

# THE HEAT IS ON

Species feeling the effects of climate change



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## Delta Smelt

*Hypomesus transpacificus*

### Region:

West Coast

### Area affected:

Sacramento-San Joaquin  
River Delta

### Climatic change:

Drought and increased  
temperature

### Impact:

Habitat loss

### ABOUT THIS SPECIES

The delta smelt is found only where the Sacramento and San Joaquin rivers meet in a complex delta of bays and sloughs, before emptying into San Francisco Bay. Just three inches long, the smelt is readily identified by its large eyes, an adaptation for feeding on zooplankton and small invertebrates in the cloudy, sediment-rich waters of the Bay-Delta. Foraging predominantly in cloudy, turbid waters also helps avoid predation by larger fish. The smelt live only a year before spawning in the upstream, low-salinity reaches of the rivers and sloughs. The main threats to the fish are water pollution, reduced river flow and changes to flow caused by upstream water diversions and dams. Delta smelt are listed as “threatened” under the Endangered Species Act.

### DESCRIPTION OF IMPACT

The multi-year severe drought in California has had major impacts on its waterways, including the rivers that feed into the San Francisco Bay-Delta. Diversions of water for agriculture and urban use have further reduced river flow, allowing sea water from the nearby Pacific Ocean to move further into the Bay-Delta, increasing its salinity. Delta smelt prefer low-salinity water and cannot use their preferred habitats during times of low freshwater flow. Seeking lower salt concentrations, the smelt instead move upstream, where they encounter competition from other fish and dangerous impediments like water pumps. The rivers are also getting warmer, and the delta smelt cannot tolerate water temperatures higher than about 78 degrees F. **The drought’s effects on flow and salinity may be helping to drive the delta smelt to extinction: Populations have fallen to new record lows for several years running, and surveys in spring 2015 found only six fish in the wild.**

### References

California Department of Fish and Wildlife. 2016. Monthly Abundance Indices. <http://www.dfg.ca.gov/delta/data/fmwt/indices.asp>

Kay, J. 2015. Delta smelt, icon of California’s water wars, is almost extinct. *National Geographic*. April 3. <http://on.natgeo.com/20OoJEX>

U.S. Fish and Wildlife Service. 2014. Species Assessment and Listing Priority Assignment Form: Delta smelt (*Hypomesus transpacificus*). <https://ecos.fws.gov/docs/species/uplisting/doc4452.pdf>



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