

**European Community Directive
on the Conservation of Natural Habitats
and of Wild Fauna and Flora
(92/43/EEC)**

**Third Report by the United Kingdom under
Article 17**

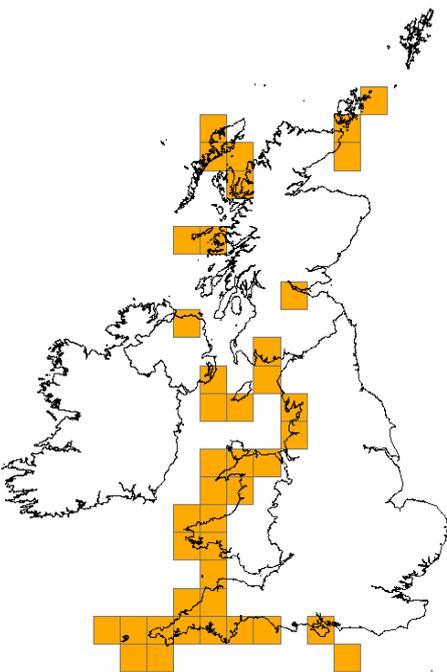
on the implementation of the Directive
from January 2007 to December 2012
Conservation status assessment for

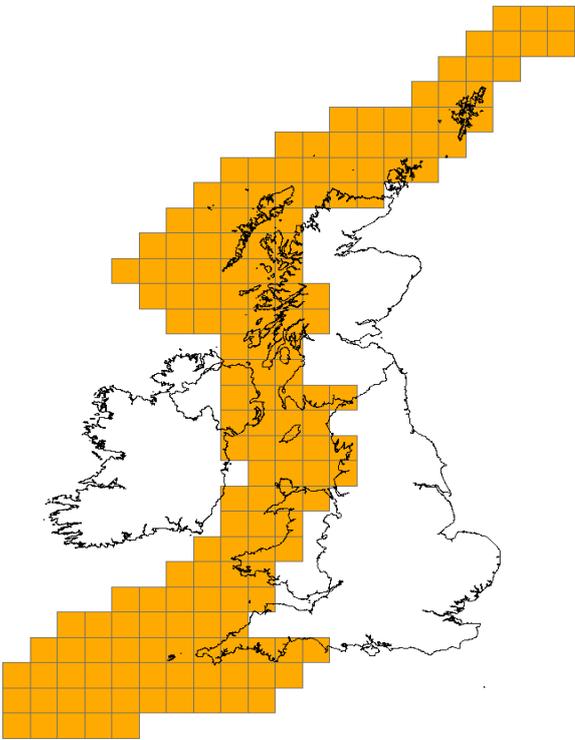
Species:

S1223 - Leatherback turtle (*Dermochelys coriacea*)

Reporting format on the 'main results of the surveillance under Article 11' for Annex II, IV & V species

<i>Field name</i>	<i>Brief explanations</i>	
0.2 Species	0.2.1 Species code	S1223
	0.2.2 Species scientific name	<i>Dermochelys coriacea</i>
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	

1.1 Maps				
1.1.1 Distribution map			Sensitive	False
<p>It can be seen that leatherback turtles have been recorded from all around the UK but large differences in concentrations between areas are also evident. The greatest concentrations of sightings and strandings are off Cornwall, Wales, and in the Solway Firth while the least are off the Channel and North Sea. There are 104 records of leatherback turtle in the TURTLE database for the 2007-2012 period in UK waters; 32 from England, 21 Scotland, 42 Wales, 3 Northern Ireland, 4 Isle of Man and 2 'offshore'. The majority (90) of these records come from live sightings of leatherback turtles recorded at sea; a further 11 were recorded as dead stranded and a further 3 dead sighted at sea.</p>				

