



## Climate Change To Shift Many Fish Species North

**A new NOAA Fisheries-funded study presents the first major projections of where U.S. fish species populations may shift under future climate scenarios**

A new NOAA Fisheries-funded [study](#) published this week in the journal PLOS ONE presents the first major projections of where U.S. fish species populations may shift under future climate scenarios. The research was led by James Morley and Malin Pinsky of Rutgers University-New Brunswick.

According to Rutgers, “Climate change will force hundreds of ocean fish and invertebrate species, including some of the most economically important to the United States, to move northward, disrupting fisheries in the United States and Canada.

Fish are sensitive to the temperature of the water where they live, and as it becomes too warm, populations often shift to where the water temperature is right for them. This process has already begun, though at different rates in different places. As climate change continues and the oceans warm up, the study shows, more species of fish will move north to where the temperature range is habitable for them.”



16 different climate models were used by researchers for this study, as was NOAA Fisheries stock assessment data for many species including finfish, sharks, rays, crustaceans, and squid.

Cisco Werner, Chief Science Advisor for NOAA Fisheries, stated, “This kind of science helps fishermen, fishery managers, and fishing communities track ocean change, assess resources at risk, and safeguard the nation’s valuable marine fish stocks and the many businesses and people that depend on them,” he said.

You can view the entire study here:

<http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0196127&type=printable>

## The Changing Voices of North Atlantic Right Whales

### Similarities found with human voices

Researchers have found that right whale calls, much like human voices, change as individuals age.

In a study published in *Animal Behaviour*, scientists examined 986 high-quality calls from 49 individual North Atlantic right whales of known ages spanning from 1 month to 37 years. Much like those of human infants and other mammals, calls made by whales younger than 1 year were shorter and less structured than adult sounds. As the animals matured their calls became more clear, with better defined structure and longer call durations.



right whale feeding

“Acoustic maturation does not stop when a female right whale reaches sexual maturity at about age 9 and for males around 15,” said **Sofie Van Parijs**, leader of the passive acoustic program at NOAA’s Northeast Fisheries Science Center (NEFSC) laboratory in Woods Hole, Mass. and a co-author of the study. “The calls continue to develop as the animal ages, decades after it is physically mature. The frequency and duration of these calls may be able to tell us about body weight and size, and physical condition, including stamina.”

Calls were analyzed for five age groups. Sub-adults were divided into two groups: calves less than one year old and juveniles 1-8 years old. Adults were split into three groups: ages 9-14, 15-25, and 25 and older. Right whales are thought to have a life span of 65 or more years.

Previous studies have shown they have complex, information-rich calls and a large repertoire, including quick gunshot and constant frequency tonal calls, high to low sweeping “down-calls,” and low to high-sweeping “upcalls.” Upcalls are used by all ages of right whales as contact calls between individuals.

(to page 30)