

Monitoring Factsheet: Marine Reptiles & Marine Mammals

October 2015

1. Subject: Marine Reptiles & Marine Mammals

Species of marine reptiles and marine mammals pertaining to the Maltese marine fauna are listed in Table 1.

The loggerhead turtle (*Caretta caretta*) is considered the most 'abundant' and the only species of marine turtles deemed a true member of the Maltese fauna.

With respect to marine mammals, out of the twenty one species recorded in the Mediterranean region, eight species which are represented by resident populations in the Mediterranean have been confirmed in Malta. Species which only occur occasionally and/or are stragglers represented by vagrant individuals from the North Atlantic or Red Sea populations are not considered by this monitoring factsheet.

When considering the 'functional groups' or 'ecotypes'¹ for marine reptiles and marine mammals as recommended by Cochrane et al. (2010)² and as listed in the MSFD Commission Staff Working Paper³ (Table 2), *Caretta caretta* would be the only species representative of the 'reptiles' species and functional groups in Malta.

With respect to the marine mammals functional group, the single species belonging to the 'Baleen Whales', the fin whale (*Balaenoptera physalus*), is only sporadically recorded in Malta⁴. Species belonging to the 'Toothed Whales' functional group which have been recorded in Malta include the delphinids, the sperm whale (*Physeter macrocephalus*) and the Cuvier's beaked whale (*Ziphius cavirostris*). Sightings and/or records of the sperm whale and Cuvier's beaked whale in Malta are not frequent, the latter to date only recorded through strandings. The same applies to the long-finned pilot whale (*Globicephala melas*) for which only a few records exist, although at the time of compiling this document a pod of nine was recently sighted in Malta⁵. Risso's dolphin (*Grampus griseus*) is not as rare as the above-

¹ Defined by Cochrane et al. (2010) as: 'An ecologically-relevant set of species, applied here to the following (highly) mobile species groups: birds, reptiles, marine mammals, fish and cephalopods. Each ecotype represents a predominant ecological niche (e.g. offshore surface feeding birds, demersal fish) within the species group.'

² Cochrane S.K.J., Connor D.W., Nilsson P., Mitchell I., Reker J., Franco J., Valavanis V., Moncheva S., Ekeboom J., Nygaard K., Serrao Santos R., Naberhaus I., Packeiser T., van de Bund W., Cardoso A.C. (2010). Marine Strategy Framework Directive Task Group 1 Report – Biological diversity. Publications Office of the European Union, Luxembourg. EUR 24337 EN – 2010

³ Commission Staff Working Paper: Relationship between the initial assessment of marine waters and the criteria for good environmental status. SEC(2011)1255 final

⁴ Sightings of this species seem to be more frequent in recent years (Ms. C. Mifsud, MEPA, personal communication)

⁵ Malta's MSFD Initial Assessment report on Marine Mammals

mentioned cetacean species and is in fact considered a more regular species throughout the Mediterranean⁶.

Within this context, the ‘Toothed Whales’ functional group for Malta is deemed to be mainly represented by the striped dolphin (*Stenella coeruleoalba*), the common dolphin (*Delphinus delphis*), the bottlenose dolphin (*Tursiops truncatus*) and albeit less frequent, the Risso’s dolphin (*Grampus griseus*). The former three species are relatively frequently reported in Malta and records available suggest that the presence of resident populations is highly likely.

Table 1: Marine reptiles and marine mammals confirmed in Malta

Scientific name	English name
Marine Reptiles	
<i>Caretta caretta</i>	Loggerhead turtle
Marine Mammals	
<i>Balaenoptera physalus</i>	Fin whale
<i>Delphinus delphis</i>	Short-beaked common dolphin
<i>Globicephala melas</i>	Long-finned pilot whale
<i>Grampus griseus</i>	Risso’s dolphin
<i>Physeter macrocephalus</i>	Sperm whale
<i>Stenella coeruleoalba</i>	Striped dolphin
<i>Tursiops truncatus</i>	Common bottlenose dolphin
<i>Ziphius cavirostris</i>	Cuvier’s beaked whale

Table 2: Relevant Functional groups identified by the MSFD Commission Staff Working Paper⁷

Species Group	Functional Group
Reptiles	Turtles
Marine Mammals	Toothed whales
	Baleen whales

⁶ Malta’s MSFD Initial Assessment report on Marine Mammals

⁷ Commission Staff Working Paper: Relationship between the initial assessment of marine waters and the criteria for good environmental status. SEC(2011)1255 final

2. Monitoring Requirements

2.1. Marine Strategy Framework Directive – MSFD (2008/56/EC)

2.1.1. Annex III characteristics/pressures/impacts

The MSFD calls for an assessment of the environmental status based on a list of characteristics listed in Table 1 of Annex III to the Directive, and pressures and impacts listed in Table 2 of the same Annex.

