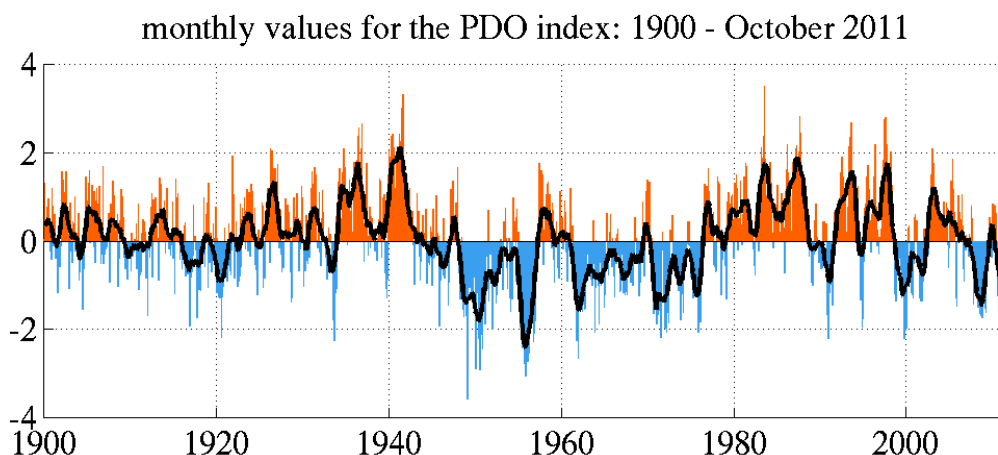


Our Ocean Backyard — *Santa Cruz Sentinel* columns by Gary Griggs, Director, Institute of Marine Sciences, UC Santa Cruz.

#52 April 10, 2010

Changing climates and shifting species



Pacific Decadal Oscillation index from 1900 to 2011. Orange or warm periods are characterized overall by warmer water, more frequent and larger El Niño events, greater rainfall and more frequent storms and coastal erosion. Blue represents generally cooler cycles with colder water, less rainfall, fewer El Niño events and calmer wave climate.

This column marks two years of Ocean Backyards. When I began in April of 2008 I thought there might be enough ideas to last 6 months or so, but the ocean and our coastline continue to provide more ideas to write about. For those of you who email me from time to time, thank you for reading the columns, for your interest, and for posing questions and suggesting new topics. I think there are still a lot more issues and questions to explore and new ones continue to arise.

In an early column I talked about the rise and fall of Cannery Row. When the sardine fishery collapsed in the mid-1940's, there was no agreed upon answer as to why. With the beginning of regular and sustained oceanographic measurements of things like temperature, salinity and nutrients, however, ocean scientists figured out that the climate of the Pacific Basin fluctuates over periods of several decades. These cycles, now known as Pacific Decadal Oscillations, or PDO cycles, are characterized by different oceanographic and meteorological conditions. These influence things like ocean currents and water temperature, storm patterns and rainfall distribution, and importantly, the distribution of marine organisms.

Sardines and anchovies alternate in their general abundance with PDO cycles. Cannery Row flourished during a warm PDO period, and when ocean conditions shifted, sardine populations plummeted. Lots of other creatures out there also fluctuate in abundance and distribution with these changing ocean conditions, which have now been labeled regime shifts.

A local legend, Sandy Lydon, once told me about a semi-professional baseball team named the Monterey Barracudas (who played against the Santa Cruz Sand Crabs a century ago). Sandy, you may not know, knows a fair amount about baseball, and when a bit younger, narrowly missed playing in the big leagues. My first thought was what a ridiculous name for a baseball team from Monterey; there aren't any barracudas in Monterey Bay. Sandy somewhat politely corrected me, and told me they had been abundant at times, in 1895, 1907-9 and 1915. In looking back at the history of California fisheries, they were even fished commercially during the warm years of 1926, 1931 and 1941, all part of a warm PDO cycle, when the sardines also were abundant. Barracuda were also caught in Monterey Bay in 1958, another warm year.

The most recent warm water invader is the Humboldt squid, also known in Mexico as Diablo Rojo or red devil. These are large predatory squids up to six feet long and weighing as much as 100 pounds. They are commonly found in the waters of the Humboldt Current off of South America, but have a historic range extending from Tierra del Fuego to southern California. The 1997-98 El Niño event triggered the first recent sighting of these notoriously aggressive predators in Monterey Bay. During the milder 2002 El Niño event the squid returned in larger numbers and have now become permanent residents. They have also been seen in increasing numbers off the coasts of Oregon, Washington and even Alaska. While usually found in deep water, they have also been known to aggressively attack divers who have gotten too close. More to come on squid.