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Out of Disaster, Shrimp Are Reborn

By Erik Stokstad
ScienceNOW Daily News
16 January 2008

Europeans are so hungry for the red shrimp (*Aristeus antennatus*) that it can fetch as much as €200 a kilogram--making its fishery one of the most valuable in the Mediterranean Sea. When the deep-sea shrimp are plentiful, trawlers sweep up thousands of metric tons of them in a season. But sometimes, adult shrimp seem to disappear for years from the most productive fishing grounds before eventually bouncing back. Now researchers think they know why: pulses of muddy submarine currents that may be influencing deep-sea fisheries around the world.

Caught red-handed.

Strong, muddy currents can wipe out valuable populations of red shrimp.

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The study was done in the Gulf of Lions, off the coast of Spain, which is one of the richest sources of red shrimp in the

Mediterranean Sea. Two years ago, a team from the Marine Sciences Institute in Barcelona and other institutions reported that submarine canyons in the Gulf of Lions occasionally funnel large currents of water and sediment into the deep sea. Although such currents, known as sediment gravity flows, have been known for a long time, the mechanism was new. Each winter, the researchers determined, surface waters are chilled by winds and become dense enough to cascade into the deep. During particularly cold winters, the water flows as fast as 80 centimeters a second and carries enormous amounts of sediment from the canyons.

Joan Company, a deep-sea ecologist at the Marine Sciences Institute, wondered about the current's effect on deep-sea life. He, Pere Puig, and others at the institute compiled nearly 30 years of data on shrimp catches and compared them with observations of water and sediment.

The team reports online today in *PLoS ONE* that each episode of deep-water cascading through the canyon was followed by a statistically significant drop in the amount of shrimp brought back by the trawlers, presumably because the crustaceans are swept away and killed by the sediment. Just 2 months after a major cascade in February 1999, for example, the shrimp fishery collapsed. The good news is that the populations recover within 3 to 5 years after the flood. One reason could be the additional nutrients that arrive with the sediment, Company says.

The finding could be useful for managing the fishery, Company says. By measuring the currents, researchers can determine when a major pulse of water begins to flow into the shrimp habitat. Then they can recommend that shrimp boats avoid trawling there and spare the juvenile shrimp, allowing the population to recover more quickly.

Fisheries biologist Daniel Pauly of the University of British Columbia in Vancouver, Canada, is convinced that the flows can have an impact. "It's neat a mechanism," he says. But he is skeptical about scientists' ability to change fishing patterns in the Mediterranean or elsewhere in the world, where the data are not nearly as good as in the Gulf of Lions. "There is no fishery that would take such advice for its quota, because it would be highly uncertain," he says.

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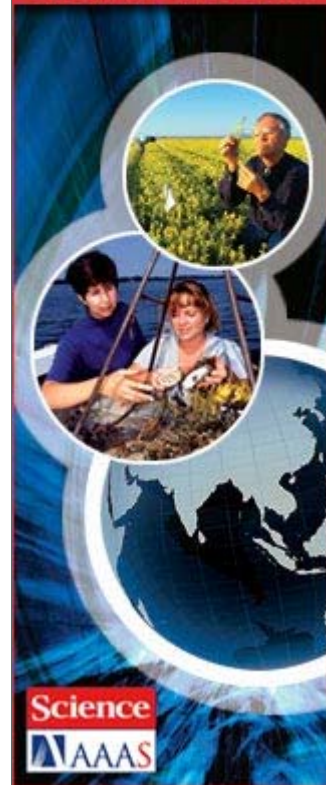
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