Implementation of this monitoring factsheet will enable a description of the population dynamics, range and status of species of marine mammals and reptiles occurring in the marine region or subregion as per Table 1 of Annex III. This monitoring factsheet will also address some pressures on marine reptiles as listed in Table 2 of Annex III, in particular ‘Biological disturbance’: selective extraction of species, including incidental non-target catches (e.g. by commercial and recreational fishing).

2.1.2. Annex I Good Environmental Status Descriptors

MSFD Annex I descriptors of Good Environmental Status and the associated criteria and indicators established by MSFD Commission Decision 2010/477/EU for assessment of progress towards the achievement of GES in terms of marine reptiles and marine mammals, and which will be addressed by this monitoring factsheet, are listed hereunder:

Descriptor 1: *Biological Diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions*

- 1.1 Species Distribution
 - Distributional Range (1.1.1)
- 1.2 Population Size
 - Population Abundance and/or biomass as appropriate (1.2.1)
- 1.3 Population Condition
 - Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/mortality rates) (1.3.1)

2.2. EU Nature Directives

The Habitats Directive targets the conservation and protection of species of community interest listed in its annexes. It is also the main European legal framework for designating protected areas of European importance in the marine environment.

The loggerhead turtle (*Caretta caretta*) and the bottlenose dolphin (*Tursiops truncatus*) are listed in Annex II to the Directive which lists animal and plant species of community interest requiring the designation of Special Areas of Conservation. *C. caretta*, which is listed as a priority species, and all species of marine mammals (cetaceans) are also listed in Annex IV to the Habitats Directive which lists animal and plant species of community interest in need of strict protection. Member States need to take all the requisite measures to maintain the population of these species at a Favourable Conservation Status (FCS).

The reporting format set out by the Commission requires information on the different parameters defining conservation status:

- Range;
- Population;
- Habitat of species; and
- future prospects⁸.

2.3. Barcelona Convention and the Ecosystem Approach

The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) was adopted in 1976 and came into force in 1978. The principal aim of the Barcelona Convention and its protocols is to reduce pollution in the Mediterranean Sea and to protect and improve the marine environment in the area, thereby contributing to its sustainable development. The Barcelona Convention/MAP are working towards an Integrated Monitoring Programme and an Integrated Policy of Assessments to be established by 2015. The Integrated Monitoring Programme should be able to provide all the data needed to assess whether 'Good Environmental Status' defined through the EcAp process⁹ has been achieved or maintained.

The list of species which would be subject to EcAp monitoring through the Integrated Monitoring Programme is under discussion at the time of compiling this monitoring factsheet. At this stage, the list includes¹⁰:

Marine Mammals

- *Balaenoptera physalus* (Fin whale)
- *Delphinus delphis* (Common dolphin)
- *Globicephala melas* (Long-finned pilot whale)
- *Monachus monachus* (Monk Seal)
- *Physeter macrocephalus* (Sperm whale)
- *Stenella coeruleoalba* (Striped dolphin)
- *Tursiops truncatus* (Bottlenose dolphin)
- *Ziphius cavirostris* (Cuvier's Beaked Whale)

⁸ The Explanatory Notes & Guidelines for the period 2007-2012 on Assessments and reporting under Article 17 of the Habitats Directive recommends that future prospects are evaluated by considering the future trends and likely future status of the 3 other parameters.

⁹ Ecosystem-based approach undertaken as part of the Barcelona Convention.

¹⁰ UNEP(DEPI)/MED WG.400/4

Marine Reptiles:

- *Caretta caretta* (Linnaeus, 1758)
- *Chelonia mydas* (Linnaeus, 1758)

2.4. The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)

The Council of Europe's Bern Convention aims at the conservation of European wild flora and fauna and their natural habitats, with a particular focus on the protection of endangered natural habitats and species, including migratory species, while promoting European co-operation in this field. The European Community is also a Contracting Party to the Bern Convention.

The marine turtle species recorded in the Mediterranean and all marine mammals are listed in Appendix II of the Bern Convention as strictly protected fauna species. Each Contracting Party shall take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild fauna species specified in Appendix II. The Contracting Parties should also encourage and coordinate research related to the purposes of this Convention.

