

Manx Marine Environmental Assessment
Ecology and Biodiversity
Sea Turtles in Manx Waters



Leatherback Turtle (*Dermochelys coriacea*).
Photo: www.marinecreaturesstockphoto.com/rowanbyrne

MMEA Chapter 3.8

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Manx Marine Environmental Assessment

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Sea Turtles in Manx Waters

Summary

- Of the world's seven marine turtle species, five have been recorded in British, Irish and Manx waters.
- The largest species, the Leatherback turtle is the most likely species to be present in Manx waters as their unique physiology offers protection from the colder sea temperatures.
- All species of sea turtle are fully protected under Isle of Man legislation.
- Leatherback turtles and Loggerhead turtles are listed on the OSPAR list of Threatened and Declining Species.
- Species of sea turtle found in UK, Irish and Manx waters are either listed as 'vulnerable', 'endangered' or 'critically endangered' by the World Conservation Union (IUCN) on their Red List of Endangered Species.
- Between 2001 and 2016, 17 leatherback turtles were recorded in Manx waters and an additional 4 unidentified turtles.
- There are no known records of entanglement of sea turtles in Manx waters, although this may reflect lack of reporting.
- Sea turtle reports are more likely late summer and autumn with turtles observed at the surface of the sea on clear, flat days.
- Reports are often associated with jellyfish, their main prey, siphonophores (jellyfish-like animals, e.g. Portuguese Man o' War), and occasionally octopus.
- The main threats to sea turtles in Manx waters are probably: 'cold shock' (when species are carried out of their normal ranges by adverse conditions); ingestion of marine litter; and potentially accidental entanglement in fishing gears e.g. pot lines.
- Climate change is also recognised as a potential negative impact, due to probable effects on the distribution of their prey species and through erosion of their nesting habitat elsewhere. Sea turtles are also still hunted for meat and eggs in many parts of the world.

Baseline

Of the world's seven marine turtle species, five have been recorded in British, Irish and Manx waters. Whilst all species of marine turtles are protected under Manx law, the species most likely to be encountered in Manx waters is the largest, the Leatherback turtle (*Dermochelys coriacea*) (see cover image). Species such as the loggerhead turtle (*Caretta caretta*) (Figure 1.) and Kemp's ridley turtle (*Lepidochelys kempii*) are less likely encountered and most specimens seen in British and Irish waters are thought to have been carried north from their usual habitats by adverse conditions (Pierpoint 2000).

Local records are usually received from fishermen during summer months with sightings often associated with jellyfish swarms, especially of the large barrel jellyfish (*Rhizostoma sp.*), their main diet. Unlike the hard-shelled marine turtles, leatherbacks have a thick oily layer under their skin and a unique physiology (including a counter-current heat exchange system) to protect them and their internal body temperature from the colder sea temperatures of the Irish Sea. See MMEA Chapter 2.1 for further information about Manx sea temperature.



Figure 1. Loggerhead turtle (*Caretta caretta*). Photo: C Hanley.

Legal status and protection

Worldwide, most species of marine turtles are considered to be endangered and under threat of extinction.

The World Conservation Union (IUCN) Red List of Endangered Species includes the hawksbill (*Eretmochelys imbricata*) and Kemp's ridley (*Lepidochelys kempii*) turtles as 'critically

endangered'. Green (*Chelonia mydas*) turtles are listed as 'endangered'. Leatherback (*Dermochelys coriacea*) and loggerhead (*Caretta caretta*) are listed as 'vulnerable'.

See: <http://www.iucnredlist.org/details/6494/0>

Under Schedule 5 of the Manx Wildlife Act 1990, sea turtles receive legal protection from intentional killing, injuring and taking of listed animals. The Act also prohibits the reckless disturbance of scheduled animals while they are occupying a structure or place used for shelter or protection.

Marine turtles are also listed on several international conventions to which the Isle of Man is signatory including:

OSPAR - leatherback turtles and loggerhead turtles are listed on the OSPAR list of Threatened and Declining Species.

CITES - The leatherback turtle is listed on Appendix I of the Convention on International Trade in Endangered Species (CITES) (www.cites.org) whereby trade in the species is strictly prohibited.

The Bern Convention - All five British recorded species are listed on Appendix II of The Convention on the Conservation of European Wildlife and Natural Habitats.

