2	Study
RUN4.3.2. Maintain turtle monitoring programmes on Reunion Island	1	Study
RUN4.4.1. Carry on monitoring turtle mortality causes and relate them to regional data	3	Study
Objectif 5: Make the population aware of conservation challenges regarding marine turtles and their habitats		
RUN5.1.1. Sensitise communities as well as beach and sea users	1	Communication
RUN5.2.1. Improve, enhance and fine-tune the eco-tourism approach in connection with turtles	2	Communication
RUN5.3.1. Carry on and develop actions aimed at giving turtles pride of place as a heritage element	1	Communication

FOCUS ON ONE REUNION ISLAND ACTION

ACTION RUN3.2.2 «Restore nesting beaches»

Context and overall description:
Sea turtles used to lay eggs in plenty in historical times, but stopped in the second half of the 20th century. After a pilot operation for seashore vegetation restoration was conducted in Saint-Leu in 1999, turtles started laying eggs there again.
Action content:
1/ Identify priority restoration sites
- Identify sites likely to benefit from seashore vegetation restoration (historical nesting data, beach facies, conservation condition of coastal vegetation, anthropogenic threats, attendance, land and regulatory status, etc.).

2/ Consult with relevant actors and stakeholders
- Select the most favourable site(s) in consultation with the various partners;

3/ Draw up a technical guide
- Draw up technical beach restoration guidelines (plant range, watering methods, etc.).

4/ Implement seashore vegetation restoration actions
- Rehabilitate the selected site according to specifications.

All institutional, scientific and technical stakeholders must be mobilised for this action, which will bear fruit in the medium to long term.

Beach restoration operation on Reunion Island. © S. Ciccione/Kelonia

V.6 SCATTERED ISLANDS ACTION PLAN

16 actions have been defined for Scattered Islands, with a **total cost** of **€1,368,100 over 5 years** (amount requested as part of this NAP for Reunion Island: Ð605,000. Joint financing of some €500K has already been sourced).

NAME OF ACTION	PRIORITY	ACTION FIELD
Objectif 1: Ensure proper implementation of the National Action Plan		
EPA1.1.1. Implement actions of the Turtle NAP Scattered Islands component in line with the Indian Ocean NAP and other public policies carried out on Scattered Islands	1	Protection
EPA1.2.1. Disseminate the Scattered Islands NAP and provide information on its progress and results	2	Communication
Objectif 2: Reduce marine turtle mortality		
EPA2.1.1. Strengthen and prolong the fishing observer system deployed on high sea fishing vessels	2	Protection
EAP2.1.2. Ensure permanent training of fishing observers on the marine turtle issue	2	Protection
EPA2.2.1. Support the strengthening of monitoring measures for Ile du Lys and the Glorieuses lagoon	1	Protection
Objectif 3: Protect and restore key habitats of marine turtles		
EPA3.1.1. Establish a research program on non-native plant species and their potential impacts on the use of nesting beaches and turtle breeding	2	Study
EPA3.2.1. Where necessary, establish a rehabilitation plan for the more degraded coastal plant species.	3	Protection
EPA3.3.1. Strengthen the protection of globally important habitats by proceeding with the project aimed at listing Europa as an RNN (National Natural Reserve)	1	Protection
EPA3.4.1. Include Scattered Islands in the Network of Important Sites for Indian Ocean Marine Turtles (IOSEA Network)	3	Protection
Objectif 4: Advance knowledge of marine turtle population and habitat biology and ecology		
EPA4.1.1. Make nesting trace monitoring programmes permanent and feed databases (BDD TORSOOI)	1	Study
EPA4.2.1. Identify regional connectivity of green turtles reproducing on Scattered Islands	2	Study
EPA4.2.2. Revalue reproduction parameters of green turtles nesting on Scattered Islands	1	Study
EPA4.2.3. Determine the origin as well as space and time dynamics of immature green and hawksbill turtles present on Scattered Islands	2	Study
EPA4.2.4. Determine the origin as well as space and time dynamics of hawksbill turtles laying eggs on Juan de Nova	1	Study
Objectif 5: Make the population aware of conservation challenges regarding marine turtles and their habitats		
EPA5.1.1. Sensitise fishing crews to direct and indirect impacts of fisheries on sea turtles	2	Communication
EPA5.2.1. Sensitise island users	1	Communication