Specific recommendations issued under the auspices of the Bern Convention call for monitoring of species. Recommendation No. 59 (1997) on the Drafting and Implementation of Action Plans of Wild Fauna Species calls for the identification of species requiring Species Action Plans which plans should take into consideration biological data, including distribution, habitat, population size estimates, trend, and other demographic data, migratory and dispersal patterns (if applicable), genetics, taxonomy, and ecological and ethological studies. Recommendation No. 7 (1987) of the standing committee on the protection of marine turtles and their habitat promote a coordinated research programme on marine turtles, setting the following themes as priorities:

- mapping of nesting densities ;
- location of feeding and wintering areas and migratory routes ;
- effects of different forms of fishing and pollution on turtle populations ;
- biological studies on artificial hatcheries so that this solution may be used if needed ;

2.5. Convention on Conservation of Migratory Species of Wild Animals (Bonn Convention)

This Convention aims at the conservation of migratory species and their habitats. It calls on Parties to acknowledge the need to take action to avoid any migratory species becoming endangered through promoting, cooperating in and supporting research related to migratory species.

Species listed in Appendix I of this Convention are migratory species deemed to be in danger of extinction throughout all or a significant proportion of their range. Appendix II of the Convention lists migratory species that have an unfavourable conservation status or would benefit significantly from international co-operation. The Convention encourages the contracting parties to conclude global or regional agreements for the conservation and management of individual species or, more often, of a group of species listed on Appendix II. Agreements should provide for, *inter alia*, periodic review of the conservation status of the migratory species concerned and the identification of the factors which may be harmful to that status, and research on the ecology and population dynamics of the migratory species concerned, with special regard to migration.

In 2001, an Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) entered into force under the auspices of the Bonn Convention. This constitutes a cooperative tool for the conservation of marine biodiversity in the Mediterranean and Black Seas, and provides specialised attention to cetacean conservation in the region. This agreement calls for coordinated and concerted research on cetaceans as well as monitoring of the status and trends of species covered by the Agreement, especially those in poorly known areas, or species for which little data is available, in order to facilitate the elaboration of conservation measures. ACCOBAMS also calls for cooperation in determining migration routes and the breeding and feeding areas of the species covered by the Agreement.

2.6. Common Fisheries Policy

The Common Fisheries Policy (CFP) reform was approved in a final plenary vote in December 2013. The Council and European Parliament concluded political agreements on the basic regulation of the Common Fisheries Policy and the Council adopted the texts as their first reading position in October 2013. The Parliament also adopted the Council's first reading position without changes.

Article 25 of the approved legislative text of the basic regulation is of relevance to monitoring of marine reptiles and marine mammals. This article states the following:

"Member States shall, in accordance with the rules adopted in the area of data collection, collect biological, environmental, technical, and socio-economic data

necessary for fisheries management, manage those data and make them available to end-users, including bodies designated by the Commission. The acquisition and management of such data shall be eligible for funding through the European Maritime and Fisheries Fund in accordance with a future Union legal act establishing the conditions for the financial support for maritime and fisheries policy for the period 2014–2020. Those data shall, in particular, enable the assessment of:

(a) the state of exploited marine biological resources; (b) the level of fishing and the impact that fishing activities have on the marine biological resources and on the marine ecosystems; and (c) the socio-economic performance of the fisheries, aquaculture and processing sectors within and outside Union waters”.

3. Targets

This section includes targets set by policies in relation to marine reptiles and marine mammals.

Implementation of this monitoring factsheet will enable assessment of progress towards the achievement of targets adopted by Malta as part of the EU Marine Strategy Framework Directive. Such monitoring may also apply in assessing progress towards targets articulated through other processes.

Policy	Status to be achieved	Targets
Marine Strategy Framework Directive	Good Environmental Status: The population abundance of key marine species is stable and their population dynamics are indicative of longterm viability.	To ensure systematic collection of records of turtle by-catch by the Maltese registered fishing fleet and of data on mortality rate of landed turtles [applies to <i>Caretta caretta</i>]
		To strengthen knowledge on the conservation status of <i>Tursiops truncatus</i> , <i>Delphinus delphis</i> and <i>Stenella coeruleoalba</i> in Malta, and on interactions of these species with human activities, with a view to contribute to the regional conservation of marine mammals in the long-term.

