



LOGGERHEAD TURTLES & CLIMATE CHANGE

The future of the Loggerhead Turtle is threatened by the effects of climate change – Photo: Loggerhead Turtle © T. Moore, NOAA

ABOUT THE LOGGERHEAD TURTLE

Names:

Scientific: *Caretta caretta*

English: Loggerhead Turtle

French: Caouanne, Tortue carette

Spanish: Tortuga boba

The Loggerhead Turtle is found in numerous regions of the Atlantic, Pacific, and Indian Oceans and the Mediterranean Sea. Overall, there are ten recognized subpopulations of *Caretta caretta*, which differ in population size, geographical location and population trends. In general, all sub-populations nest on mainland sandy beaches and once hatched, the young leave the beach to enter the open ocean.

After 4 to 19 years, the juvenile turtles migrate from the oceanic zones into neritic zones (shallow parts of the sea near a coast) where they feed on hard-shelled prey such as clams and sea urchins. The turtles are then considered mature when they reach between the ages of 10- and 39-years-old.

Having reached sexual maturity, the Loggerhead Turtle embarks on a breeding migration between the neritic zone and the nesting area. Both males and females undertake this migration and the distances that they cover can span hundreds to thousands of kilometres. Once at the nesting beach, the female digs a deep hole in the sand with her flippers, deposits the eggs in the hole and finally covers it with the excavated sand. The cycle then starts again and though the lifespan of Loggerheads is unknown, they are believed to live to approximately 50-years-old.

Threats due to climate change

The most common threats to the Loggerhead Turtle are fishing bycatch and loss and degradation of their nesting grounds due to coastal development. Disturbance to these critical sites is expected to increase with expanding human populations. Poaching, pollution and climate change also significantly contribute to the plight of the Loggerhead Turtle.

Climate change affects, and will increasingly affect, sea and land temperatures. This is particularly important to Loggerhead Turtles as their development is intricately linked to temperature. The temperature of the sand at the nesting site affects the resultant sex of the baby turtle embryos: a temperature of $\leq 28^{\circ}\text{C}$ results in males; 30°C means there are equal chances of the turtle being either male or female; and $\geq 32^{\circ}\text{C}$ results in females. As temperatures are predicted to rise, there is a growing concern, and already some evidence, that too many females will be born, skewing sex ratios and eventually reaching a situation whereby there are not enough males for successful reproduction of the population. This phenomenon of skewed sex ratios is known, fittingly, as the ‘feminization’ of embryos. Another future scenario is one where the sand temperatures on the nesting beach are too high for proper development of the embryos. Nest temperatures of above 34°C are considered to increase the probability of hatchling mutations, in many cases resulting in the hatchlings’ inability to reach adulthood.

Warmer ocean temperatures are also likely to have a negative impact on the prey of sea turtles, leading to a long-term decrease in food supply. The lowered availability of food could reduce the turtles’ resilience and push them to more productive areas, if they exist. Additionally, Loggerhead Turtles are ectothermic (which means their body temperature depends on external sources), therefore it is probable that individual metabolic rates will also increase with warmer sea surface temperatures in the foraging grounds, requiring more food supply to support them.

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An additional concern is that thermal expansion and the melting of the ice caps will cause further sea level rise, resulting in the inundation and loss of the Loggerhead Turtles' nesting habitat. It has been estimated that rising sea levels will result in the loss of up to half the existing nesting sites. This is especially true on islands that are threatened by complete immersion and where no alternative areas are present.

As coastal water tables rise simultaneously with the sea level, the Loggerhead Turtles' nests risk being flooded from below. The limitation of oxygen available to the eggs can easily result in the drowning of developing embryos. Similarly, the increased incidence and intensity of tropical storms could have a negative impact on the moisture levels of the beach nests. Lastly, increased rainfall during the incubation period will also disturb nest temperatures and pose a significant risk of nests being washed away.

Species Listing

Caretta caretta was included in Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals in 1979 and was subsequently included in Appendix I in 1985. The species is assessed as 'Vulnerable' by the International Union for the Conservation of Nature (IUCN). The Loggerhead Turtle is covered by several CMS instruments, including two Memorandums of Understanding (MOU) for the conservation of marine turtles along the Atlantic Coast of Africa and in the Indian Ocean-South-East Asia regions, and a Single Species Action Plan for the Loggerhead Turtle in the South Pacific Ocean.



Photos: Loggerhead Turtle (*Caretta caretta*) © Kimberly Nielsen; Loggerhead Turtles hatchlings © U.S. Fish and Wildlife Service

About CMS

The Convention on the Conservation of Migratory Species of Wild Animals (CMS), also known as the Bonn Convention, works for the conservation of a wide array of endangered migratory animals worldwide through negotiation and implementation of agreements and species action plans. It has 130 Parties (as of 1 February 2020).

CMS engages all relevant stakeholders in addressing threats to migratory species in concert with all other aspects of wildlife conservation and management.

CMS Instruments

Animals receive protection under CMS through listing on its two Appendices, through global or regional agreements and through action plans.

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