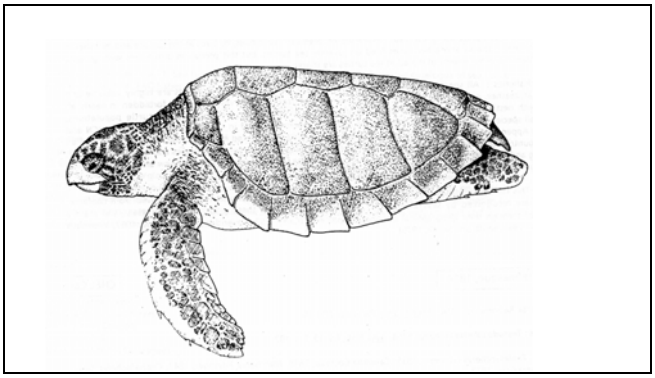
Nomination

Caretta caretta, Loggerhead Turtle



Geographical extent

OSPAR Regions; IV & V
Biogeographic zones: 1,4,5,6
Region & Biogeographic zones specified for decline and/or threat: as above

C.caretta occurs throughout the temperate and tropical regions of the Atlantic, Pacific and Indian Oceans (Dodd, 1988). The major nesting grounds in northern latitudes are on the coasts of Florida and South Carolina where at least four genetically distinct nesting subpopulations have been identified (NOAA, 2000).

Loggerhead turtles that occur in the NE Atlantic (including the OSPAR Maritime Area) are mostly juveniles in their oceanic life stage (Musick & Limpus, 1997). They are believed to belong to the breeding population of the SE United States from where they enter the NE Atlantic Gyre System as hatchlings, and may stay in this system for 7-12 years (e.g. Carr., 1986; Bolten *et al*., 1993; Bjorndal *et al.,* 2000). This species is known to occur in large numbers around the Azores and in the seas north of these islands, as well as along the Atlantic coast of southern Spain in late summer (Brongersma, 1995). Some of the latter could possibly be hatchings from nesting beaches along the coast of Morocco.

There are no loggerhead nesting beaches in the OSPAR Maritime Area.

Application of the Texel-Faial criteria

C.caretta was nominated for inclusion on the OSPAR list with particular reference to decline and sensitivity with information also provided on threat.

Decline

Detailed information on population sizes and trends is difficult to obtain and interpret, especially for the younger age classes that may spend several years adrift in the North Atlantic. It is generally believed that there has been a historical decline in the numbers of loggerhead in several areas such as the Bahamas, Cuba, Honduras and Mexico (Ross, 1982; Frazer, 1995).

The most suitable index to population stability at the current time is believed to be the numbers of females nesting at a given rookery from year to year. Bolten *et al*. (1998) demonstrated that the juvenile loggerheads encountered in Azorean waters are primarily derived from the nesting populations of the southeast U.S. and represent the size classes missing in that region (Carr,1986). A recent assessment of these populations is shown in Table A.

TABLE A: Assessment of loggerhead populations on US nesting beaches made by the US Turtle Expert Working Group of NOAA (NOAA, 2000).

Sub-Population	Approx No of nests (1998)	Assessment
Northern	7,500	Stable or declining
South Florida	83,400	Stable or increasing
Florida panhandle	1,200	Increasing*
Yucatan	1,000	Not determined

* thought to be due to expanded beach monitoring.

Sensitivity

The loggerhead turtle is a long-lived, late-maturing animal with growth rates dependant on temperature, food quantity and food quality. It is sensitive to marine pollution, particularly oil, which has been observed in the mouth and stomach of both juvenile and adult turtles.

Threat

C.caretta is threatened by actions on nesting beaches, habitat loss, disturbance, and egg collecting (e.g. Frazer, 1995). At sea the main threats come from incidental capture and entanglement in fishing gear, ingestion of persistent

marine debris and marine pollution (e.g. Lutcavage *et al*., 1997). The loggerhead also used to be collected for human consumption/ sale to tourists in the Azores and Madeira during the late 1960's-70's (Brongersma, 1995).

In the OSPAR Maritime Area, the main threats to this species come from fisheries activity, and marine litter. Two fisheries which are known to result in the incidental capture of loggerhead turtles in the OSPAR Maritime Area are the tuna drift net fishery and the swordfish longline fishery. In 1998, for example, the estimated total capture of loggerhead turtles was 4,190 from surface longlines targeting swordfish in the EEZ of the Azores (Ferreira *et al*., 2001). Other studies point to mortality rates from long line fisheries of somewhere between 10-30% of turtles caught. It can be concluded that there has been and continues to be a threat to this species across its range within the OSPAR Area.