Habitats Directive	<p>Achievement or maintenance of Favourable Conservation Status on the basis of the following parameters:</p> <ul style="list-style-type: none"> ▪ Range ▪ Population ▪ Habitat for the species ▪ Future prospects 	<p>The conservation status of species listed in the Habitats Directive will be taken as 'favourable' when:</p> <ul style="list-style-type: none"> - Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and - The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future - There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.
Barcelona Convention: ECAP Process: Marine Mammals	<p>Operational Objective: Species distribution is maintained (marine mammals)</p> <p><i>Common Indicator¹¹:</i></p> <ul style="list-style-type: none"> ▪ <i>Species distributional range</i> 	<p>Pressure/Response: Human activities having the potential to exclude marine mammals from their natural habitat within their range area or to damage their habitat are regulated and controlled.</p> <p>Conservation measures implemented for the zones of importance for cetaceans</p> <p>Fisheries management measures that strongly mitigate the risk of incidental taking of monk seals and cetaceans during fishing operations are implemented.</p>
	<p>Operational Objective: Population size of selected species is maintained (marine mammals)</p> <p><i>Common Indicator¹²:</i> <i>Population abundance of selected species (marine mammals)</i></p> <p>Good Environmental Status for cetaceans defined as: The species population has abundance levels allowing to qualify to Least Concern Category of IUCN.</p>	<p>State Populations recover towards natural levels.</p>
	<p>Operational Objective: Population condition of selected species is maintained (marine mammals)</p>	<p>State Decreasing trends in human induced mortality</p>

¹¹ UNEP/MAP 2014. Working document on Common Indicators for the Mediterranean. Integrated Correspondence Groups of GES and Targets Meeting, Athens (Greece), 17-19 February 2014, UNEP(DEPI)/MED WG.390/3

¹² UNEP/MAP 2014. Working document on Common Indicators for the Mediterranean. Integrated Correspondence Groups of GES and Targets Meeting, Athens (Greece), 17-19 February 2014, UNEP(DEPI)/MED WG.390/3

	<p><i>Common Indicator¹³:</i> <i>Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/mortality rates)</i></p> <p>Good Environmental Status for cetaceans defined as: Species populations are in good condition: Low human induced mortality, balanced sex ratio and no decline in calf production</p>	<p>Pressure/Response: Appropriate measure implemented to mitigate incidental catch, prey depletion and other human induced mortality</p>
<p>Barcelona Convention: ECAP Process: Marine Reptiles</p>	<p>Operational Objective: Species distribution is maintained (reptiles)</p> <p><i>Common Indicator¹⁴:</i> <i>Species distributional range</i></p> <p>Good Environmental Status for reptiles defined as: The species continues to occur in all its natural range in the Mediterranean, including nesting, mating, feeding and wintering and developmental (where different to those of adults) sites.</p>	<p>State Turtle distribution is not significantly affected by human activities</p> <p>Turtles continue to nest in all known nesting sites</p> <p>Pressure/Response: Protection of known nesting, mating, foraging, wintering and developmental turtle sites.</p> <p>Human activities having the potential to exclude marine turtles from their range area are regulated and controlled</p> <p>The potential impact of climate change is assessed.</p>

¹³ UNEP/MAP 2014. Working document on Common Indicators for the Mediterranean. Integrated Correspondence Groups of GES and Targets Meeting, Athens (Greece), 17-19 February 2014, UNEP(DEPI)/MED WG.390/3

¹⁴ UNEP/MAP 2014. Working document on Common Indicators for the Mediterranean. Integrated Correspondence Groups of GES and Targets Meeting, Athens (Greece), 17-19 February 2014, UNEP(DEPI)/MED WG.390/3

	<p>Operational Objective: Population size of selected species is maintained (marine reptiles)</p> <p><i>Common Indicator¹⁵:</i> <i>Population abundance of selected species (marine reptiles)</i></p> <p>Good Environmental Status defined as: The population size allows to achieve and maintain a favourable conservation status taking into account all life stages of the population.</p>	<p>State: No human induced decrease in population abundance.</p> <p>Population recovers towards natural levels where depleted.</p>
	<p>Operational Objective: Population condition of selected species is maintained (reptiles)</p> <p><i>Common Indicator¹⁶:</i> <i>Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/mortality rates)</i></p> <p>Good Environmental Status defined as: Low mortality induced by incidental catch; Favourable sex ratio and no decline in hatching rates.</p>	<p>Response: Measures to mitigate incidental catches in turtles implemented.</p>
	<p>Operational Objective: Population condition of selected species is maintained (reptiles)</p> <p><i>Indicator:</i> <i>Distributional pattern of certain coastal and marine habitats listed under SPA protocol</i></p> <p>Good Environmental Status defined as: Increasing distribution of nesting sites.</p>	<p>The species recovers historical nesting sites.</p>