1.1.2 Method used - map	<p>Estimate based on partial data with some extrapolation and/or modelling</p> <p>The distribution of this species is based on records of strandings and sightings held within the National Biodiversity Gateway database. The source of these data is the UK's national TURTLE database which stores opportunistically recorded accounts of this species in UK (and Irish) waters. The records for 2006-2010 have been mapped as presence on a 50x50km grid. Many of the records are of stranded animals and there will likely be a correlation between the location of strandings and the presence of a coastal monitoring/stranding network. There tends to be more records where there is observational coverage. The amount of observation effort by area is not recorded and therefore, species counts can not be corrected for it to map relative abundance in UK waters. The effect of varying observational effort on numbers recorded is evident when comparing the number of records during the current recording period (2007-2012 = 104) with the previous recording period (2001-2006 = 354); the difference is due to loss of observation effort in particular key areas e.g. Solway Firth (Penrose, pers. comm. TURTLE database manager).</p>
1.1.3 Year or period	2006-2012
1.1.4 Additional distribution map Optional	False
1.1.5 Range map	 <p>The TURTLE database holds records from throughout the UK's Exclusive Economic Zone. Therefore, the boundary of the EEZ is used to</p>

	approximate the range of this species in UK waters. There are also records in the adjacent EEZ of Eire.
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2.1 Biogeographical region & marine regions	<p>MATL</p> <p>Leatherback turtles are a rare but nevertheless regular visitor around the British Isles (Brongersma 1972) during the summer months. Recent studies have suggested that the waters of the UK represent the northerly limit of routine seasonal leatherback foraging migrations (McMahon and Hays 2006, Witt et al. 2007).</p>
2.2 Published sources	<p>Brongersma, J. D. 1972. European Atlantic turtles. Zoologische Verhandelingen (Leiden), 12, 1-318.</p> <p>Davenport, J. 1998. Sustaining endothermy on a diet of cold jelly: energetics of the leatherback turtles <i>Dermochelys coriacea</i>. British Herpetological Society Bulletin, 62:4-8.</p> <p>Doyle, T. 2007. Leatherback sea turtles (<i>Dermochelys coriacea</i>) in Irish waters. Irish Wildlife Manuals, No. 32. National Parks & Wildlife Service, Department of the Environment, Heritage & Local Government, Dublin, Ireland. http://www.npws.ie/publications/irishwildlifemanuals/</p> <p>Eckert, K. L., Wallace, B. P., Frazier, J. G., Eckert, S. A. and Pritchard, P. C. H. 2012. Synopsis of the Biological Data on the Leatherback Sea Turtle (<i>Dermochelys coriacea</i>). U.S. Fish and Wildlife Service Biological Technical Publication BTP-R4015-2012.</p> <p>Ferraroli S., Georges, J.-Y., Le Maho Y. 2004. Where leatherback turtles meet fisheries. Nature, 429, 521–522.</p> <p>Frair, W., Ackman R.G., Mrosovskyn, N. 1972. Body temperature of <i>Dermochelys coriacea</i>: warm turtle from cold water. Science, 177, 791–793.</p> <p>King, G. L. 2006. Review of marine turtle records in Northern Ireland. Environment and Heritage Service, Research and Development Series. No 07/02.</p> <p>Godley B.J., Gaywood M.J., Law R.J., McCarthy C.J., McKenzie C., Patterson I.A.P., Penrose R.S., Reid R.J., Ross H.M. 1998. Patterns of marine turtle mortality in British Waters (1992-1996) with reference to tissue contaminant levels. Journal of the Marine Biological Association of the United Kingdom, 78, 973-984.</p> <p>Hays G. C., Houghton J.D.R., Isaacs C., King R.S., Lloyd C., Lovell P. 2004a. First records of oceanic dive profiles for leatherback turtles, <i>D. coriacea</i>, indicate behavioural plasticity associated with long-distance migration. Animal Behaviour, 67, 733–743.</p> <p>Hays G. C., Houghton J.D.R., Myers A.E. 2004. Pan-Atlantic leatherback turtle movements. Nature, 429, 522.</p>

Houghton J. D.R., Doyle T.K., Wilson M.W., Davenport J., Hays G. C. 2006. Jellyfish aggregations and leatherback turtle foraging patterns in a temperate coastal environment. *Ecology*, 87, 1967–1972.

James M. C., Herman T.B. 2001. Feeding of *Dermochelys coriacea* on medusae in the Northwest Atlantic. *Chelonian Conservation Biology*, 4, 202–205.