Relevant additional considerations

Sufficiency of data

Estimates of the world population of loggerhead turtles rely on information about the number of adult nesting females at the major nesting sites. In many cases the data set covers more than a decade. There are also data on the incidental capture of turtles (including loggerhead), strandings, and sightings records.

The annual fluctuations in the number of nesting females in a given rookery from year to year makes it difficult to assess trends in population size based on number of nesting females. Such annual fluctuations may mask general trends in population size unless studies are carried out over several decades (Richardson 1982 in Frazer, 1995), however most estimates of population increase, stability or decline, currently rely on monitoring numbers. It is generally agreed that this is the most suitable index to population size at the present time (Frazer, 1995).

Changes in relation to natural variability

It is not unusual to observe large fluctuations in numbers of nesting loggerheads from year to year in a given locality (NRC, 1990). The causes are not understood but are presumed to be environmentally induced, perhaps involving the accumulation of resources necessary for reproduction (Wilbur & Morin, 1988).

Expert judgement

In a species with a long age to maturity, such as the loggerhead, nesting trends alone may give an incomplete picture of population status. It is conceivable for a population with no new recruitment to the benthic juvenile stage to continue to show increases in nesting for a number of years as benthic juveniles from past cohorts mature. Conversely a population could continue to show declines in nesting over time due to losses of adults while the immature population is increasing. Thus multiple lines of evidence must be considered in order to determine true population status (NOAA, 2000).

It is difficult to ascertain whether occasional years of heavy depredation of loggerhead eggs and hatchlings is a normal or abnormal occurrence in a particular areas, but it is believed that sustained levels of heavy predation on these early life stages can severely threaten loggerhead populations if, as a result of human induced mortality, the adults and larger juveniles are not experiencing their typically high natural survival (Crouse *et al.,* 1987).

ICES evaluation

The ICES Advisory Committee on Ecosystems (ICES 2003) concluded that the data for loggerhead turtles meets the Texel-Faial criteria for declining and threatened species.

Threat and link to human activities

Cross-reference to checklist of human activities in OSPAR MPA Guidelines
Relevant human activity: Fishing, hunting, harvesting; land-based activities, tourism & recreational activities; *Category of effect of human activity:* Physical – visual disturbance, litter; Biological – removal of target and non-target species.

Both direct and indirect links between human activities and the threat to loggerhead turtles are well known. The clearest of these are harvesting of eggs and incidental capture of both juvenile and adult turtles in fishing gear.

Because of their feeding behaviour and their habitat of over-wintering in shallow waters, loggerhead turtles are particularly vulnerable to capture by shrimp trawlers and gill nets. In US Atlantic and Gulf of Mexico waters many thousands of loggerheads drowned each year in shrimp trawl nets (Henwood & Stuntz, 1987), a situation which led to the development and introduction of Turtle Excluder Devices in shrimp nets. A current major threat linked to human activity in the OSPAR Maritime Area is the incidental capture of loggerhead turtles in pelagic longline fisheries.

Management considerations

Management measures that would aid the conservation of *C.caretta* are protection of nesting sites, including from egg collection, reduction in the direct and incidental capture of adults and the larger juveniles in the oceanic stage of their life cycle, and improvements in water quality (litter and pollution). All but the first of these is relevant to turtle conservation in the OSPAR Maritime Area. Much work has been done on the development and introduction of turtle excluder devices to reduce by-catch of turtles in shrimp trawl nets in US waters. Within the OSPAR Maritime Area, experimental work is currently underway in the Azores to evaluate the effects of hook type on sea turtle bycatch in the swordfish longline fishery (Bolten *et al*., 2000).

The loggerhead turtle is classified as Endangered by the IUCN (Hilton-Taylor, 2000). This species is also listed for protection on the EC Habitats & Species Directive, the Bern Convention and the Bonn Convention. International Trade in sea turtle products and sub-products is also forbidden under CITES except for certain countries where they are considered to be part of internal traditional customs or rituals.

Further information

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Joint submission from Iceland, Portugal, UK for OSPAR Area V and from Portugal for OSPAR Area IV.

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