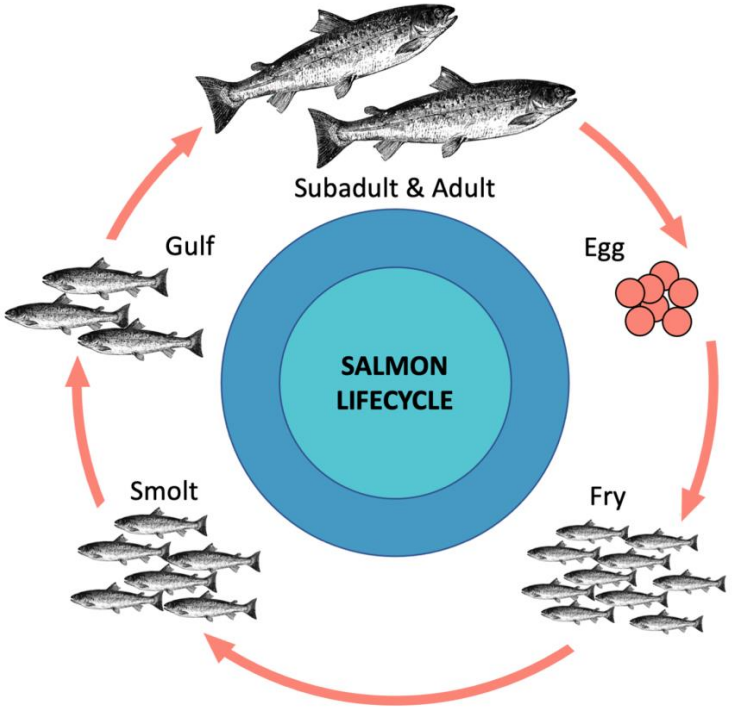
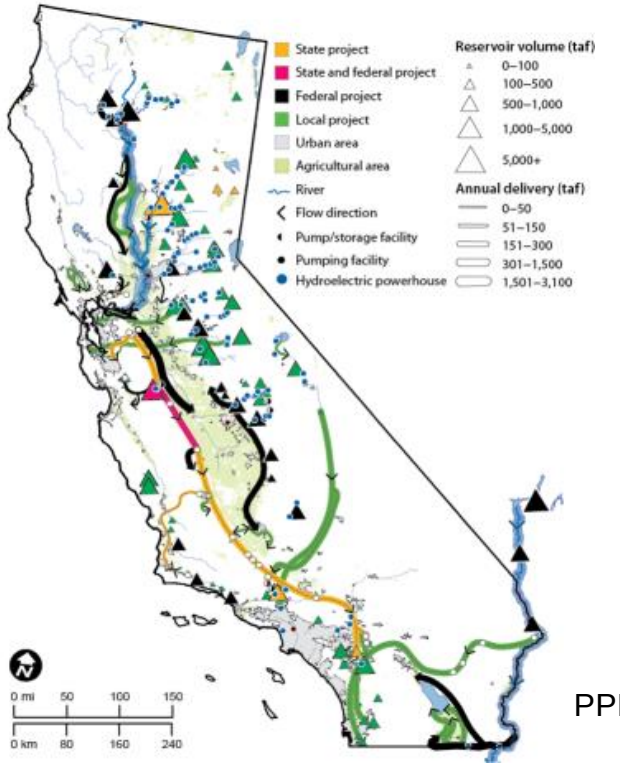
Water Management and Salmon