James M.C., Ottensmeyer C.A., Myers R.A. 2005. Identification of high-use habitat and threats to leatherback sea turtles in northern waters: new directions for conservation. *Ecology Letters*, 8, 195–201.

Lewison, R., Freeman, S.A and Crowder, L. B. 2004. Quantifying the effects of fisheries on threatened species : the impact of pelagic longlines on loggerhead and leatherback sea turtles. *Ecology Letters*. 7:221-231

Luschi P., Sale A., Mencacci R., Hughes G.R., Lutjeharms J.R.E., Papi F. 2003. Current transport in leatherback sea turtles (*Dermochelys coriacea*) wandering in the ocean. *Proceedings of the Royal Society of London B Supplement*, 270, 129–132.

McMahon C.R., Hays G.C. 2006. Thermal niche, large-scale movements and implications of climate change for a critically endangered marine vertebrate. *Global Change Biology*, 12, 1330-1338.

Mrosovsky, N. Ryan, G. D. And James, M. C. 2009. Leatherback turtles; the menace of plastic. *Marine Pollution Bulletin*. 58 : 287–289

Paladino F.V., O'Connor M.P., Spotila J.R. 1990. Metabolism of leatherback turtles, gigantothermy, and thermoregulation of dinosaurs. *Nature*, 344, 858–860.

Pierpoint C., Penrose R. 2002. 'TURTLE' A database of Marine Turtle Records for the United Kingdom and Ireland. (Version 1.3 2002): Introduction, data summary and user notes. (Contractor: Marine Environmental Monitoring, Llechryd.)

Pierpoint, C. 2000. Bycatch of marine turtles in UK waters. JNCC Report No.310

Spotila J.R., Reina R.D., Steyermark A.C., Plotkin P.T., Paladino F.V. 2000. Pacific leatherback turtles face extinction. *Nature*, 405, 529–530.

Witt M. J., Broderick A. C., Johns D.J., Martin C., Penrose R., Hoogmoed M.S., Godley B.J. 2007. Prey landscapes help identify potential foraging habitats for leatherback turtles in the northeast Atlantic. *Mar. Ecol. Progr. Ser.* 337: 231–243.

Witt, M J., Baert, B., Broderick, A. C., Formia, A., Fretey, J.,

	<p>Gibudi, A., Mounquengui, G. A. M., Moussounda, C., Ngouesso, S., Parnell, R. J., Rounmet, D., Sounguet, G. P., Verhage, B., Zogo, A. and Godley, B. J. 2009. Aerial surveying of the world's largest leatherback turtle rookery: a more effective methodology for large scale monitoring. <i>Biological Conservation</i>. 142:1719-1727</p> <p>Witt, M. J., Hawkes, L. A. Godfrey, M. H., Godley, B. J. and Broderick, A. C. 2010. Predicting the impacts of climate change on a globally distributed species: the case of the loggerhead turtle. <i>The Journal of Experimental Biology</i> 213, 901-911</p>

2.3 Range					
2.3.1 Surface area Range	341957				
2.3.2 Method used Surface area of Range	<p>Estimate based on partial data with some extrapolation and/or modelling</p> <p>There are records of leatherback turtles throughout the UK Exclusive Economic Zone within the TURTLE database. The majority of records are from strandings and sightings closer to the coast. However, occasional records further offshore do occur although in low numbers which likely reflects less observational effort in these waters. The most northerly record in TURTLE of a probable leatherback turtle is at 63°46'44.289"N, alive and swimming north of the Faroe Islands in 1957.</p>				
2.3.3 Short-term trend Period	2001-2012				
2.3.4 Short term trend Trend direction	<p>unknown</p> <p>Historical records of sightings and strandings have been collated in the database TURTLE (Pierpoint and Penrose 2002). It is not possible to determine trends in range from this database because of the quality of recording effort.</p>				
2.3.5 Short-term trend Magnitude	<table border="1"> <tr> <td>a) Minimum</td> <td></td> </tr> <tr> <td>b) Maximum</td> <td></td> </tr> </table>	a) Minimum		b) Maximum	
a) Minimum					
b) Maximum					
2.3.6 Long-term trend Period	1988-2012				
2.3.7 Long-term trend Trend direction	unknown				
2.3.8 Long-term trend					