For further information please see MMEA Chapter 3.7 (Marine and Coastal Conservation).

Turtle Implementation Group (TIG)

DEFA are included as part of the UK and Republic of Ireland Turtle Implementation Group which acts as a steering group for monitoring and research of these species in our waters. TIG consists of all the UK and Republic of Ireland statutory conservation bodies together with other interested organisations. The group's remit includes raising awareness of marine turtle presence, providing guidance on handling stranding events and rehabilitation; and guiding national and international policy.

Manx records and data

On the Isle of Man all sightings and strandings of both dead and alive marine turtles are to be reported to DEFA Fisheries Directorate (+44 1624 685857) or Manx Wildlife Trust (+44 1624 844432). The DEFA Marine Environment Officer and MWT Marine Officer handle and collate all sea turtle records for Manx waters and would respond to, and co-ordinate the handling of any live or dead strandings if they occurred.

Between 2001 and 2016, 17 leatherback turtles were recorded in Manx waters and an additional 4 unidentified turtles. There are relatively few historic records of turtles in Manx waters, with 32 occurrences recorded between 1748 and 2011, see Table 1 (Penrose and Gander 2012). There are currently no known records of entanglement of sea turtles in Manx waters, although this may reflect limited reporting.

In 2016 three loggerhead turtles were washed up dead on Manx shores. It is thought the strong southerly winds at the time were the cause of their misdirection. This is reflected in the British Isle and Republic of Ireland where another 9 loggerhead turtles were found. A total of 20 dead turtles (leatherbacks, Kemp’s ridley, loggerheads and green turtles) washed up around the coasts in 2016, a higher than normal result.

Table 1. Cumulative number of records in the UK and Republic of Ireland Turtle Database including the Isle of Man (Penrose and Gander, 2017).

Cumulative number of records.		
Country	All Species	
	2016	1748 - 2016
Rep. of Ireland	4	1327
England	11	655
Scotland	1	396
Wales	12	271
N. Ireland	0	40
Isle of Man	3	35
Channel Islands	2	17
Offshore	0	13
Total	33	2754

Marine turtle reports collated by DEFA/MWT are included in the UK and Republic of Ireland TURTLE database. The database goes back to 1748 and can be viewed on the NBN Gateway, where an interactive map of all records is also available, see: <https://data.nbn.org.uk/>

A map of leatherback turtle records is available through the NBN Atlas www.nbnatlas.org Annual reports are available from the Marine Environmental Monitoring Network: <http://www.strandings.com/Wales.html>.

Isle of Man news item on one of the most recent leatherback turtle sightings in Manx waters: <http://www.isleofman.com/News/local/article.aspx?article=25519&area=communityhome&cat=2>.

Research elsewhere and further data gaps

Research on leatherback turtles, including tagging efforts, is predominantly carried out on their nesting beaches at locations that include: Caribbean Islands, Florida, Central and South America and the West Coast of Africa.

Long term satellite tracking has revealed that leatherbacks range widely throughout the Northern Atlantic and travel extensively (Hays et al. 2004). Several individuals have also been satellite tagged in European waters. The map in Figure 2 (b) shows satellite tracking data received from devices deployed on six leatherback sea turtles in the northeast Atlantic including two individuals tracked from Dingle, Ireland (Doyle et al. 2008).

