

U.S. Fish & Wildlife Service  
Bay Delta Fish & Wildlife Office  
Species Account  
DELTA SMELT  
*Hypomesus transpacificus*



CLASSIFICATION: Threatened  
Federal Register 58:12854; March 5, 1993  
[http://ecos.fws.gov/docs/federal\\_register/fr2235.pdf](http://ecos.fws.gov/docs/federal_register/fr2235.pdf)  
[Species and Listing Priority Form June 27, 2016](#)

CRITICAL HABITAT: DESIGNATED  
Federal Register 59:65256; December 19, 1994  
[http://ecos.fws.gov/docs/federal\\_register/fr2751.pdf](http://ecos.fws.gov/docs/federal_register/fr2751.pdf)  
See critical habitat [map](#) (PDF)

RECOVERY PLAN: FINAL  
Recovery Plan for the Sacramento-San Joaquin Delta Native Fishes,  
November 26, 1996  
[ecos.fws.gov/docs/recovery\\_plan/961126.pdf](http://ecos.fws.gov/docs/recovery_plan/961126.pdf).  
Note: Some information is out of date.

5-YEAR STATUS REVIEW  
Completed September 13, 2010  
[ecos.fws.gov/docs/five\\_year\\_review/doc3570.pdf](http://ecos.fws.gov/docs/five_year_review/doc3570.pdf)

Delta smelt were once one of the most abundant fish in the Delta. They could also be found year-round in Suisun Marsh, in Napa River and in the waterways of the south and central Delta.

In the late 1950s the first of two large water export facilities began pumping water out of the Delta, and then in 1967 the second large facility started up,

pumping even more water. Pesticides and herbicides began showing up with more frequency, which led to increased contamination of the Delta. And ships from China and elsewhere came to San Francisco and dumped their ballast water, which infected the Delta with invasive organisms, exotic species of zooplankton and a voracious plankton eating clam.

From that point, the ecological environment of the Delta was radically changed and damaged, and Delta Smelt numbers began declining in the 1970s, plunging in the early 1980s to worrisome levels. Delta Smelt was listed under the Endangered Species Act in 1993, and have declined to the edge of extinction today.

## DESCRIPTION

Delta smelt (*Hypomesus transpacificus*) are slender-bodied fish, approximately 5.0 to 7.0 cm (about 2 to 3 inches) long. They are in the Osmeridae family (smelts). They have a steely blue sheen on the sides and seem almost translucent. Smelts live together in schools and feed on zooplankton (small fishes and invertebrates).

Delta smelt are a euryhaline species (tolerant of a wide salinity range). They have been collected from estuarine waters up to 14 ppt (parts per thousand) salinity. For a large part of their one-year life span, delta smelt live along the freshwater edge of the mixing zone (saltwater-freshwater interface), where the salinity is approximately 2 ppt.

Shortly before spawning, adults migrate upstream from the brackish-water habitat associated with the mixing zone and disperse widely into river channels and tidally influenced backwater sloughs. They spawn in shallow, fresh or slightly brackish water upstream of the mixing zone.

Most spawning happens in tidally influenced backwater sloughs and channel edgewater. Although spawning has not been observed in the wild, the eggs are thought to attach to substrates such as cattails, tules, tree roots and submerged branches.

## DISTRIBUTION

Delta smelt are found only from the Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties. Their historic range is thought to have extended from Suisun Bay upstream to at least the city of Sacramento on the Sacramento River and Mossdale on the San Joaquin River. They used to be one of the most common pelagic (living in open water away from the bottom) fish in the upper Sacramento-San Joaquin Estuary.

## THREATS

There are four significant threats to the species:

- Direct entrainments by State and Federal water export facilities
- Summer and fall increases in salinity
- Summer and fall increases in water clarity
- Effects from introduced species

Ammonia in the form of ammonium may also constitute a significant threat to the delta smelt.

Additional potential threats include predation, entrainment into power plants, contaminants and small population size. Existing regulatory mechanisms have not proven adequate to halt the decline of delta smelt since the time of listing as a threatened species.

We are unable to determine with certainty which threats or combinations of threats are directly responsible for the decrease in delta smelt abundance. However, the apparent low abundance of delta smelt in concert with ongoing threats throughout its range indicates that the delta smelt is now in danger of extinction throughout its range.

## PROGRAMMATIC CONSULTATION

The Service's [Programmatic Consultation with the U.S. Army Corps of Engineers](#) on the issuance of section 10 and 404 permits streamlines projects with relatively small effects on the Delta smelt.

### RECENT INFORMATION

March 29, 2016. [UC Davis Coastal and Marine Sciences Institute Delta and Longfin Smelt Symposium Delta and Longfin Smelt: Is Extinction Inevitable?](#) This video is an overview of smelt issues: [The Ecology and Management of Delta Smelt: New insights into the most important non-game fish in the United States](#).

January 2015 [An updated conceptual model of Delta Smelt biology: our evolving understanding of an estuarine fish. Interagency Ecological Program of the San Francisco Bay/Delta Estuary, Management, Analysis and Synthesis Team \(MAST\)](#).

## REFERENCES FOR ADDITIONAL INFORMATION

(See also Delta smelt species account for 4th, 5th and 6th grade students, [http://www.fws.gov/sfbaydelta/species/delta\\_smelt\\_kf.cfm](http://www.fws.gov/sfbaydelta/species/delta_smelt_kf.cfm).)

Baxter, R., R. Breuer, L. Brown, L. Conrad, F. Feyrer, S. Fong, K. Gehrts, L. Grimaldo, B. Herbold, P. Hrodey, A. Mueller-Solger, T. Sommer, K. Souza. 2010. Interagency Ecological Program 2010 Pelagic organism decline work plan and synthesis of results through August 2010. Interagency Ecological Program for the San Francisco Estuary. 125 pages.

Moyle, P. B., B. Herbold, D. E. Stevens, and L. W. Miller. 1992. Life history and

status of delta smelt in the Sacramento-San Joaquin Estuary, California.  
Transactions of the American Fisheries Society. 121:67-77.

Parker, A.E., et al. Elevated ammonium concentrations from wastewater discharge depress primary productivity in the Sacramento River and the Northern San Francisco Estuary. Mar. Pollut. Bull. (2012), doi:[10.1016/j.marpolbul.2011.12.016](https://doi.org/10.1016/j.marpolbul.2011.12.016)

Wang, J.C.S. 1986. Fishes of the Sacramento-San Joaquin Estuary and Adjacent Waters, California: A Guide to the Early Life Histories.

Bay-Delta Office, Fish and Wildlife Service  
650 Capitol Mall, 8th Floor  
Sacramento, CA 95814  
Main Reception: 916-930-5603  
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