Understanding and Incorporating the Role of Climate on Individual Species and Ecosystems to Protect Marine Species: NOAA's Climate Change and ESA Project

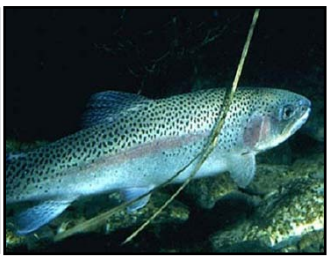
Climate change has the potential to worsen the conditions for species that are listed as Threatened or Endangered or are of concern. Both recent scientific work and federal court decisions have affirmed the importance of considering climate change in U.S. Endangered Species Act (ESA) decisions, such as determining whether listing a species as Threatened or Endangered is warranted and predicting the effects of federal actions on the status of listed species and their habitats.

NOAA Fisheries is conducting several case studies based on pending ESA decisions to evaluate and improve current practices for considering climate change in analyses and approaches that support these decisions. These case studies address ways to:

- Determine the likely effects of a warming and acidifying ocean on hard corals in tropical areas;
- Identify key elements of watershed and freshwater habitat needed to maintain and recover a steelhead trout (*Oncorhynchus mykiss*) population in California as hydrologic regimes change in response to altered climate;
- Evaluate the effects of water withdrawals on a Chinook salmon (*O. tshawytscha*) population in Idaho as temperatures increase and freshwater flows change in volume and timing;
- Determine how long-term cycles in oceanographic conditions cue female sea turtles to initiate nesting and influence juvenile recruitment, and evaluate how those might be altered under climate change;
- Characterize the distribution of populations of the cod-like fish species, cusk (*Brosme brosme*), in the North Atlantic Ocean as ocean conditions change; and
- Determine whether the effects of a pilot tidal energy project in Puget Sound or a bank stabilization project on a small section of bank in the Willamette River (Oregon) are likely to be different under climate change scenarios than current conditions.

The NOAA Climate Change and ESA Project will grapple with how to use the best available scientific information to predict the effects of climate change on marine and coastal protected species. The goals of the project are to help decision-makers understand the differences between varying scientific approaches related to climate change and, ultimately, to improve their ability to implement the ESA in a changing world.

The NOAA Climate Change and ESA Project is hosting a symposium at the 2011 AAAS Meeting on February 20, 8:30-11:30am: "Changing Climate, Changing Approaches: Conservation in the Face of Climate Change."

Photos: Bearded Seal (NOAA photo, John Jansen); Boulder Star Coral (NOAA photo, CCMA Biogeography Team); Steelhead Trout (NOAA photo); Loggerhead Sea Turtle (Erin Seney); Cusk (SHRMP Science Team and NURTEC at University of Connecticut).