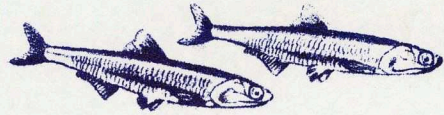
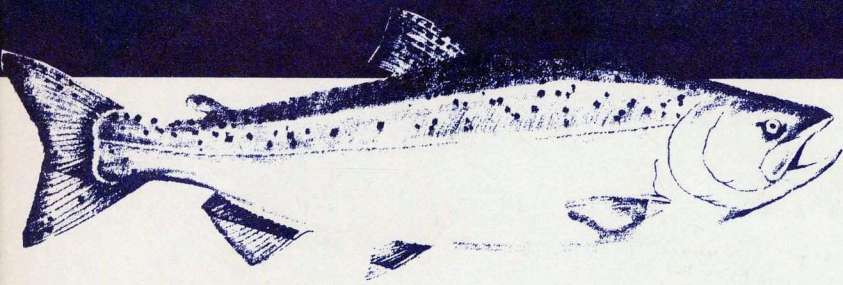


# Whiskeytown Unit

Whiskeytown-Shasta-Trinity  
National Recreation Area  
National Park Service  
U.S. Department of the Interior



## It's Curtains for the Chinook Salmon (Cooler water will aid our salmon)



### TEMPERATURE NEEDS OF THE CHINOOK SALMON

Water temperature plays a critical role in the life cycle of the chinook salmon, an anadromous fish that migrates over 218 miles in the Sacramento River to return to the stream from which it was spawned. Four races of salmon spawn in the upper Sacramento River: fall, late-fall, spring, and winter. The races are named for the time period when they first enter fresh water.

Prespawning adult salmon tolerate a broader range of water temperatures than their eggs or larvae. The eggs and larvae require cold (42-56° F), clean water to survive. In this temperature range salmon eggs hatch in about 50 days. **Yolk-sac fry** the newly hatched salmon, stay in the gravel for 2-3 weeks until the yolk sack is absorbed. Once they emerge from the gravel the salmon fry feed along the waters edge. The optimum water temperature for salmon fry ranges from 42-65° F.

The urge to migrate occurs when the juveniles "smolt". During this smolting process, the fry undergo physiological changes that allow them to adapt to living in salt water. They migrate, tail first and close to the riverbank, downstream through the Delta and into the Pacific Ocean.

### WATER TEMPERATURE CONTROL CURTAINS

Water temperature control curtains were installed in Whiskeytown Lake by the Bureau of Reclamation to meet the narrow temperature range requirements of the salmon eggs and sac-fry. The main function of the curtains is to prevent mixing of warmer (75° F) lake water with colder (48° F) water from the Carr Powerhouse. Without the curtains incoming cold water was warmed from 48° F to 62° F by the time it reached the Highway 299 bridge.

#### How do the curtains work?

The Oak Bottom curtain acts as a barrier to prevent warmer lake water from moving further up the channel and mixing with the cold incoming water. Mixing occurs at the **plunge point**. Before the curtain was installed the plunge point was located up channel from the Oak Bottom campground area.

You may have noticed that the Overlook curtain is much larger than the Oak Bottom curtain. The Overlook curtain is designed to block out the warmer lake water and to selectively withdraw the cold bottom water that has been transported through the lake along the bottom. The curtain extends out into the lake in an inverted U-shape to aid cold water movement into the underwater intake and tunnel.

#### Curtain facts...

The curtain fabric is made out of reinforced rubber sheets that form a continuous barrier under the water. The Oak Bottom curtain is 400 feet long and reaches a depth of 40 feet. The Overlook curtain is 2400 feet long and reaches a depth of 100 feet.

This new technology will hopefully contribute to the continued survival of Northern California's chinook salmon.

#### Visitor Safety

**The water curtains are not designed for tying up boats, sunbathing or other recreational activities. Stay safe by staying off!**

