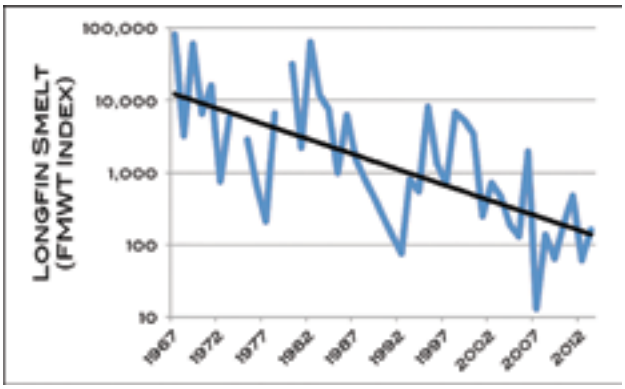
E N D A N G E R E D

The Unsung Smelt

While not as famous as its cousin the Delta smelt, the longfin smelt is just as imperiled locally and — if the drought continues — stands to have one of its worst years ever. "The longfin smelt responds strongly to freshwater flows," explains conservation biologist Jon Rosenfield of The Bay Institute, an environmental nonprofit. "It could really be in trouble."

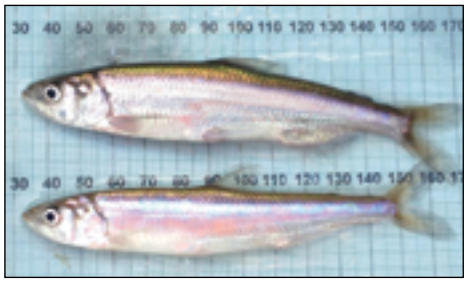
Named for its elegant pectoral fins, the longfin smelt (*Spirinchus thaleichthys*) was once among the most abundant fishes in the San Francisco Estuary. This small, silver fish also has one of the widest ranging habitats. Like salmon, longfin smelt live in both fresh and salt water over the course of their lives: adults live in salty water, swim inland to spawn in fresher waters at about two years of age, and then usually die. Unlike salmon, young longfin smelt track the ever-shifting zone where salt and freshwater meet and mix, riding currents much as turkey vultures soar on thermals. The combination of abundance and its ability to span the Bay-Delta salinity gradient made the longfin smelt ecologically important. "It occurs all the way from the Delta to the nearshore ocean, and all the predatory fish in the Estuary used to eat it," Rosenfield says.



Source: CDFW

We don't know how many longfin smelt are left but we do know they're dropping fast. "The population has gone down 99 percent or more in the last 45 years, a decline bigger than that of the Delta smelt," Rosenfield says. The state assessment, which measures changes in abundance from year to year, peaked in 1967 at nearly 82,000 longfin smelt. But the last decade has seen record lows down in the hundreds and even tens.

Longfin smelt live along the coast from here to Alaska. But the local population is isolated, cut off from the rest by ocean currents, just as mountains and other barriers can isolate land animals. Listed as threatened in



Courtesy NOAA

California in 2009, the longfin smelt is in enough trouble to be listed federally too. But instead it's been on a waiting list since 2012 because the system is backlogged. This is the longfin smelt's second shot at a federal protection. "It should have been listed 20 years ago," says Rosenfield, who helped with the first petition under the Endangered Species Act in the 1990s. "We're lucky it's still here."

He thinks the longfin smelt was saved by the big rains in the 1990s. That's because the population rises and falls mainly with freshwater outflows during the winter and spring. Another major factor in longfin smelt abundance is the number that are old enough to spawn.

"People have been trying to figure out what drives longfin smelt abundance for 40 years," says biologist Randy Baxter of the California Department of Fish and Wildlife, who has monitored the fish at 100-plus stations locally for 25 years. "It's amazing that just two factors account for more than 70 percent of the abundance."

Freshwater outflow is the biggest factor, and the longfin smelt's biggest need is likely more fresh water flowing though the Delta and into the Bay. "The relationship between abundance and flow is strong and extreme," Baxter says. "If you're looking to increase

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MARKET PLACE

Fresh Catch in 48 Hours

Anna Larsen, trained as a classical opera singer, never really planned on becoming a modern-day fishmonger. But a few years ago she was tired of living in LA and the constant hustle required of a performer. She was looking for a new creative outlet and thought it might lie in the food industry.

