



Fish use of restored habitat in the stream-estuary ecotone habitat of Humboldt Bay

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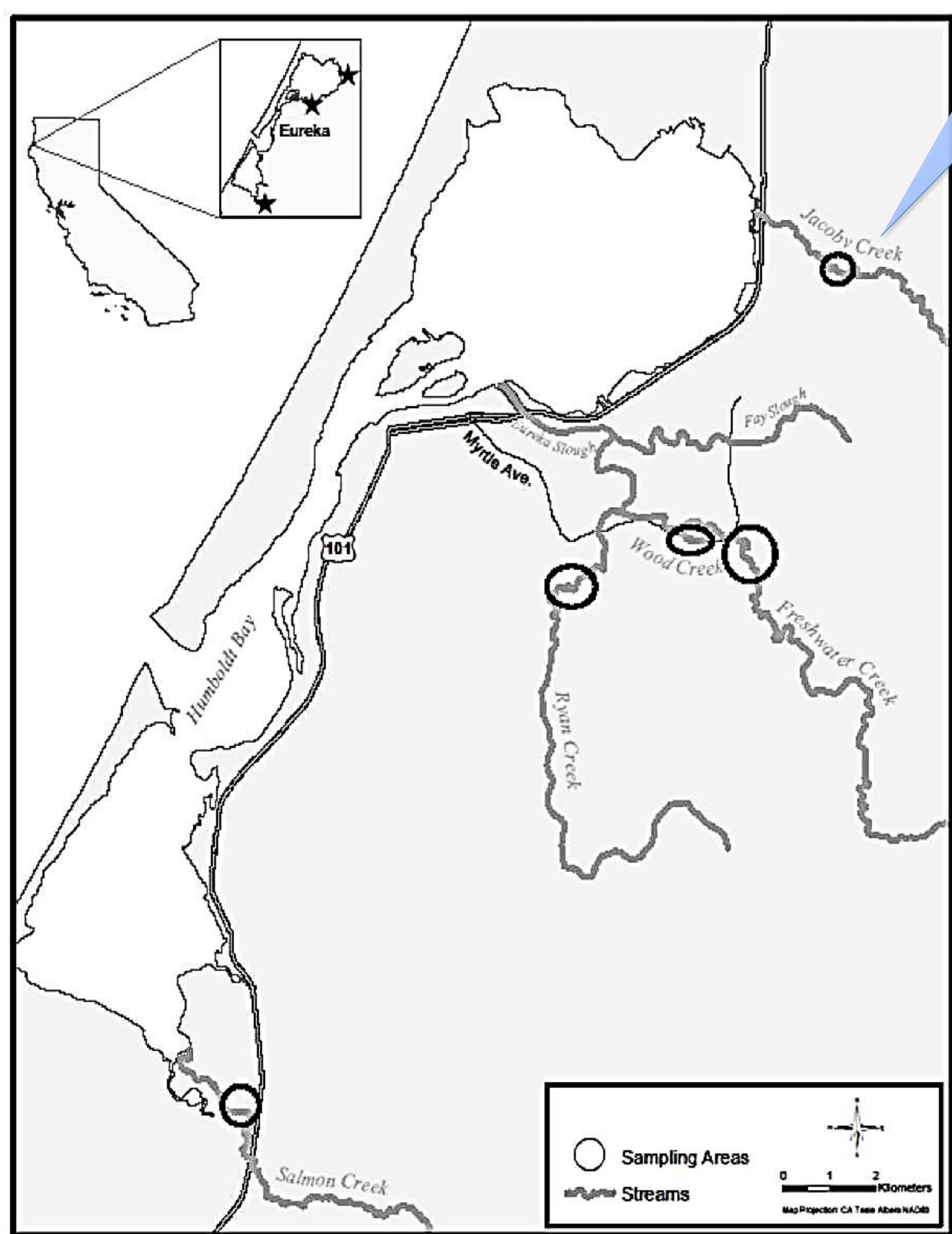
California Department of Fish and Wildlife and Pacific States Marine Fisheries Commission staff have sampled the stream-estuary ecotone (SEE) of selected Humboldt Bay tributaries in an ongoing effort to document their use by juvenile salmonids and to assess estuarine habitat restoration projects.



Seining and minnow trapping SEE habitat around Humboldt Bay (upper three photos); Dungeness crab (lower left) and longfin smelt (lower right).

Multiple salmonid recovery plans encourage estuary and marsh habitat restoration projects around Humboldt Bay. The majority of tidal wetlands around Humboldt Bay have been diked and converted to pasture land during the past 150 years. Most of the Humboldt Bay sloughs are now contained between levees. Their adjacent marshes have been converted to pasture land and consequently the historic connectivity between slough channels and marsh habitat has been lost.