¹⁵ UNEP/MAP 2014. Working document on Common Indicators for the Mediterranean. Integrated Correspondence Groups of GES and Targets Meeting, Athens (Greece), 17-19 February 2014, UNEP(DEPI)/MED WG.390/3

¹⁶ UNEP/MAP 2014. Working document on Common Indicators for the Mediterranean. Integrated Correspondence Groups of GES and Targets Meeting, Athens (Greece), 17-19 February 2014, UNEP(DEPI)/MED WG.390/3

4. Competent Authorities

Policy	Competent Authority
MSFD	Office of the Prime Minister (delegation of technical implementation to the Malta Environment and Planning Authority)
Habitats Directive	Malta Environment and Planning Authority
Barcelona Convention	Malta Environment and Planning Authority

5. Spatial Extent of monitoring requirements

Policy	Extent of marine waters
MSFD	Extent of waters to be monitored depends on relevance and established GES and targets.
Habitats Directive	12 nautical miles
Barcelona Convention	Regional

6. Monitoring Approach

This monitoring factsheet includes five monitoring subprogrammes listed hereunder:

Monitoring sub-programme	Title	Monitoring Purpose
1	Mobile species – marine reptiles & marine mammals – distributional range and abundance	State
2	Mobile species – marine reptiles & marine mammals – population characteristics	State
3	Mobile species – marine reptiles – incidental mortality/injury rates from fisheries	Impact
4	Mobile species – marine reptiles and marine mammals – strandings	Impact
5	Information on relevant anthropogenic activities	Activity

The monitoring programme focuses on assessment of the distributional range and population size of species of marine reptiles and marine mammals. All species of marine reptiles and mammals listed in Table 1 of this document will be subject to monitoring efforts, however the monitoring programme will focus on the assessment of status for the more regularly occurring species.

7. Assessment of status

Assessment of status at a local scale will be undertaken for the more common species namely:

Marine reptiles – turtles:

- *Caretta caretta*

Marine Mammals – Toothed Whales

- *Stenella coeruleoalba*
- *Tursiops truncatus*
- *Delphinus delphis*

Assessment of status will be based on trends in:

- Species distributional range
- Population Size
- Size and/or age classes

Information collected on the less frequent species is passed on to relevant regional bodies to complement other regional monitoring programmes and research projects.

8. Monitoring Sub-Programme 1:
*Mobile species – marine reptiles & marine mammals –
 distributional range and abundance*

8.1. Monitoring Parameters

The monitoring parameters for marine reptiles and marine mammals in terms of distributional range and abundance are listed in Table 3. Definitions of relevance to the implementation of this monitoring sub-programme are listed hereunder:

- Distributional Range of a species is the outer limits or the overall area in which a species is found at present. It can be considered as an envelope within which areas actually occupied occur.
- Population size is defined as the number of individuals present in a subjectively designated geographic range. Most studies require an estimate of population size.

Table 3: Indicators and parameters for distributional range and abundance to be monitored per species of marine reptiles and marine mammals

Species	Indicator	Parameter	Policy		
			HD	MSFD	EcAp
All species	Species Distributional Range	Range maps on 1kmX1km ETRS grid	✓	✓	✓
All species	Population size	Abundance or density estimates	✓	✓	✓

8.2. Supporting Parameters

The following data/information will be measured/collected when possible through surveys at sea:

- Physical data namely sea surface temperature, salinity and depth
- course and speed of the vessel
- Wind direction, sea state, wind force, swell height and swell direction

Collection of such data should not interfere with survey time.

Additional supporting data includes:

- Sea surface temperatures and chlorophyll concentrations may be obtained from satellite imagery.
- Data on currents is also important for the purpose of monitoring and should be obtained through implementation of the monitoring factsheet on 'Hydrographical Changes'.

8.3. Monitoring methodologies

Marine mammals and marine turtles¹⁷ are monitored concurrently through the use of standard monitoring techniques at sea. Data on marine reptiles and marine mammals will thus be collected through the following mechanisms:

- (i) transect surveys from dedicated ships;
- (ii) data gathering throughout the year using platform of convenience and volunteers¹⁸.

8.3.1. Visual Line Transects

Visual transect surveys are carried out in line with the recommendations in the report of the 2004 workshop on obtaining baseline cetacean abundance information for the ACCOBAMS area¹⁹ and the methodologies adopted by the ongoing the LIFE11 NAT/MT/1070- LIFE+MIGRATE which is based on that outlined in Evans & Hammond (2004)²⁰.

