

Our Ocean Backyard — *Santa Cruz Sentinel* columns by Gary Griggs, Director, Institute of Marine Sciences, UC Santa Cruz.

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Calamari—small, large, and extra large



Humboldt Squid have become permanent residents of Monterey Bay.

Squid come in three different sizes and until fairly recently, all we saw were the small ones on our dinner plates. The small market squid has been near the top of the charts in recent years, being the largest California fishery by weight, 54,000 tons in 2006, and number two in value, \$27 million, with only Dungeness crab being more valuable. These little guys, up to a foot long, have about a 12-14 month life cycle such that the entire stock turns over every year, even without any fishing.

They are terminal spawners, meaning they spawn at the end of their yearly life cycle. Females generally produce 20 to 30 egg capsules with each capsule containing 200 to 300 eggs. So a successful female can produce 4000 to 9000 individual eggs, and very few animals eat the eggs. The market squid migrate in

enormous schools throughout the eastern Pacific from the waters of southeast Alaska to Mexico. Most of the squid are caught off California, however, using very bright lights and nets at night.

At the other end of the size spectrum is the Giant Squid, the largest invertebrate on Earth. The biggest ever found was about 60 feet long, and weighed nearly a ton. These big guys are very rarely observed, however, because they normally live in deep water. Like their small relatives, they have eight arms and two longer feeding tentacles that help them grab food. Curiously, their eyes are the largest of any animal, up to 10 inches across. In 2004, researchers in Japan got lucky and took the first underwater images of a giant squid. Two years later other Japanese scientists caught a 24-foot long female and brought her to the surface.

In June 2008, a research vessel on a shark tagging expedition 20 miles off Santa Cruz found the partial remains of a giant squid floating at the ocean surface. The tentacles were as thick as a human leg although much of the body was missing. The squid was taken back to Long Marine Lab where interested scientists performed a necropsy.

And now the somewhat smaller Humboldt squid has entered the bay and taken up residence. Still, at five to six feet long and 100 pounds they are known in Mexico as Diablo Rojo, or red devil, for their color and aggressive behavior. This carnivorous calamari has been reported in large numbers in recent years off San Diego and the Orange County coast to the north. While normally living at depths of 600 to 2000 feet, research indicates they appear to have established a year-round population off California, often at depths of 300 to 600 feet. There now has been frequent diver contact as shallow as 60 to 80 feet. It's not clear how many squid are offshore but based on their school size elsewhere, they could number in the hundreds or thousands. Their razor sharp beaks and long barbed tentacles have brought terror to scuba divers and close encounters with these devils appear to be increasing. Their growing numbers migrating northwards may be due to warming waters, or possibly a shortage of food in their normal territory to the south or a decline in natural predators.