Scientists warn of climate change risk to marine turtles

North American marine turtles are at risk if global warming occurs at predicted levels, according to scientists from the University of Exeter. An increase in temperatures of just one degree Celsius could completely eliminate the birth of male turtles from some beaches. A rise of three degrees Celsius would lead to extreme levels of infant mortality and declines in nesting beaches across the USA.

Research published this week in the journal *Global Change Biology* analyses 26 years of loggerhead turtle nesting and climate data and compares the findings with models for future temperatures. The study shows just how vulnerable marine turtle populations are to changes in temperature. The sex of marine turtle hatchlings is determined by the temperature of eggs during incubation, with warmer temperatures producing females and cooler conditions producing males. Temperatures during nesting also need to be at the right level for eggs to develop healthily and hatch successfully.

'We are stunned by these results and what they could mean for the species in the future,' said Dr Brendan Godley of the University of Exeter's School of Biosciences. 'In particular, we're concerned that populations that are already predominantly female could become 100% female if temperatures increase by just one degree. This is a major issue for nesting populations further south, in Florida, for example, where males are already in short supply.'

The research team recommends that conservation efforts are focused on protecting northern breeding grounds. While in Florida, 90% of hatchlings are female, in North Caroline 42% are male and scientists believe some of these males currently travel south, bolstering southern populations. A decline in male turtles in northern populations, as a result of global warming, could potentially impact marine turtles across the continent. ‘We take this as an important step in identifying essential thermal habitat for marine turtles,’ said study co-author Dr. Matthew Godfrey, of the North Carolina Wildlife Resources Commission. ‘It highlights the need to establish measures to specifically protect male-producing beaches.’

Dr Brendan Godley continued: 'In the face of climate change, it's essential that we prioritise the protection of sites that produce males not only for local breeding success, but to help support potentially vulnerable populations further south.'

This work was carried by the University of Exeter in partnership with the Bald Head Island Conservancy and the North Carolina Wildlife Resources

Source: University of Exeter