- Linear transects are conducted by qualified observers on dedicated ships.
- Data is collected and analysed as per Section 8.3.1.1.

8.3.1.1. Data Collection and Analysis

- Data to be collected through the 'Line Transects' for determination of distributional range and estimation of abundance and/or density of marine turtles and marine mammals as listed in Table 1 of this factsheet, includes:

¹⁷ Turtle nesting in Malta is extremely rare therefore monitoring of the breeding population is not being sought.

¹⁸ Monitoring to be undertaken subject to availability of platforms of opportunity and/or volunteers

¹⁹ ACCOBAMS, 2005. Report of the Workshop on obtaining baseline cetacean abundance information for the ACCOBAMS area. Valsain, Spain, 17–19 December 2004, 32 pp.

²⁰ Evans, P.G.H. & Hammond, P.S. 2004. Monitoring cetaceans in European waters. *Mammal Rev.* **34**, No. 1, 131-156

- date, time and position (latitude and longitude) of the sighting;
- species identification and number of individuals;
- distance searched along the transect and the perpendicular distance to each animal/group, measured using angle (measured by means of a digital inclinometer) and radial distance from the detected animal/group to the observer;
- Observations on behaviour and group structure (including pod size and presence of mixed pods).
- Other observations (e.g. entanglement).
- Distributional range maps for all species listed in Table 1 are plotted on 1kmX1km ETRS grid on the basis of the geographical position of the encounters made through the visual line transects. Maps to be plotted in line with 'Assessment and reporting under Article 17 of the Habitats Directive: Explanatory notes & Guidelines for the period 2007-2012'.
- Abundance and/or density estimates (as appropriate) for each encountered species of marine turtles and marine mammals are calculated through the use of the software DISTANCE (www.ruwpa.st-and.ac.uk/distance) or standard methodologies such as those outlined by Evans & Hammond (2004) for marine mammals.

8.3.1.2. Photo-identification

- Photo-identification is only suitable for local populations of species listed in Table 4.
- Individuals of these species observed through the visual line transects are photographed ("captured") with a view to identify specific individuals using natural marks including:
 - marks on the carapace of marine turtles and their head profiles;
 - marks on the body of marine mammals such as scars, notches, tooth marks, holes, missing portions, skin colour patterns and lesions as well as the general shape of the dorsal and caudal fin.
- These marks are used to achieve individual identification of the animals through "benign tagging". Identified individuals are given a code or a name and their presence in any given sampling occasion is recorded. The term "re-capture" is used when an individual that had been identified in a previous sighting is re-sighted. This process would enable determination of whether the observed animals use a specific area all year round (resident) or not (non-resident).

Table 4: Species of which local populations can be monitored through photo-identification.

Scientific name	English name
Marine Reptiles	
<i>Caretta caretta</i>	Loggerhead turtle
Marine Mammals	
<i>Balaenoptera physalus</i>	Fin whale
<i>Delphinus delphis</i>	Short-beaked common dolphin
<i>Globicephala melas</i>	Long-finned pilot whale
<i>Grampus griseus</i>	Risso's dolphin
<i>Physeter macrocephalus</i>	Sperm whale
<i>Tursiops truncatus</i>	Common bottlenose dolphin

8.3.2. Other data collection processes

8.3.2.1. Platforms of opportunity

- A database of potential platforms of opportunity, including vessels that navigate at sea on a routine basis (fishing vessels, ferries, research vessels, oil exploration vessels, tourist boats, patrol boats) will be established in the long term.
- Observers would use vessels willing to collaborate and data collected as per Section 8.3.1.1 of this document or as per methodologies specified for particular trips.

8.3.2.2. Incidental Sightings

- Collection of information will be sought from incidental sightings by the general public (in particular fishers, leisure boat owners and divers) by sustaining the call for the voluntary provision of data by the public as launched by the LIFE11 NAT/MT/1070- LIFE+MIGRATE²¹.

8.4. Monitoring areas

Monitoring for marine turtles and marine mammals is carried out within the 25 nautical mile Fisheries Management Zone.

²¹ <http://lifeprojectmigrate.com/>

8.5. Monitoring frequency

Monitoring frequency indicated hereunder is subject to revision following the initial monitoring episodes.