Currently, former marshlands around Humboldt Bay are being acquired by various public agencies for the purpose of habitat restoration. Willing private landowners are partnering with local land trusts and other non-profit groups to restore wetlands. The result is numerous SEE restoration projects are being planned and implemented in Humboldt Bay's tributaries and sloughs including constructing off channel ponds.



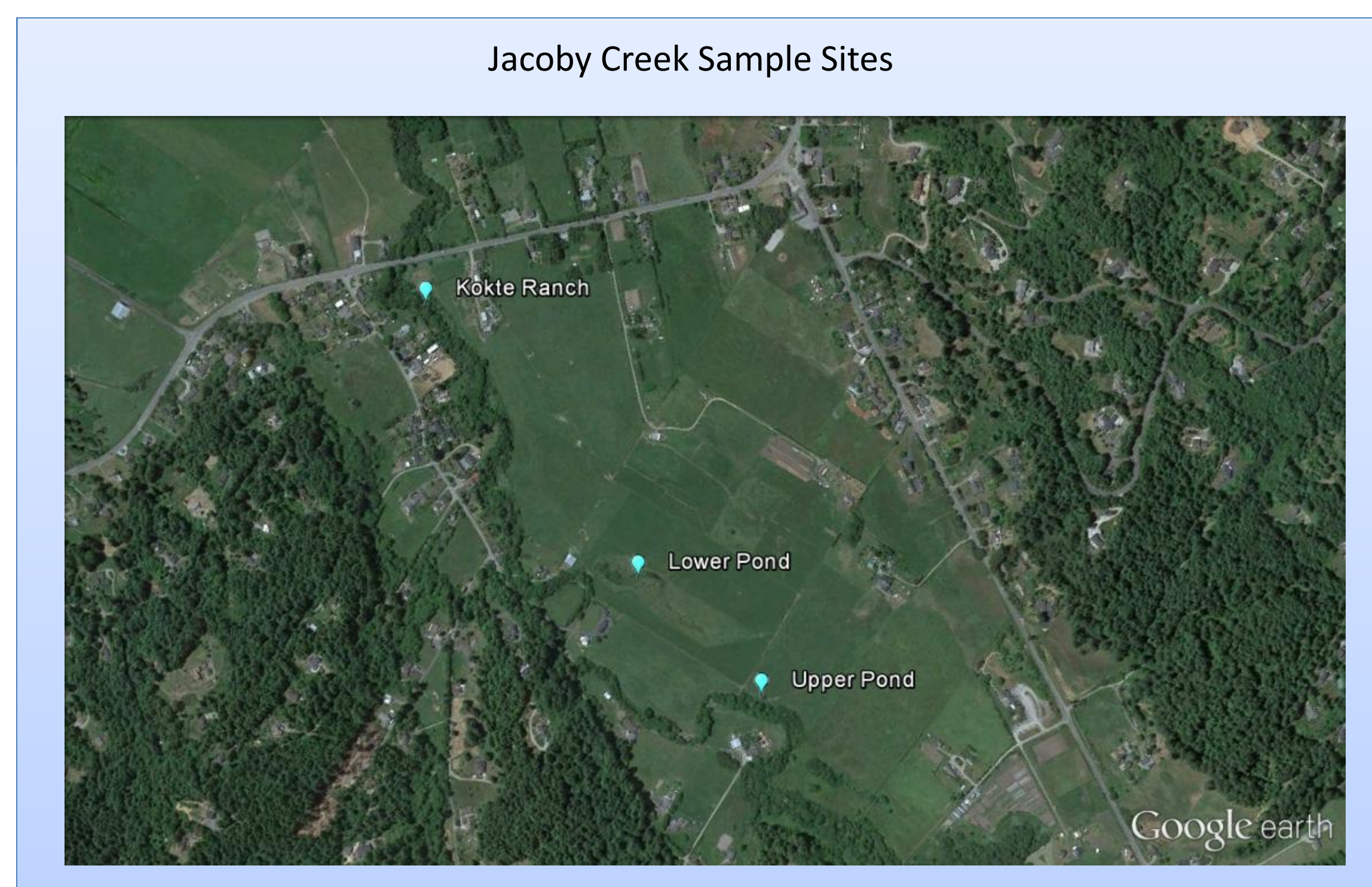
