Growth rates of juvenile Chinook salmon (*Oncorhynchus tshawytscha*) in various habitats of a restored floodplain

**Background**

In 1998 agricultural land adjacent to the Cosumnes River was restored to floodplain habitat. The levees were breached so that the river was allowed to connect with the floodplain multiple times during a normal water year. This created habitat for many species of plants and animals that are able to utilize a depleted resource in the California Central Valley. We studied how juvenile Chinook salmon can potentially use this restored habitat for enhanced growth and survivability.

**Objectives**

To determine growth rates of juvenile Chinook salmon in different habitats in a restored floodplain and in control sites in the river

To determine how floods of varying magnitude and duration affect the growth of juvenile Chinook salmon

To help resource managers better manage restored floodplains

**Methods**

Fish were placed in 60 2’ x 2’ x 4’ extruded plastic cages with 1/4 inch mesh.

Ten fish were placed in each cage during the 2004 and 2005 flood seasons.

The fish were measured as regularly as the hydrograph allowed.

Photographs showing how quickly the landscape on the restored floodplain can change.

Floodplain two years after restoration (upper left) and eight years after restoration (upper right). Floodplain dry during summer months (lower left) and flooded during winter months (lower right).

**Results**

**Conclusion**

Juvenile Chinook salmon grew approximately 4.5 times faster on the floodplain than in the river sites. The floodplain sites that had the highest growth rates were those that dried out during the summer months and had herbaceous vegetation growth until the floodplain was inundated. Fish in the inter-tidal portion of the river showed very poor growth. While fish in the river above tidal influence showed high growth during low flows, but experienced high mortality during high flows.

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