Indicators	Species	Monitoring Frequency
Distributional range and abundance	All species	6-yearly

9. Monitoring Sub-Programme 2: *Mobile species – marine reptiles & marine mammals – population characteristics*

9.1. Monitoring Parameters

Table 5: Indicators and parameters for population characteristics to be monitored per selected species of marine reptiles and marine mammals

Species	Indicator	Parameter	Policy		
			HD	MSFD	EcAp
<i>Caretta caretta</i> ; <i>Delphinus delphis</i> ; <i>Stenella coeruleoalba</i> ; <i>Tursiops truncatus</i> ;	Population Demographic Characteristics	Distribution of size and/or age classes		✓	✓

9.2. Monitoring methodologies

Monitoring is based on the visual line transects as adopted by the ongoing the LIFE11 NAT/MT/1070- LIFE+MIGRATE which is based on methodologies outlined in Evans & Hammond (2004)²² (refer to Section 8.3.1).

9.2.1. Data Analysis

- Population demographic characteristics are assessed for the most abundant species as listed below:
 - *Caretta caretta*
 - *Delphinus delphis*
 - *Tursiops truncatus*
 - *Stenella coeruleoalba*
- Observations throughout the visual line transects as described in 8.3.1 coupled to photo-identification are used to estimate body size and age, the latter sorted into age-specific categories, to the extent possible.
- Depending on the data generated, profiles of the size and age structures of the above-mentioned species may be created.

²² Evans, P.G.H. & Hammond, P.S. 2004. Monitoring cetaceans in European waters. *Mammal Rev.* **34**, No. 1, 131-156

9.3. Monitoring areas

Monitoring for marine turtles and marine mammals is carried out within the 25 nautical mile Fisheries Management Zone.

9.4. Monitoring frequency

Monitoring frequency indicated hereunder is subject to revision following the initial monitoring episodes.

Indicators	Species	Monitoring Frequency
Population Demographic Characteristics	<i>Caretta caretta</i> ; <i>Delphinus delphis</i> ; <i>Stenella coeruleoalba</i> ; <i>Tursiops truncatus</i> ;	6-yearly

10. Monitoring Sub-Programme 3:
Mobile species – marine reptiles – incidental mortality/injury rates from fisheries

10.1. Monitoring Parameters

Table 6: Indicators and parameters to be monitored in relation to turtle by-catch

Species	Indicator	Parameter	Policy		
			HD	MSFD	EcAp
<i>Caretta caretta</i>	Fisheries by-catch	Number of turtle by-catch per fishing effort		✓	

10.2. Monitoring methodologies

- Data on by-catch from drifting long-lines targeting large pelagic fish will be collected from quarterly trips during the respective fishing seasons, following Malta’s yearly National Programme for Fisheries Data Collection, based on the EU’s Data Collection – Multi Annual Programme. The collected data will be raised to the drifting long-line fleet population level. As from 2018, data of turtle by-catch recorded from drifting long-lines will be collected via logbooks (or any other equivalent documents) from vessels larger than 15m. Since data from logbooks is a census for vessels larger than 15m, this data will not be raised.
- The number of turtle by-catch per fishing effort will be computed.
- The survival/mortality rate of incidentally-caught turtles will be also recorded.

10.3. Monitoring frequency

Indicators	Species	Monitoring Frequency
Fisheries by-catch	<i>Caretta caretta</i>	Other: frequency depends on occurrence of reptile by-catch during the relevant fishing season; data on by-catch will be aggregated to report number of by-catch per year.

11. Monitoring Sub-Programme 4:
Mobile species – marine reptiles and marine mammals - Strandings

11.1. Monitoring Parameters

Table 7: Indicators and parameters to be monitored in relation to strandings

Species	Indicator	Parameter	Policy		
			HD	MSFD	EcAp
All species	Strandings	Number of animals stranded or beached on Malta's shores per year, coupled to data on interactions with human activities and causes of death.		✓	

11.2. Monitoring methodologies

- The number of marine turtles and marine mammals stranded or beached on Malta's shores is recorded.
- The following data on the stranded/beached animal is recorded on site (if possible) and/or through necropsy when possible:
 - Species/Tag/chip number
 - Date of finding
 - Circumstances (stranded, interaction with human activity – precise gear when interaction with fishing activity, death at rescue center)
 - Date of necropsy, if possible (after or before freezing, if freezed indicate at which temperature)
 - Fresh/decomposition status
 - Date of animal's death
 - Cause of death, if determined
 - Location
 - Coordinates
 - Finder (personal details)
 - External observations (comments)
 - Measurements of body size (as applicable) & weight

12. Monitoring Sub-Programme 5: *Information on Relevant Anthropogenic Activities*

- Information on the activities at sea generating impulsive underwater noise, which will be collected for the purposes of underwater noise monitoring through the compilation of a noise register, is also relevant to monitoring of marine reptiles and marine mammals. Such activities include impact pile driving, use of airguns for oil exploration activities and use of sonars for research activities.
- Collection of aggregated data on fishing location and intensity, in accordance with the Data Collection Framework [Commission Decision 2010/93/EU].
- Other activities which may exert pressures on marine reptiles and marine mammals are covered by other monitoring factsheets such as 'contaminants' and 'marine litter'.