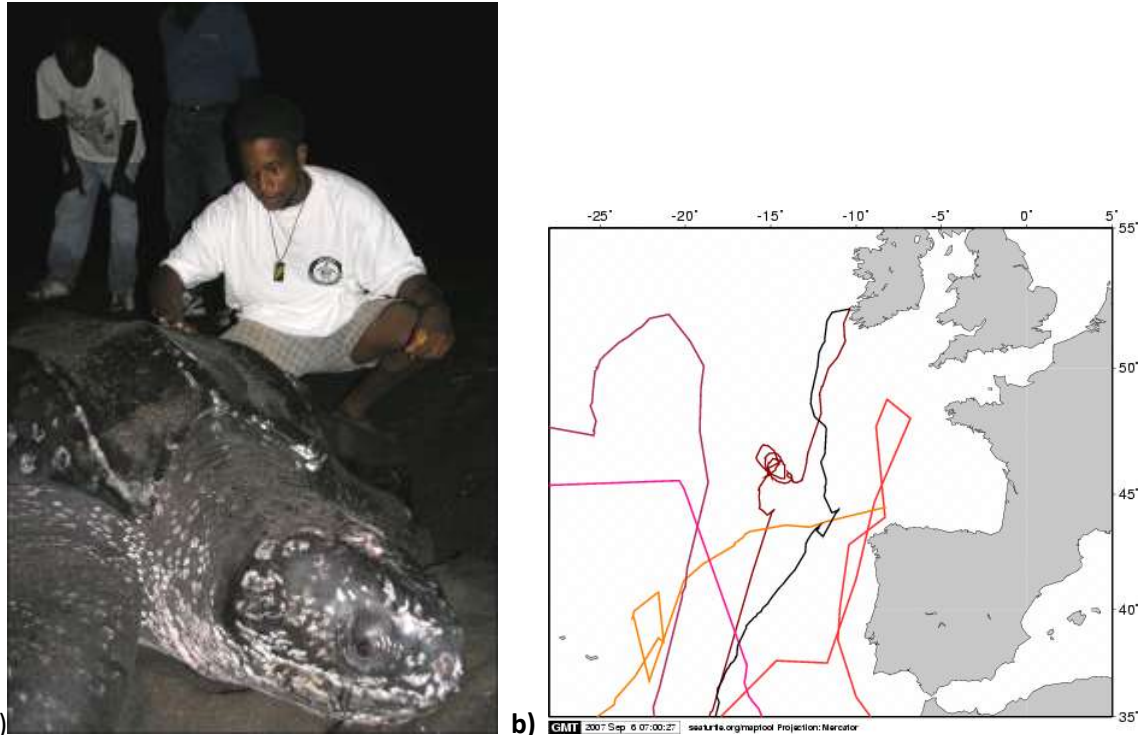


Figure 2.

a) Nesting Leatherback sea turtle, Dominica, West Indies.

Photo: www.marinecreaturesstockphoto.com/rowanbyrne/;

b) All known leatherback tracks in the northeast Atlantic (published & pending) (Doyle, 2007).

Three leatherback turtles were satellite tracked from Grenada, Caribbean. Two turtles satellite tracked from Dingle, Ireland; One turtle satellite tracked from Trinidad & Tobago. Reproduced with permission (Doyle, 2007).

Increased data is required on the distribution and abundance of prey species including gelatinous zooplankton species (e.g. salps, siphonophores and jellyfish). A better understanding of the relationships between turtles and their main prey may provide a more focussed approach to future research and monitoring, for example; Houghton et al. (2006) suggested fairly strong links between the presence of *Rhizostoma* jellyfish and leatherback turtle sightings. Given the proximity to the Isle of Man of a probable *Rhizostoma* 'hotspot' in the Solway Firth, it may be that more targeted research in future could increase sightings and our understanding of these animals.

Local marine users (inc. sea swimmers, divers and surfers) and members of the public often collect valuable records for Manx waters, particularly of large jellyfish aggregations or jellyfish mass stranding events. Even basic information on presence is valuable to build information on seasonality and changing jellyfish presence and distributions in Manx waters.

There is currently no formal biological recording on the Isle of Man to handle jellyfish records although many individuals pass their reports to initiatives in UK and Ireland on an *ad hoc* basis.

For information about initiatives elsewhere please see the following links which also have identification and reporting sheets available to download:

- Marine Conservation Society – Jellyfish Survey: http://www.mcsuk.org/what_we_do/Wildlife+protection/Report+wildlife+sightings/MCS+Jellyfish+Survey.
- EcoJel. A collaboration between Swansea University (Wales) and University College Cork (Ireland) which is no longer running. However a jellyfish ID guide can be downloaded: <https://www.beaches.ie/wp-content/uploads/2017/06/jellyfish-id-card.pdf>



Figure 3. A barrel jellyfish (*Rhizostoma octopus*) in Manx waters. Individuals can weigh up to 30 kg. Photo: G. Smith.

Stranded Marine Turtles

Stranded individuals provide a unique opportunity to gain important information about these endangered animals in the Irish Sea.

All stranded or entangled turtles (dead or alive) should be reported to a DEFA (Fisheries Directorate) or Manx Wildlife Trust's Marine Officer to examine and co-ordinate a response.

Any **live** turtles that strand or become entangled are likely to be passed to ManxSPCA who would endeavour to arrange for rehabilitation in liaison with organisations with experience elsewhere.

