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Marin's coho salmon on the brink of extinction

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Marin's endangered coho salmon population is on the verge of collapse and immediate steps will likely have to be taken to prevent the species from going extinct, according to federal officials.

For the third straight year the number of coho egg nests - which spawn the next generation of fish - are down significantly. There is still about a month left for they were born to spawn, but even if numbers improve, environmentalists and habitat managers believe action is needed to save the species.



Paola Bouley, conservation program director for the Salmon Protection and Watershed Network, stands at the Lagunitas trail, which is closed during coho spawning season along Samuel P. Taylor State Park in San Geronimo. (IJ photo/Jeff Vendsel)

"We are at a point of trying to prevent their extinction," said Charlotte Ambrose, coho salmon recovery coordinator for the National Marine Fisheries Service. "We are in an extinction vortex. The species is collapsing."

Ambrose noted a federal recovery plan for the fish that will be released later this month has now morphed into an "extinction prevention plan."

"The situation is grim," she said.

Coho salmon have a three-year life cycle in which they hatch, live in creeks for a year and go to sea for two years before returning to their birth sites.



Male (top) and female coho salmon spawning in the shallow gravel streambed in Lagunitas Creek adjacent to Sir Francis Drake Blvd. in Samuel P. Taylor Park. (IJ photo/Jeff Vendsel)

"With three bad years we could lose the population," said Paola Bouley, watershed biologist for the Lagunitas-based Salmon Protection and Watershed Network.

That the species - known as the Central California Coast coho salmon - is in trouble is not a surprise. The federal government listed the species as "threatened" in October 1996 and in June 2005 it was re-listed as "endangered."

But in the past three years the number of fish returning to streams in its range, between Mendocino and Santa Cruz, has taken a precipitous drop.

Marin's Lagunitas watershed has one of the largest remaining populations of wild coho salmon in Northern California, but the fish virtually vanished last year. While this year has been slightly better, it is still well below average.

"We have had an OK beginning to the season, and it's better than last year, which was abysmal, but we still have a way to go yet," said Greg Andrew, fisheries biologist for the Marin Municipal Water District, which manages the watershed. "We really need some good storms."

While the water district keeps enough flow in the creeks for fish, the species responds better to storms, which create runoff and are a natural invitation for the fish to begin swimming from the oceans upstream into creeks to spawn.

The life cycle of the coho is rigid: In the winter, fish return to the streams in which they were born to spawn and then die. Young fish hatch from eggs in the gravel in the spring and then spend another year in the streams feeding and growing while seeking refuge in deep, cold pools. After enduring a summer and winter they head out to sea in their second spring to feed along the productive California coast. Fish return to their streams from the ocean to spawn, die and continue on the cycle of life.

In the 1940s, there was a statewide peak of 500,000 coho. But today's native coho population is 1 percent of that - a decline caused primarily by a loss of free-flowing creeks and rivers that have been affected by development, culverts, dams and other obstacles. Development along creeks fills creekbeds with sediment, limiting oxygen for fish. Coho are gone from 90 percent of California streams that once supported the species.

The county imposed a two-year moratorium on building near creeks in the San Geronimo Valley - set to end Feb. 11 - aimed at protecting fish habitat. Applauded by some, the moratorium raised the ire of some residents who remain concerned about proposed development guidelines in the area.

Changes in ocean patterns possibly due to climate change, flooding and even the Cosco Busan oil spill may be having an effect, experts said.

A robust population could withstand such forces, but for an already ailing species the factors are enough to shove the fish into oblivion, Ambrose said.

"A lower abundance of fish simply cannot withstand these things," she said.

Bouley agreed.

"When you have a population close to extinction, something small can have a great impact," she said last week, standing along Lagunitas Creek as she watched a female coho create a nest. "We need to produce more and healthier fish in the watershed. It's a numbers game. The more that you send out the more that will come back. They have survived changing ocean conditions for generations, but now when they are bouncing near the bottom they are vulnerable."

Ambrose said action will likely have to be taken sooner rather than later if the species is to be saved.

Putting more woody debris into creeks, which create protection and habitat for the fish, is an immediate step that could be taken, she said.

But it may also take a more drastic step to stop species from disappearing: raising them outside their natural habitat.

"The last fish are gathered and basically reared in captivity to pull them through that extinction bottleneck," Bouley said. "It's good to be thinking ahead. It's a serious decision to make. It's not ideal, but it's a last, last, last resort. We could be close to that."

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It's looking like another dismal year for the coho salmon of Northern California. The population is already endangered, and now biologists and fish experts say immediate steps need to be taken to prevent the fish from extinction.

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