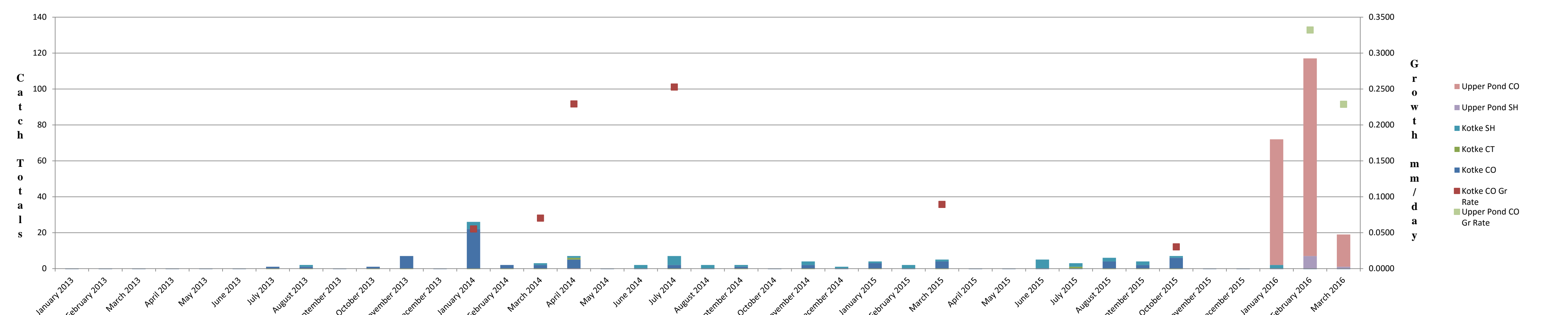
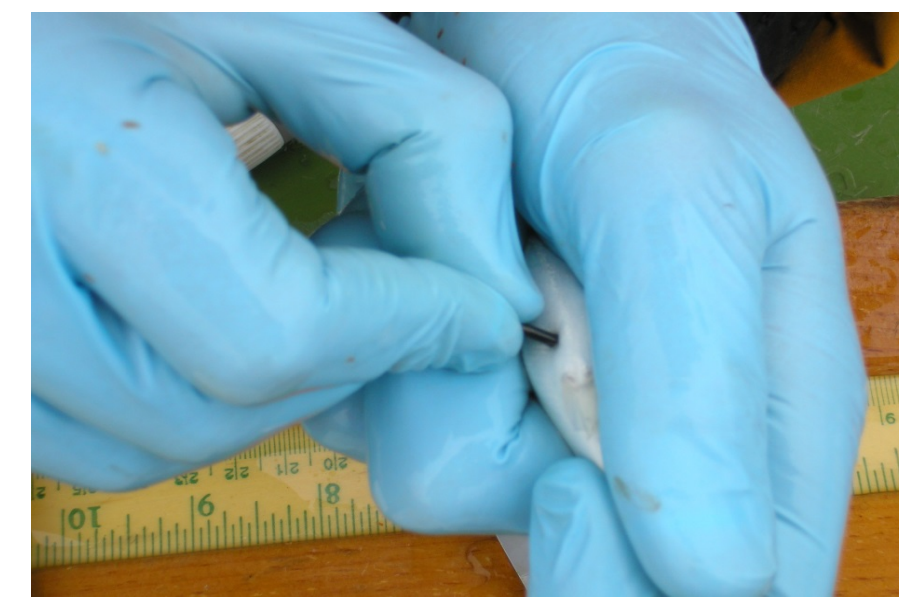
The latest rehabilitation project, which is presented here, took place in the Jacoby Creek watershed. Pacific Coast Fish Wildlife and Wetlands Restoration Association received funding from CDFW's FRGP to construct two off-channel ponds in Jacoby Creek on Jacoby Creek Land Trust property to provide rearing habitat for juvenile salmonids during the winter and spring.

