

Scientists look for reasons behind herring decline

September 15 2009, By Paul Rogers

In an ominous environmental sign, California regulators this month closed all herring fishing in San Francisco Bay for the first time ever, shutting down the last commercial fishery in the Bay.

A 6-inch, silvery [fish](#), herring has been caught in the Bay since the 1870s. The fish forms a key part of the food web, as prey for ducks, terns, harbor seals, salmon and other species. But populations have been falling recently, and last year state scientists found herring numbers down 90 percent from historic levels.

Why? For now, it's a mystery.

"For whatever reason the conditions just don't seem to be favorable for the young fish to survive in recent years to grow up to be adults," said Tom Barnes, a marine region program manager at the California Department of Fish and Game.

Scientists are looking at possible explanations for the herring decline.

California is in its third year of drought. With less rain and snow, the amount of freshwater flowing into the bay has declined. And because herring spawn best in low salinity water, many researchers believe water conditions may be playing a role.

Herring numbers also fell during previous droughts, but never this much.

Another possible culprit may be oil. In November 2007, the Cosco Busan, a Chinese freighter, collided with one of the support towers of the Bay Bridge in heavy fog, tearing a huge gash in the hull and leaking 53,000 gallons of thick bunker fuel into the bay.

While herring had not yet come into the bay from the ocean that year to spawn, some fisheries experts worry that lingering chemicals from the oil left in the water may have done significant damage to herring eggs and larvae, killing or biologically compromising them.

"These oil spills take a tremendous toll. The herring fishery in Prince William Sound still hasn't recovered all the way from the Exxon Valdez spill, and that was 20 years ago," said Zeke Grader, executive director of the Pacific Coast Federation of Fishermen's Associations, in San Francisco.

On Sept. 3, the state Fish and Game Commission voted to stop all herring fishing in San Francisco Bay as well as the small amount that occurs in the Pacific Ocean off California in hope of giving the species a chance to recover. Traditionally, herring season begins in December, after the fish return from the ocean to lay eggs in the bay and spawn. It continues until about April.

Although early Californians pickled and fried the fish to eat, the main market these days is Japan. Most of the herring caught in San Francisco Bay and other West Coast areas is shipped to processing plants in British Columbia or Korea, where the roe, or eggs, are removed.

The eggs are a delicacy in Japan, and are eaten around traditional New Year's celebrations. They are known there as kazunoko, or "many children," and symbolize fertility and prosperity.

About 30 boats fish for herring in San Francisco Bay, down from more

than 100 in the 1970s.

Ernie Koepf of Oakland has been fishing for herring on the bay every winter since 1977. Throwing a gill net over the side, he has caught the fish off Coyote Point, the Marin County shoreline, Point San Pablo, even as far south as Redwood City.

Rather than a total shutdown of the season, as Fish and Game biologists recommended, Koepf would have preferred to see a small quota continue.

"I'm disappointed. It's not necessary to do this. In my 32 years, I've seen many fluctuations in the population. With the drought, it's to be expected," he said. "What we don't know is the impact of the Cosco Busan oil spill."

Tests done by Fish and Game biologists after the spill on herring eggs and larvae are expected to be released later this fall.

The size of the herring catch has been steadily declining in San Francisco Bay. From a peak of 11,496 tons in the 1996-97 season, it fell to just 1,540 tons in 2003. Last year was only a fraction of that, with 507 tons landed.

A large part of the decline has been due to outside factors. After the Japanese economy crashed, sales of herring roe fell. More recently, other parts of the world, like Russia, have begun supplying Japanese markets.

If the herring rebound, the state could open the fishery again next year. But if not, it will be the end of commercial fishing in San Francisco Bay, a practice dating back to the Gold Rush.

Although sport fishing remains, commercial fishing in the bay has

suffered a steady decline. Once oysters were big business, but raw sewage and other pollution killed most of them after World War I. Commercial sturgeon fishing went out after over-fishing took its toll. And commercial salmon fishing in the bay ended in the 1950s after the construction of huge dams like Friant Dam near Fresno decimated populations.

The recent herring decline in San Francisco Bay has biologists worried that other fish, birds, and marine mammals could suffer. So far, they have been able to eat other ocean fish like sardines and anchovies. But any time one key food source declines, they say, it's troubling.

"The decline of the herring is bad for the whole food web," said biologist Rainer Hoenicke, executive director of the San Francisco Estuary Institute, in Oakland.

"It may be death by a thousand cuts. There is not one single factor, but every bit adds up."

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