Magnitude Optional	a) Minimum	
	b) Maximum	
2.3.9 Favourable reference range	a) Value in km²	
	b) Operator for FRR	
	c) FRR is unknown (indicated by "true")	True
	d) Method used to set FRR	
2.3.10 Reason for change Is the difference between the reported value in 2.3.1 and the previous reporting round mainly due to...	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

2.4 Population		
2.4.1 Population size estimation (using individuals or agreed exceptions where possible)	a) Unit	
	b) Minimum	
	c) Maximum	
2.4.2 Population size	a) Unit	number of localities

estimation (using population unit other than individuals) Optional (<i>if 2.4.1 filled in</i>)	b) Minimum	42
	c) Maximum	42
2.4.3 Additional information on population estimates / conversion Optional	a) Definition of "locality"	A single locality is represented by presence in a single 50x50km grid cell as shown in map 1.1.1
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	As a locality is presence in a grid cell, the population is measured as number of grid cells with presence and therefore cannot have a minimum or maximum, just an absolute number.
2.4.4 Year or period	2007-2012	
2.4.5 Method used Population size	Estimate based on expert opinion with no or minimal sampling	
2.4.6 Short-term trend Period	2001-2012	
2.4.7 Short-term trend Trend direction	unknown	
2.4.8 Short-term trend Magnitude Optional	a) Minimum	
	b) Maximum	
	c) Confidence interval	
2.4.9 Short-term trend Method used	Absent data	
2.4.10 Long-term trend – Period Optional	1988-2012	
2.4.11 Long-term trend	unknown	

Trend direction Optional		
2.4.12 Long-term trend Magnitude Optional	a) Minimum	
	b) Maximum	
	c) Confidence interval	
2.4.13 Long term trend Method used Optional		
2.4.14 Favourable reference population	a) Number of individuals/agreed exceptions/other units	
	b) Operator	
	c) FRP is unknown (indicated by "true")	True
	d) Method used to set FRP	
2.4.15 Reason for change Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

2.5 Habitat for the species	
2.5.1 Area estimation	341957 There is currently no data to assess the amount of suitable habitat within this species range. Therefore, the potential habitat has been equated to the species estimated range.
2.5.2 Year or period	2001-2012
2.5.3 Method used Habitat for the species	Estimate based on partial data with some extrapolation and/or modelling
2.5.4 Quality of the habitat	a) Habitat quality Unknown Leatherback turtles visit UK waters during their foraging migrations. The wide-ranging extent of these migrations is only recently becoming apparent through tagging studies. They feed exclusively on jellyfish and other gelatinous zooplankton throughout their life cycle (Davenport, 1998) and UK waters offer a rich foraging habitat (Hays et al. 2004a). Associations between leatherback turtles and jellyfish concentrations have been reported and are the focus of current research interest (Houghton et al 2006, Witt et al 2007). Leatherback turtles exhibit physiological and anatomical adaptations (large body size, insulating thick fat deposits, counter-current heat exchangers) that are unique among reptiles and allows them to conserve heat and maintain a warm core even in cool surrounding waters (Frair et al. 1972, Paladino 1990). Nonetheless, cold temperatures remain an ultimate physiological barrier to their northerly distribution. Some individuals have been recorded in much cooler waters such as in Iceland and Norway, but these are considered to be exceptions (McMahon and Hays 2006). Indeed recent studies have suggested that the waters of the UK represent the northerly limit of routine seasonal leatherback foraging migrations (McMahon and Hays 2006, Witt et al. 2007). Leatherback turtles breed in the tropics where females nest every two to three years.
	b) Assessment method
2.5.5 Short-term trend Period	2001-2012
2.5.6 Short-term trend Trend direction	unknown

2.5.7 Long-term trend Period Optional	1988-2012	
2.5.8 Long-term trend Trend direction Optional	unknown	
2.5.9 Area of suitable habitat for the species	a) Value in km²	
	b) Absence of data indicated as '0'	
2.5.10 Reason for change Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	a) Genuine change?	False
	b) Improved knowledge/more accurate data?	False
	c) Use of different method (e.g. "Range tool")?	False

