

Diversity within species may be as important as among them

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Courtesy of Nature
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For the health and resilience of a natural environment, it may be as important for each species to have genetic diversity within itself as it is to have many different species, a study reports.

Past studies have tended to focus on diversity of species as a key factor in the health of an ecosystem, the web of relationships between an environment and all the organisms inhabiting it.



A brown bear eats a spawning sockeye salmon at Brooks Falls, Alaska, part of Bristol Bay. (Credit: Michael Webster)

Not unlike diversity in a set of financial holdings, diversity of species in an ecosystem helps to protect it from threats. A diverse ecosystem offers redundancies, for example, in the form of two or more species that fill a similar ecological role so that one can take over if another is lost.

The new study, focusing on within-species genetic diversity, is published in the June 3 issue of the research journal *Nature*.

In it, Daniel Schindler of the University of Washington and colleagues studied the effects of diversity in population and life histories in an exploited fish population, the sockeye salmon in Bristol Bay, Alaska, over 50 years.

Individual, discrete breeding groups of sockeye salmon were significantly more variable in population than was the Bristol Bay sockeye salmon stock as a whole, the authors found. This indicates that within-species variability was key to keeping stable population levels as well as stable catch levels, they added.

“Our results demonstrate the critical importance of maintaining population diversity for stabilizing ecosystem services and securing the economies and livelihoods that depend on

them,” the authors wrote. It’s known that the rates at which individual populations are lost are at least 1,000 times higher than those of species extinction, they added.

Sockeye salmon support the most valuable fisheries in the United States, and natural resource management decisions need to take into account both ecological and economic factors. The findings could be applied to other species and could provide a new standard for managing risk to exploited species threatened by climate change, Schindler and colleagues said.