So she moved to the Bay Area and got a job working in a fish processing and wholesale company, North Coast Fisheries, based in Santa Rosa. The idea of a community supported fishery grew from there.

Modeled after community supported agriculture, where people buy a regular share of a farmer's produce, community supported fisheries aim to connect customers with local fishermen. Dealing in fresh fish is slightly more complicated than dealing in fresh vegetables mainly because of unpredictable weather and sea conditions, layers of regulations, and the general uncertainty inherent in fishing. "There are definitely times of the year when it is hard." Larsen says. "We don't always know what we are going to get. It can be an all or nothing situation."

Undeterred, Larsen started Siren Fish Company in the summer of 2011, two months later. That first summer involved lots of testing and building connections, but the demand for a constant supply of locally caught fish was there.

Larsen calls Siren's customers subscribers and says that there are currently about 400 steady participants. At times that number can climb to about 450. Subscribers sign up on the company's website to receive a share of whatever fish is caught.

Shares range from $20 to $60, depending on the size of the purchase. A half filet is the least expensive, a whole fish is the most expensive. Shares can be purchased weekly or bi-weekly.

Subscribers usually get their fish within 48 hours of it being caught.

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MANAGING EDITOR Ariel Rubissow Okamoto

CONTRIBUTING WRITERS
Joe Eaton
Robin Meadows
Daniel McGlynn
Victoria Schlesinger
Kathleen M. Wong

DESIGN Darren Campeau

COVER MAP Amber Manfree

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There are pick-up points around the Bay Area and they range from restaurants in San Francisco to private homes in Petaluma. There is even a pickup point in Davis.

It's the tasteable freshness of the fish that keeps subscribers loyal. "People say that we have ruined them on other fish," Larsen says, "There is a pretty big difference in the quality."

The night before delivery, subscribers get an email with details about where and how their fish was caught, complete with information about the boat and its captain. Also included in the email are recipes and preparation instructions particular to that catch. "But all of the background is really secondary to the fact that the fish is really good," Larsen says.

Since the trip from boat deck to dinner table is more direct, community supported fisheries are more efficient from a packaging and transportation standpoint. It's also a little easier to verify the sustainability of the fishing practices involved, "We bought one load of trawl-caught fish once, but I'll never do that again. Now we only buy hook and line, so there is not a lot of bycatch," Larsen says.

In 2013, Larsen says she purchased $130,000 worth of fish from local fishermen who work out of San Francisco, Bodega Bay and Fort Bragg. That is double the amount that the company purchased in 2012. She says Siren pays fishermen slightly higher than market rates. This season the demand has grown so much that Larsen is able to purchase entire hauls from fishermen, which works in both the buyer's and seller's favor. "We are looking to narrow the number of fishermen we work with and buy everything they catch," Larsen says.

Since 2011, when Siren Fish Company started taking on subscribers, other similar community supported fishery operations have opened in the Bay Area and down the central coast. "The word is spreading." Larsen says. "We have helped introduce a demand for local, sustainably caught fish." **DM**

CONTACT: Anna Larsen, sirenseasa@gmail.com

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abundance, the biggest knob is the water knob." But ironically, during the driest years when the longfin smelt needs freshwater the most, it gets less. "When water's tight for everyone, we still take what we need," Rosenfield says. This is a double whammy for the smelt because low freshwater flows make it spawn further inland closer to the maws of the Delta pumps.

Plan B for the longfin smelt, proposed in the *Bay Delta Conservation Plan*, is to try one of the smaller knobs: restoring tidal marshes to boost the fish's food. Longfin smelt and the invasive Asian clam (*Potamocorbula amurensis*) compete for the same food, notably the copepod *Eurytemora affinis*, a tiny crustacean that lives on phytoplankton. "The hypothesis is that restoration could help the longfin smelt without increasing freshwater flow," Baxter says.

Will habitat restoration be enough to reverse the longfin smelt's long, steep decline? And if so, will it be in time? If history is any guide, the longfin smelt will need help fast if the drought persists. "There were back-to-back horrendous drought years in 1976 and '77," Baxter recalls. "The population really suffered." Cautions Rosenfield, "If we don't improve freshwater flow, we're fighting with both hands tied behind our back." **RM**

CONTACT: Randy Baxter, Randy.Baxter@wildlife.ca.gov or Jon Rosenfield, rosenfield@bay.org