2.6 Main pressures		
a) Pressure	b) Ranking	c) Pollution qualifier
	H = high importance (max 5 entries) M = medium importance L = low importance	
XE: Threats and pressures from outside the EU territory	M	
F02: Fishing and harvesting aquatic resources	L	
H03: Marine water pollution	L	

2.6.1 Method used – Pressures	mainly based on expert judgement and other data

2.7 Threats		
a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance (max 5 entries)	

	M = medium importance L = low importance	
F02: Fishing and harvesting aquatic resources	M	
M01: Changes in abiotic conditions	M	
M02: Changes in biotic conditions	M	
XE: Threats and pressures from outside the EU territory	M	

2.7.1 Method used – Threats	expert opinion

2.8 Complementary information	
2.8.1 Justification of % thresholds for trends	
2.8.2 Other relevant information	
2.8.3 Trans-boundary assessment	Leatherback turtles are also recorded by countries with neighbouring EEZ's to the UK. The TURTLE database has 1067 records from waters around Eire between 1938-2011. Since 2001, there have been 162 records of this species.

2.9 Conclusions (<i>assessment of conservation status at end of reporting period</i>)		
2.9.1 Range	a) Conclusion	Unknown
	b) Qualifier	
2.9.2 Population	a) Conclusion	Unknown
	b) Qualifier	
2.9.3 Habitat for the species	a) Conclusion	Unknown

	b) Qualifier	
2.9.4 Future prospects	a) Conclusion	Unknown
	<p>The UK makes up a part of the foraging range utilised by this widely migrating species; while the prey is available all year round, leatherback turtles visit only during the warmer months of the year. It has been envisaged that through climate change increased seawater temperature might allow them to utilize UK waters for longer (McMahon and Hays, 2006).</p> <p>The Atlantic population of leatherback turtles is believed to be the last stronghold for this species which is globally critically endangered and particularly so in the Pacific, where Spotila et al. (2000) are warning of the threat of extinction.</p> <p>In the North Atlantic, incidental capture by fisheries is the greatest threat (Lewison et al. 2004) both in offshore and shelf waters. Entanglement in pelagic long-line fisheries is relatively common (Pierpoint 2000; Lewison et al. 2004); often turtles are still able to swim to the surface while entangled and so a large proportion is able to escape or be freed but their fate is far from certain as capture may result in life-threatening injuries. More directly deadly is fishing gear anchored on benthos as turtles are drowned once they become entangled. Indeed in the UK, the highest known incidence of bycatch is recorded for inshore pot fisheries for crustaceans and whelk. While data are still too sparse to be able to evaluate the severity of UK fisheries bycatch to the overall population, a reduction of incidental capture in northern latitude coastal and shelf fisheries would assist the recovery of this species worldwide as advocated in Canada by James et al. (2005).</p> <p>Since the most significant threats to this species occur outside UK waters and thus future prospects will be determined by international conservation efforts.</p>	
	b) Qualifier	
2.9.5 Overall assessment of Conservation Status	Unknown	
2.9.6 Overall trend in Conservation Status		

3 Natura 2000 coverage & conservation measures - Annex II species (only applies to species listed under Annex II of the Directive)

3.1 Population

3.1.1 Population size Estimation of population size included in the SAC network	a) Unit	
	b) Minimum	
	c) Maximum	
3.1.2 Method used	There are no sites designated within the Natura 2000 network for the purposes of this species in UK waters. Nor is this species included as a feature of sites; as a vagrant species in UK waters, site designation is not an appropriate conservation measure.	
3.1.3 Trend of population size within the network (short-term trend) Optional		

3.2 Conservation measures															
Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.															
3.2.1 Measure	3.2.2 Type					3.2.3 Ranking H = high importance M = medium importance L = low importance	3.2.4 Location where the measure is PRIMARILY applied			3.2.5 Broad evaluation of the measure					
	a) Legal/statutory	b) Administrative	c) Contractual	d) Recurrent	e) One-off		a) Inside	b) Outside	c) Both inside & outside	a) Maintain	b) Enhance	c) Long term	d) No effect	e) Unknown	f) Not evaluated