Nomination
*Dermochelys coriacea,*
Leatherback Turtle

Geographical extent
OSPAR Region; All
OSPAR Biogeographic zones: All
Region & Biogeographic zones specified for decline
and/or threat: as above

*D. coriacea* is a highly pelagic species with a global
distribution that extends across temperate and
tropical latitudes. Today, the largest populations are
in the Atlantic and Caribbean. The major breeding
grounds for this species are in the eastern Pacific
and western Atlantic. There are no nesting beaches
in the OSPAR Maritime Area. Adult leatherbacks
have been recorded in the Barents Sea, the North
Sea and the NE Atlantic (Brongersma, 1972;
Márquez, 1990). These are not considered to be
vagrants and hence the OSPAR Maritime Area
is within the natural foraging range of this species.

Application of the Texel-Faial criteria

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

Decline

Using data from nesting beaches, the global
population of adult female leatherback turtles was
estimated to be around 115,000 in the early 1980’s
and the population as a whole was considered to be
endangered (Pritchard, 1982). A more recent
estimate gives a figure of around 34,500 (with
confidence limits giving lowest and highest
estimates between 26,200– 42,900) of which the
eastern Atlantic population of nesting females was
estimated to be around 4,638 (±763) (Spotila et al,
1996). These figures point to a possible decline of
around 60% in the intervening period. There are no
estimates of the likely population size in the OSPAR
Maritime Area.

Losses of entire nesting colonies and dramatic
debts at other colonies, compared to fluctuations
and increases at others, have raised concern about
the status of this species. A first attempt at
mathematical modelling suggests that the Indian
Ocean and western Pacific cannot withstand even
moderate levels of adult mortality and that even
the Atlantic populations are being exploited at a rate
that cannot be sustained (Spotilla et al 1996). It has
been suggested that leatherback turtles are being
exploited at an unsustainable levels and are “on
the road to extinction” however the precise situation
remains unclear at the present time because of the
difficulties of developing and running population
models for this species (Pritchard, 1996).

Sensitivity

Mathematically modelling of population dynamics
suggest that an increase in adult mortality of more
than 1% above background levels in a stable
population cannot be sustained (Spotilla et al.,
1996). There is also the view that the leatherback is
a vigorous and dynamic species and able to show
quite rapid response to protection (Pritchard, 1996).
The sensitivity of *D. coriacea* to pollutants such as
crude oil and pesticides has yet to be determined.

Threat

Legal and illegal, commercial and subsistence,
exploitation in some parts of the world, targeting
both adult turtles and their eggs, is a significant
threat to the leatherback and has led to massive
debts in the number of adult females on some
well-studied nesting beaches (e.g. Spotilla et al.,
1996). The other main threats are from habitat
damage to nesting beaches, incidental capture and
entanglement in fishing gear, ingestion of persistent
marine debris and marine pollution (e.g. Lutcavage
et al, 1997).

In the OSPAR Maritime Area, the main threats to
this species come from fisheries activity and marine
litter. There are records of leatherbacks captured in
driftnets, trawls, set gill nets, purse seines, long line
fisheries and lines of pot fishing gear (e.g.
Brongersma, 1972; Godley et al., 1998; Pierpoint,
2000). The ingestion of plastic bags, presumably
mistaken for jellyfish, can also be fatal and has
been reported from post-mortem examinations on
stranded turtles (e.g. Duron & Duron 1980; Berrow
& Rogen, 1995). There is also a possibility that
some turtle mortality is caused by collisions with
vessels (Haelters et al., 2001). 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 leatherback turtles rely on information about the number of adult 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 leatherback), strandings, and sightings records.

Modelling the population dynamics of *D. coriacea* is in the early stages of development with the main input data being records of the number of nesting adult females. Important areas of uncertainty include knowledge about the intermediate life-stages, the longevity of the species, and the limited number of years of available data to examine for trends.

**Changes in relation to natural variability**

Leatherback numbers on nesting beaches are known to fluctuate greatly from year to year (e.g. Girondot & Fretey, 1996), with the possibility of long-term natural cycles of considerable amplitude (Pritchard, 1996). This may be due to variations in reproductive cycles, food supply, environmental conditions on their foraging grounds and effects of mortality at various stages of their life histories. Natural fluctuations also occur in relation to the success rate of hatching. Storm events and seasonal erosion can degrade or destroying nesting beaches and result in egg losses for example. Females digging into nests constructed earlier in the season may also destroy eggs. These factors mean that there is some uncertainty about how the current declining trend relates to natural variability of the population.

**Expert judgement**

Current population estimates are derived from figures of the number of nesting adults and it is not clear how much, if any of this, can be attributed to a natural fluctuation (perhaps related to El Nino) or a warning that the population is in serious jeopardy (Eckert, 1995). Some nesting populations have been virtually extirpated however. This is the case in Mexico which has the largest breeding colony of leatherback turtles in the western hemisphere, and where there have been enormous losses of both adults and eggs in recent decades (Pritchard, 1982; Eckert, 1993).

**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, although some available data for by-catch.

**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 leatherback turtles are well known. The clearest of these are harvesting of eggs which has been recognised as the main cause for the collapse in some areas (e.g. Chan & Liew, 1996). Incidental capture of adult turtles in fishing gear is also well reported, although the mortality rate of individuals that are subsequently released is not known. Links have also been made between activities on the High Seas and the decline in numbers of leatherbacks nesting on particular beaches (Eckert, 1997). An indirect cause of mortality is the ingestion of plastic debris.

**Management considerations**

Management measures that would aid the conservation of *D. coriacea* are protection of nesting sites including from egg collection, reduction in the direct and incidental capture of adults, and improvements in water quality (litter and pollution). All but the first of these is relevant to turtle conservation in the OSPAR Maritime Area.

The leatherback turtle is classified as Critically 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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Useful References:


