



# North/Central Delta Regional Salmon Out-migration Study Fact Sheet



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## Chinook Salmon

In 1989 the Sacramento River winter run of Chinook salmon were placed on the endangered species list by California. In 1992 NOAA Fisheries listed the salmon as endangered. Entrapment through the Delta Cross Channel (DCC) and Georgiana Slough has been considered a factor in the population decline from the late 1960's to the late 1980's.

## Delta Cross Channel

The DCC and the gate structure, located on Highway 160 between the towns of Locke (to the north) and Walnut Grove (to the southwest), were constructed in 1950-1951 to transfer Sacramento River water into the central/southern Delta and thereby dilute the San Joaquin River water and push back intrusion of seawater. The DCC has a design flow capacity of 3,500 cfs on average but range from zero flow during ebb tides to 10,000 cfs during flood tides. The gates are closed for flood control downstream and prevention of scouring at the gate structure when Sacramento River flows are in excess of 25,000 cfs.

## Regional Study

The goal of this experiment, November 2008 through February 2009, is to understand route selection and survival of the Sacramento River winter run of juvenile salmon in the Sacramento/San Joaquin Delta. Analysis from the study data will provide management tools capable of predicting impacts on salmon out-migrants considering operations of existing facilities in the delta, such as the Delta Cross Channel, and proposed conveyance alternatives, such as the Through Delta Facility. This field experiment is inherently interdisciplinary, involving the use of emerging technologies in fisheries science and hydrodynamic measurement within bends and junctions to discover the mechanisms that control route selection.

The salmon investigation is composed of two main elements:

- 1) Acquire a regional database, of out-migration movement, flows, and salinity, leading to a statistical analysis of route selection behaviors and reach specific survival rates, and
- 2) At the Sacramento River junctions of Georgiana Slough and the DCC acquire the salmon and hydrodynamic data in a 3-dimensional array to develop a modeling tool(s) estimating localized juvenile salmon behavior response to project induced junction hydrodynamics.

To conduct the experiment and analysis work the study will require:

- 48,000 person-hours
- Acoustic tagging and tracking of up to 6,000 juvenile salmon
- Four fish releases with different DCC gate operation scenarios
- 10 miles of cables
- 48 single-port hydrophone receiver units (see map, reverse side)
- 4 multi-port hydrophone receiver units (see map, reverse side)
- Fully autonomous boats fitted with Acoustic Doppler Current Profilers
- High frequency radar system to map the surface currents at junctions

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# Delta Regional Salmon Outmigration Study

Map of Delta Monitoring Regions