13. Links to monitoring processes

Monitoring in terms of this factsheet is linked with monitoring or related processes as follows:

- Monitoring at sea for marine reptiles and marine mammals is linked to monitoring at sea for seabirds. The same transects are used for the purposes of monitoring the three taxonomic groups.
- Monitoring of turtle by-catch is linked to monitoring pursuant to Council Regulation 199/2008 concerning the establishment of a '*Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy*' and Commission Decision 2008/949/EC outlining a multiannual Community programme pursuant to Council Regulation 199/2008.
- Data on turtle strandings is linked with monitoring of marine litter for the purposes of which the number of dead loggerhead turtles stranded or entangled in nets/fishing gear per year needs to be recorded (refer to monitoring factsheet on 'marine litter').
- Monitoring of activities is linked to monitoring of anthropogenic activities for the purpose of underwater noise (refer to monitoring factsheet on 'underwater noise').

14. Quality Assurance & Quality Control

Standard methodologies outlined in documents listed hereunder should be taken into consideration for the purpose of undertaking line transects and photoidentification:

- ACCOBAMS, 2005. Report of the Workshop on obtaining baseline cetacean abundance information for the ACCOBAMS area. Valsain, Spain, 17–19 December 2004, 32 pp.
- Evans, P.G.H. & Hammond, P.S. 2004. Monitoring cetaceans in European waters. *Mammal Rev.* 34, No. 1, 131-156

15. Data collection, storage and dissemination

All data should be collected and stored in accordance with the INSPIRE Technical Specifications listed in this section and/or any other relevant INSPIRE standard as identified through the Marine Pilot Project²³. Processed data to be uploaded in a geoportal.

- D2.8.III.19 Data Specification on Species Distribution – Technical Guidelines²⁴

16. Responsible organisations

Monitoring sub-programme	Species/activity	Responsible authorities
Distributional Range & Abundance	All species	MEPA
Population characteristics	<i>Caretta caretta</i> ; <i>Delphinus delphis</i> ; <i>Stenella coeruleoalba</i> ; <i>Tursiops truncatus</i>	MEPA
Mortality rate from by-catch	<i>Caretta caretta</i>	Fisheries
Strandings	All species	MEPA
Information on relevant anthropogenic activities	Fishing Activity	Fisheries
	Others	Various (as stipulated by relevant monitoring factsheets)

²³ <https://circabc.europa.eu/w/browse/bc33dff1-0f8c-467a-8382-7724c5f79d45>

²⁴

17. Gaps and Research Needs

Gaps	Plans to address gaps
Transboundary impacts on marine reptiles and marine mammals are as yet not known.	Implementation of this monitoring factsheet, while focusing on collection of data at a local scale, could also help in identifying potential impacts of transboundary nature.

18. Main Sources

- AAE Consortium (ADI Associates Ltd, Ecoserv Ltd and E Cubed Consultants). 2014. Long Term Monitoring Strategy for the Marine Environment of the Maltese Islands under the Marine Strategy Framework Directive. Service Contract for the development of a long-term monitoring strategy for the marine environment, a social and economic analysis of the use of marine waters and costs of degradation, and baseline sediment survey in inland waters (MEPA tender ref: CT3048/2012). ERDF156 - Developing national environmental monitoring infrastructure and capacity. Malta, unpublished report, 252 pp.
- AAE Consortium (ADI Associates Ltd, Ecoserv Ltd and E Cubed Consultants). 2014. Long Term Monitoring Programme for the Marine Environment of the Maltese Islands under the Marine Strategy Framework Directive. Service Contract for the development of a long-term monitoring strategy for the marine environment, a social and economic analysis of the use of marine waters and costs of degradation, and baseline sediment survey in inland waters (MEPA tender ref: CT3048/2012). ERDF156 - Developing national environmental monitoring infrastructure and capacity. Malta, unpublished report, 346 pp.