Kotke Ranch

Beginning in the fall of 2012 NSA (Natural Stock Assessment Project) conducted fish and water quality sampling in mainstem Jacoby Creek on Jacoby Creek Land Trust property at Kotke Ranch. Fish were captured using



minnow traps baited with frozen salmon roe. Fish captured were weighed, measured and PIT tags were applied.



Lower Pond Rehabilitation

During three years of pre-project monitoring we did not capture any fish in lower Jacoby Creek Pond. Water quality in the lower pond was usually only poor to adequate in the winter and spring and inadequate or completely dry in the summer and fall. During the two months of post-project sampling we captured six coho salmon and numerous threespine stickleback in the lower pond. Water quality was improved over pre-project conditions.

Lower Pond before Rehabilitation



Lower Pond during Rehabilitation

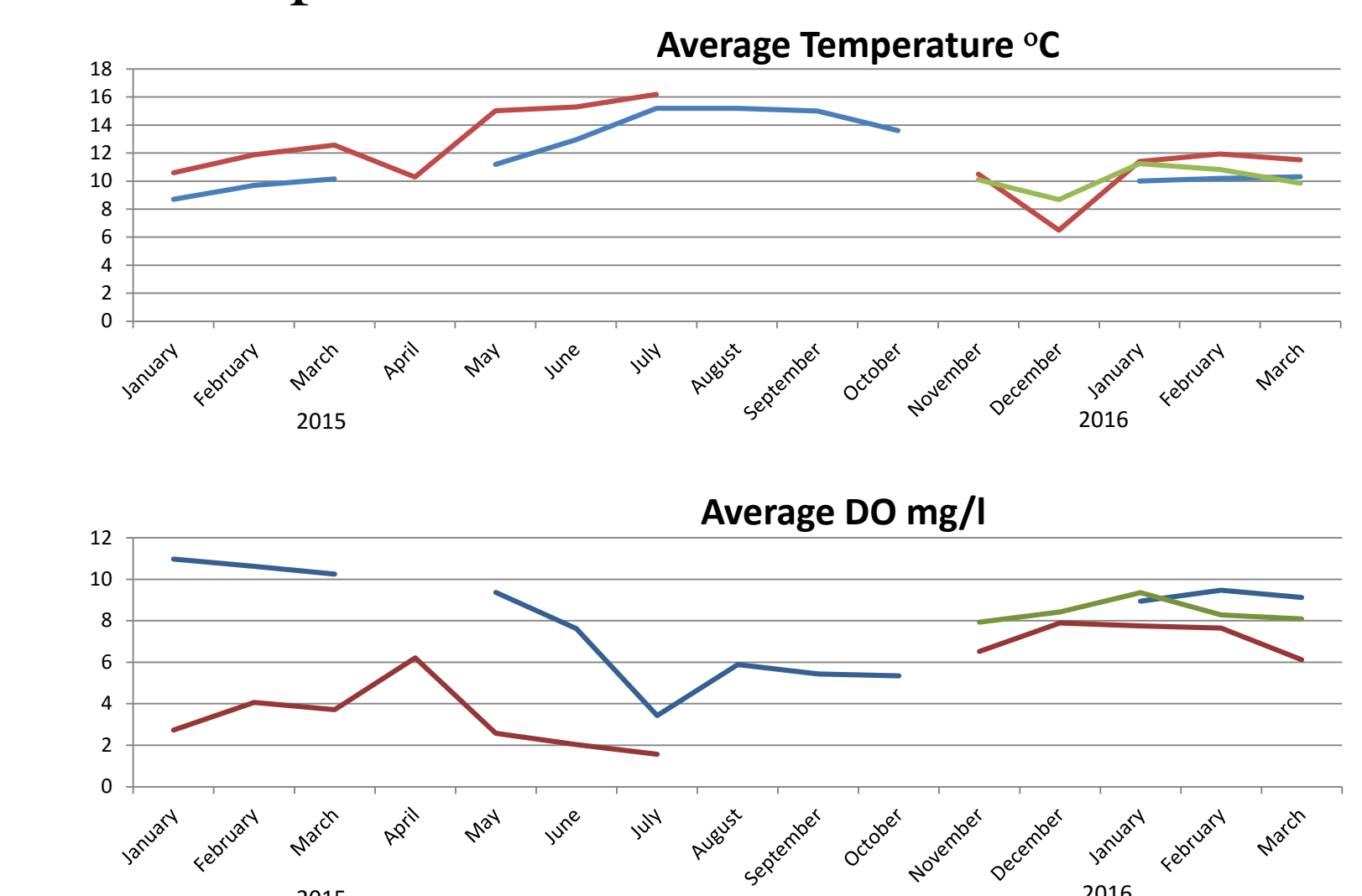


Upper and Lower Ponds

A large number of juvenile salmonids, mostly coho, moved into the upper pond between mid-December and mid-January, but relatively few fish moved into the lower pond. We are unable to seine effectively in the lower pond because of thick stands of aquatic vegetation which will reduce our salmonid catches in this pond. However, we also captured many more salmonids in minnow traps in the upper pond than the lower pond.

Pre and post-project differences in the upper pond are more clear-cut than the lower pond. However, the new Jacoby Creek ponds appear to have provided rearing habitat for numerous coho salmon and smaller numbers of steelhead trout. Also, growth rates of juvenile coho salmon were over twice as fast in the pond compared to those captured in mainstem Jacoby Creek.

It will be intriguing to see if increased connectivity and water circulation in the ponds result in longer lasting rearing conditions for salmonids compared to pre-project conditions and if juvenile salmonids continue to utilize the new off channel ponds.



Upper Pond Construction



Many studies in the Pacific Northwest have documented that juvenile salmonids, especially coho salmon, will move into off channel or low gradient habitat to escape high mainstem flows. CDFW has documented similar behavior in many Humboldt Bay tributaries including constructed off channel ponds on Salmon Creek, Martin Slough and Wood Creek. The City of Arcata documented juvenile coho use of a newly constructed off channel habitat in the stream-estuary ecotone of Jacoby Creek in the spring of 2012.

Therefore, it is likely that improving/creating access to the off channel pond habitat will provide important rearing habitat for juvenile salmonids in Jacoby Creek.

