



## Emergency Action to Help Delta Smelt

*State and Federal agencies team up with farmers to help save an iconic endangered species*

**Background.** Delta smelt – an endangered fish species found nowhere else but the Sacramento-San Joaquin Delta (Delta) – remain perilously close to extinction following several years of extreme drought conditions. This summer, State and Federal agencies are pursuing several efforts that aim to improve habitat conditions for these imperiled fish. One of these emergency efforts focuses on a critically important component of Delta smelt survival: food abundance and availability.

Habitat loss and the introduction of nonnative competitors, such as the overbite clam, have decimated food supplies across the Delta. Food web impacts are thought to be one of the major factors responsible for the decline of Delta smelt and other native fish species. Changes in food abundance have ecosystem-wide implications which can affect water supplies for the state’s communities and agricultural economies.



Zooplankton

In 2011 and 2012, following larger-than-normal agricultural return-flows from the Yolo bypass, scientists observed an unusual phytoplankton bloom in the Rio Vista area of the lower Sacramento River. It has since been theorized that this production could benefit Delta smelt if it could be replicated annually.

**Emergency Action.** From July 1<sup>st</sup> through July 21<sup>st</sup>, State and Federal agencies will work with Glen Colusa Irrigation District, Reclamation District 108, Knaggs Ranch LLC, and other local partners to convey ~ 400 cfs of Sacramento River water down the Colusa Basin Drain, through the Knights Landing Ridge Cut, past the Wallace Weir, through the Yolo Bypass, and into the Delta. This limited “pulse flow” is designed to push phytoplankton-rich water down into the Delta where it can spur a large zooplankton bloom, thereby providing critical food supplies to young Delta smelt.

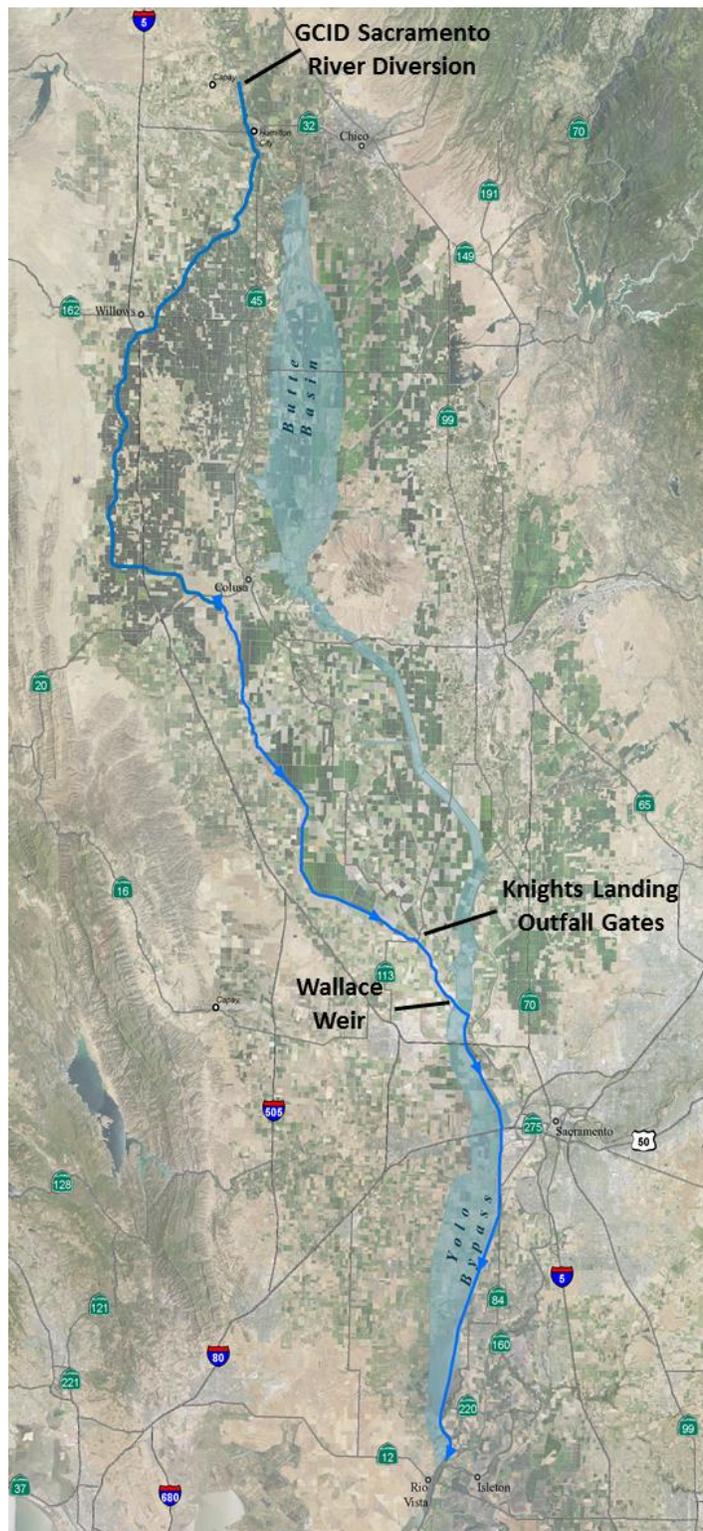
Due to the planned late summer/fall 2016 re-construction of the Wallace Weir to benefit endangered Chinook salmon species, this year's emergency Delta smelt action will occur in July. Subsequent years' plankton-production efforts will likely occur in the fall.

The California Department of Water Resources (DWR) will adjust operations at the Knights Landing Outfall Gates facility to help facilitate the temporary increased flows.

**Learning by doing.** Supported by public funds made available in the 2016/2017 State Budget, DWR is prepared to study each aspect of this emergency action so that future efforts can be as effective as possible. For example, state scientists will measure effects on water quality, phytoplankton and zooplankton abundance, clam abundance, and other key variables at multiple Delta locations to better understand the ecological mechanisms of phytoplankton blooms.

**Partners.**

- US Bureau of Reclamation
- US Fish and Wildlife Service
- National Marine Fisheries Service
- CA Natural Resources Agency
- CA Department of Fish and Wildlife
- CA Department of Water Resources
- Glenn Colusa Irrigation District
- Reclamation District 108
- Knaggs Ranch
- Conaway Ranch



Path of flows diverted from the Sacramento River near Hamilton City. Water will move down through GCID's system, into the Colusa Basin Drain and Knights Landing Ridge Cut, through Wallace Weir and the Yolo Bypass, and into the Delta near Rio Vista.