

Climate research provides roadmap for endangered species preservation

December 11 2013, by Hannah Hickey



Credit: Pacific Northwest National Lab

(Phys.org) —As the Endangered Species Act nears its 40th birthday at the end of December, conservation biologists are coming to terms with a danger not foreseen in the early 1970s: global climate change.

Federal fisheries scientists have published a special section in this month's issue of *Conservation Biology* that outlines some considerations for coming decades. A University of Washington climate scientist helped biologists determine the long-term forecast for aquatic animals.

"When you look at projections for future climate change, there's a big range of possible futures. And decision makers or biologists assessing impacts on a particular species want to know what's the most likely future – they don't want to use this huge range of uncertainty," said Amy Snover, director of the UW-based Climate Impacts Group.

Eight papers in the special section, led by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service, include case studies for species ranging from chinook salmon to steelhead to 82 different types of coral.

Snover is lead author of a paper on choosing and using climate-change scenarios to inform policy for endangered [marine species](#).

"We tried to distill what climate scientists know in a way that would be useful for conservation biologists," Snover said.

Choice of scenario will depend on the species – a salmon that moves between mountain streams and the open ocean, for example, is different from an animal that scurries along a sandy beach or that clings to a rock at the bottom of the ocean. The paper gives a choose-your-own-adventure approach to picking an appropriate set of climate projections.

"People who are trying to make decisions that account for [climate change](#) are often bewildered or overwhelmed by the large number of scenarios that are available, and think in many cases that they're too uncertain to be used," Snover said. "We're establishing a strategy for choosing from this vast array of scenarios, and strategies that are defensible in litigious situations like the (Endangered Species Act)."

The paper's broad-based approach could also apply to land animals, she said.

The paper also includes a "reality check" table to counter some common misperceptions about climate models – for example, that they differ too much to predict any useful trends, or that their uncertainty could be reduced by somehow finding the best model to use.

Trends that are certain to affect marine [species](#), Snover said, include increasing ocean acidification, warmer water temperatures and changes in level and timing of stream flows.

"Despite the significant uncertainty that remains about potential future climates, we know enough to assess impacts and incorporate that information into conservation decisions," Snover said.

More information: SNOVER, A. K., MANTUA, N. J., LITTELL, J. S., ALEXANDER, M. A., MCCLURE, M. M. and NYE, J. (2013), Choosing and Using Climate-Change Scenarios for Ecological-Impact Assessments and Conservation Decisions. *Conservation Biology*, 27: 1147–1157. [DOI: 10.1111/cobi.12163](https://doi.org/10.1111/cobi.12163)

Provided by University of Washington

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