All **live** entangled turtles should be reported to DEFA (Fisheries Directorate) or Manx Wildlife Trust's Marine Officer for advice. In many incidents elsewhere, animals have been successfully released through co-operation of local marine users and fishermen.

Dead stranded turtles in a 'fresh' condition may be suitable for post-mortem examination to establish cause of death with samples taken for archive and various research projects.

Any identification tags would be located at both sides at the rear (posterior) of the animal, beside the 'tail' area (Figure 4.). Tags should not be removed even if the animal is dead as they provide important details including: worldwide locations visited, growth rate and life history.

There is currently no direct funding for attending a sea turtle stranding, post mortem or rehabilitation, although basic protocols have been drafted and key contacts and organisations with experience in the UK would provide additional guidance to DEFA or MWT.

The UK Turtle Code provides advice for marine users on how to deal with sea turtle encounters. The Code is available at: <http://www.euroturtle.org/turtlecode/default.htm>



Figure 4. The posterior of a leatherback turtle. Arrow dictates position of two metal tags on the hind right flipper. Photo: www.marinecreaturesstockphoto.com/rowanbyrne

Threats

In the UK and Ireland the cause of death in stranded sea turtles has predominantly been as a result of 'cold shock'. Hard-shell species of marine turtle, like loggerheads, are normally found in warmer waters and are unable to regulate their body temperature in order to survive colder waters. During extreme weather conditions a turtle may be blown off course, experience cold shock, become lethargic, unable to feed and will eventually starve. Predicted increases in such extreme weather conditions as a result of climate change, could potentially lead to an increase in sea turtle strandings and the increased possibility of a stranding event on a Manx beach.

Reviews carried out in the UK have identified lobster and crab pots, drift nets and mid-water trawls as being implicated in the accidental by-catch of sea turtles (Pierpoint 2000). Turtles

entangled at depth or at the surface during low tide will almost certainly drown (Doyle 2007). It is not the pots or nets that pose a key risk, but rather the ropes used to secure and mark their positions (i.e. buoy ropes and their loose ends (slack)) (Doyle 2007). However, acknowledgement is often given towards the sometimes considerable efforts made by fishermen and marine users to release the turtles without harm (Gibson 2011).

Ingestion of marine litter is another key threat as sea turtles often mistake plastics for their prey species. Plastic polymers and compounds have been also found inside egg cases of hatchlings (juveniles).

Leatherbacks and loggerhead turtles migrate widely in European Atlantic waters and although they receive protection in Manx waters, the same animals are threatened elsewhere from a range of other anthropogenic activities including: unregulated long-line fisheries practices, tourism practices and coastal development, and persecution at their nesting beaches.

In addition, climate change is known to be having a profound effect on nesting activities (sex ratios are temperature dependant), and more locally on the distribution of their prey species.

Sea turtles are also still poached for meat and eggs in many parts of the world.

Concluding remarks

It is little known that sea turtles, especially leatherbacks, may be present in Manx waters (particularly during late summer) and awareness needs to increase if we are to better understand and protect these infrequent visitors.

Local reports from marine users, fishermen and members of the public are important to contribute to a better understanding of numbers, seasonality, behaviour and use of Manx waters in a wider Irish Sea context.

Marine users, fishermen and the public are therefore encouraged to pass all reports to DEFA Fisheries or the Manx Wildlife Trust.

Increased effort-based watches and dedicated observers on 'ships of opportunity' in conjunction with other wildlife research and survey may also increase the numbers of sightings made.

Post mortem and other data collected from strandings and entangled individuals is also crucial to continue to address information gaps that are important for an understanding of their worldwide conservation status.

Information on the distribution and occurrence of prey species (especially jellyfish aggregations) in Manx waters is currently limited, although data continues to be collected and better understanding of these relationships may be possible in future.



Figure 5. The Harlech leatherback turtle. © Western Mail & Echo, Wales.

The largest and heaviest sea turtle ever recorded, washed ashore on Harlech beach, Wales, in September 1988. The turtle measured almost 3m (9ft) in length and weighed 914 kilos (2,016 pounds) and attracted worldwide attention.

The specimen remains on display at the Museum of Wales, see:
<http://www.museumwales.ac.uk/en/rhagor/article/turtle/>.

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