

## Saving Species Threatened by Global Warming

***It is imperative that in the upcoming months as Congress considers solutions to the global warming crisis that decision-makers also act to protect at-risk species before it is too late. There are hundreds of scientific studies documenting global warming's impact on species and their habitats. What follows is a sampling of some of the species most at risk.***

The polar bear (*Ursus maritimus*) is the largest of the world's bear species. Polar bears live only in the Arctic and are completely dependent upon the sea ice for survival. Polar bears use sea ice for virtually all of their essential behaviors including feeding, mating, travel, and maternity denning. Polar bears are threatened with extinction because global warming is causing rapid environmental change in the Arctic, including the melting of the polar bear's sea ice habitat. This mighty animal cannot survive the loss of sea ice habitat that will occur if current levels of greenhouse gas emissions continue. Scientists have already recorded thinner bears, lower female reproductive rates, and reduced juvenile survival in the Western Hudson Bay polar bear population in Canada, which is at the southern edge of the species' range and the first to suffer impacts from global warming.



**Polar Bear**

### Salmon



Already imperiled salmon populations are at risk due to global warming. Warming temperatures have shifted the timing of several key factors essential for salmon survival—such as peak snow accumulation and snowmelt-derived runoff, total snowpack accumulation, and glacial melt. This means significant changes in the timing and level of stream flows, water temperatures and water quality that are vital for salmon populations to survive. These factors have put already stressed populations at risk. With less snowpack to provide water for summer flows, already high temperatures and low flow levels, it is harder for salmon to migrate, rear, and spawn. As different species and stocks have developed over time, the migratory and spawning behavior that corresponds with variations in streamflows may not be able to adapt to such rapid changes to the habitat they need for survival.

The beautiful and distinctive orange and black Edith's Checkerspot Butterfly is being driven away from its home in search of cooler temperatures as it seeks to escape the warmer climates. Edith's Checkerspot is well known for its extreme sensitivity to subtle climate changes. In western regions where the butterfly has flourished, Edith's Checkerspot has failed to survive at the southern extremes of its range due to rising temperatures. Several escape to higher elevations in these southern areas in search of cooler climates, but most migrate northward. In fact, studies show that 63% of butterflies have shifted their ranges 35 to 240 km northward in the past 100 years. It is evident that the gradual increase in temperatures that cause population migrations and extreme weather conditions will soon be responsible for the disappearance of entire local populations of the beautiful Edith's Checkerspot butterflies.



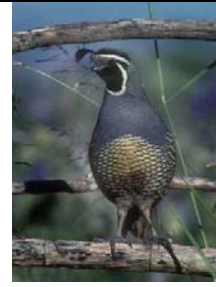
**Edith's Checkerspot Butterfly**



**Adelie Penguin**

The contracting winter sea-ice around the Antarctic Peninsula due to the earth's warming trend is responsible for the dramatic decrease in Adelie Penguin populations on the Antarctic Peninsula. The last 25 years show a decline of 33% due to the changes in their sea-ice habitat, while Adelie Penguin populations have plummeted 40% since 1989. The decline in these populations stems from the decline in the penguin's primary food source, Antarctic krill. Less sea-ice results in less algae, which is the primary food source for krill. Both adult and immature penguins have difficulty surviving. Several breeding colonies in the area have disappeared altogether!

The California quail, the Golden State's bird, may disappear from parts of the state in the summer due to change in climate forcing the bird to migrate to more suitable breeding habitat. California is home to an incredible diversity of native wildlife species, including 413 birds, 195 mammals, 86 reptiles, 62 fish and 57 amphibians. Rising temperatures and sea level in the state will likely change the makeup of entire ecosystems, forcing wildlife to shift their ranges and adapt.



**CA Quail**

**New England's Sugar Maple**



If you were to pick one thing to symbolize New England, it might have to be the sugar maple. This tree is so iconic here that a good deal of tourism revolves around leaf peeping in the fall, maple syrup festivals and visits to area sugarbushes. However, this important species might be at risk due to climate change. The National Oceanic and Atmospheric Administration notes that winter temperatures in the Northeast have increased by 2.8 degrees. This shift in the temperature is impacting New England's syrup production, which needs cold nights and warm days for sap to run. Researchers at the University of Vermont predict that sugar maples may disappear altogether as the climate zone they have evolved for moves north into Canada.

The population of the Southwestern Willow Flycatcher has declined during the last 100 years, primarily due to the loss, fragmentation, and modification of riparian habitats. Because of this, the flycatcher was listed as endangered in 1995. The Southwestern Willow Flycatcher needs dense riparian habitats along rivers, streams, or other wetlands for breeding. At some sites, surface water is present early in the nesting season, but gradually dries up as the season progresses. These important breeding areas would be greatly influenced by any changes (especially increased aridity) brought on by climate change. Bird survey data shows that currently fewer than 500 breeding pairs of the Southwestern Willow Flycatcher remain throughout its range. Surveys have also shown that the breeding sites are widely scattered and isolated, and most sites include fewer than five breeding pairs.



**SW Willow Flycatcher**

**Loggerhead Turtles**



Temperature plays a major role in the health and gender of baby Loggerhead turtles with warmer temperatures during incubation producing female turtles and cooler conditions producing male turtles. Studies have shown that temperature increases of just one degree Celsius could completely eliminate the birth of male turtles from some beaches; while temperature increases of three degrees Celsius would lead to extreme levels of infant mortality and declines in U.S. nesting beaches. This seemingly slight temperature shift could decimate male North American loggerhead populations, with huge ramifications for the entire species. Scientists suggest that in the face of climate change it is essential that critical breeding sites that produce male turtles be protected.

Desert Bighorn sheep live in small, isolated groups throughout the mountain ranges of the southwest. A recent study has shown that of 80 groups of desert bighorn sheep known to have once roamed California's mountains over the past century, 30 are now extinct. Decline in vegetation due to increased temperatures and decreased precipitation are considered to have caused these changes and made it harder for the bighorn sheep to move and repopulate different areas. Occupying an already harsh environment—high elevation desert—does not leave much room for adaptation by bighorn sheep to changes brought on by global warming. Additional stress caused by climate change will continue to impact this federally protected species.

**Big Horn Sheep**



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