FOCUS ON ONE SCATTERED ISLANDS ACTION

ACTION EPA4.1.1 «Make nesting track monitoring programmes permanent and feed databases (TORSOOI)»

Context and overall description:

As uninhabited nature reserves, these islands are an ideal reference for monitoring the evolution of the environment. Long series acquired through scientific programs conducted by Kelonia and Ifremer on the Scattered Islands, integrated into the Southwest Indian Ocean Turtle Database (TORSOOI), allow monitoring of reproduction and status changes of these species. These data also inform national (National Biodiversity Observatory) and international IUCN indicators. This action is part of the indicator monitoring process used to evaluate the efficiency of certain measures of this NAP.

Action content:

1/ Continue training of operators (gendarmes and TAAF personnel staying on Scattered Islands, etc.) for counting turtle traces according to a standard protocol developed by Kelonia and Ifremer

2/ Trained personnel must continue counting daily downward traces.

3/ Integrate all data into the central TORSOOI database and all national databases (SINP, etc.).

Although it is aimed at a small number of people, this action requires significant investment in terms of training time because personnel turnover is high in those remote islands.

Green turtle after laying eggs. © Sophie Marinesque / TAAF

VI. NAP IMPLEMENTATION AND FUNDING

VI.1 IMPLEMENTATION AND MONITORING COMMITTEES

The Reunion Island DEAL (Directorate for Environment, Development & Housing) is responsible for coordinating the NAP. In consultation with the Ministry, it draws on various operators to lead and coordinate the actions of the 4 action plans:

- Regional Action Plan: Kélonia, the observatory of marine turtle;
- Reunion Island Action Plan: Kélonia, the observatory of marine turtle;
- Mayotte Action Plan: Mayotte Marine Natural Park;
- Scattered Islands Action Plan: TAAF (direct management).

These operators are responsible for the promotion, coordination, secretary services, engineering and communication aspects of the plan.

In each territory, a local monitoring committee brings together key stakeholders. Its aim is to assist the operator in monitoring and evaluating the implementation of actions at local level. At regional level, a steering committee also ensures that actions in each territory are consistent with those in other territories and that they are in line with the overall articulation of international programs. These committees meet at least once a year.

VI.2 FUNDING AND DONORS

On the model of what has been done for several years now, this NAP applying to 5 turtle species and a territory of more than 900,000 sq km (nearly 10% of the French EEZ) should be funded by a broad range of financial partners: the EU, French Government and local authorities, as well as institutional (Ifrecor, FFEM, WWF, AFD, etc.) and private stakeholders (foundations, various companies, etc.). Lastly, where development projects affect marine turtles, certain actions of this NAP may be financed by compensatory measures.

Proactive search for public and private donors will therefore be necessary to finance the implementation of this NAP. Everyone is concerned: if you wish to participate, contact Kelonia (E-mail: kelonia@museesreunion.re) or DEAL Reunion (E-mail: deal-reunion@developpement-durable.gouv.fr). Mayotte, contact PNMM (parcmarin.mayotte@aires-marines.fr). Scattered Islands, contact TAAF (sophie.marinesque@taaf.fr)

Website

Document available at the following web-link

http://www.reunion.developpement-durable.gouv.fr/publications-et-etudes-r107.html

Reference

Philippe JS., Bourjea J., Ciccione S., Ballorain K., Marinesque S., Glenard Z. 2014. *Plan national d'actions en faveur des tortues marines des territoires français de l'océan Indien: La Réunion, Mayotte et Îles Éparses (2015-2020).* Ministère de l'Écologie, du Développement durable et de l'Énergie, Direction de l'Environnement, de l'Aménagement et du Logement de La Réunion. Biotope, Kelonia, Ifremer, Parc Naturel Marin de Mayotte, TAAF, Phaeton Traduction. 4 volumes, 312 p.

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