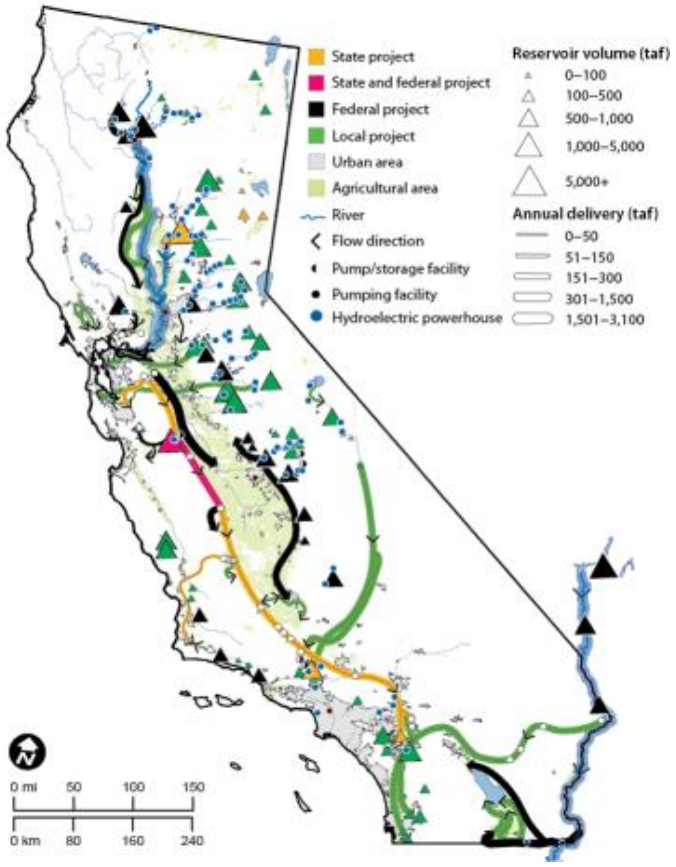


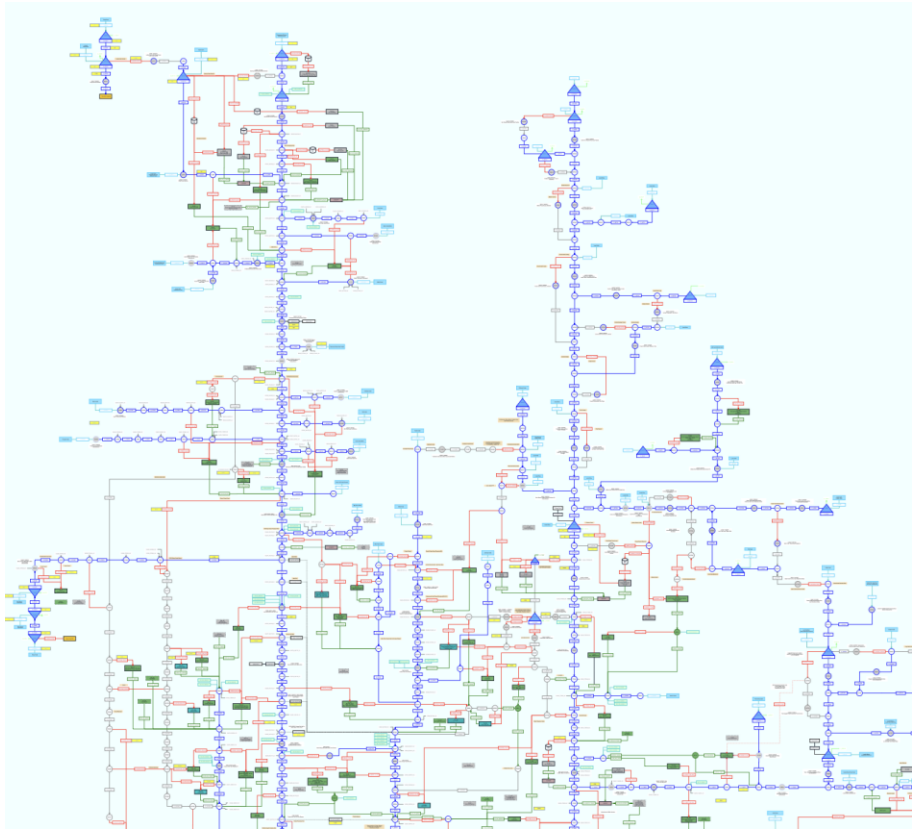
PPIC

California Water and Environmental Modeling Forum

Eric Danner
NOAA Fisheries

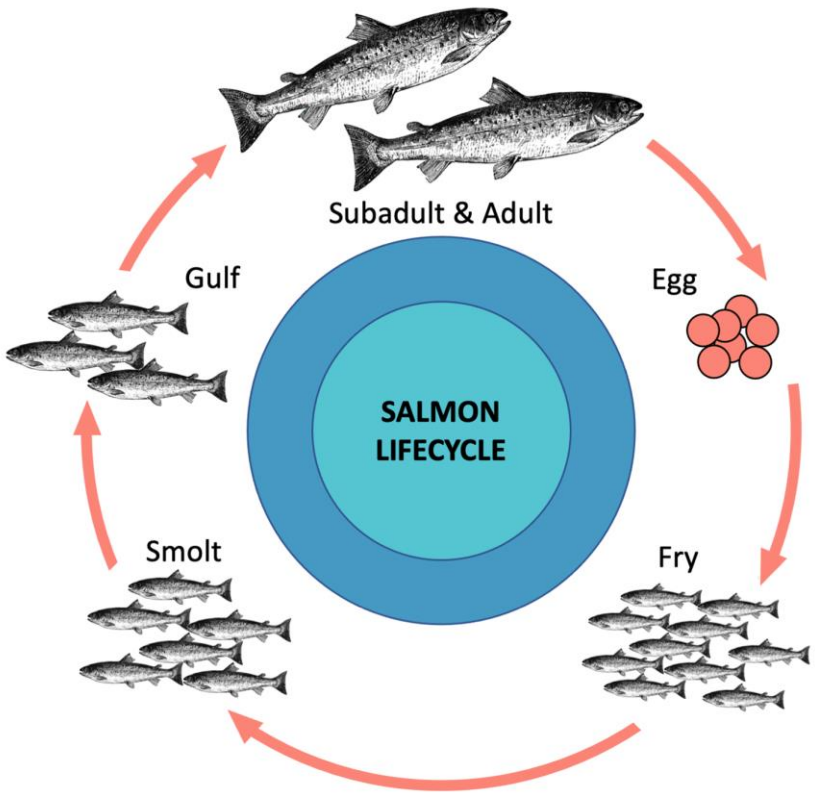
Models for evaluating water allocation

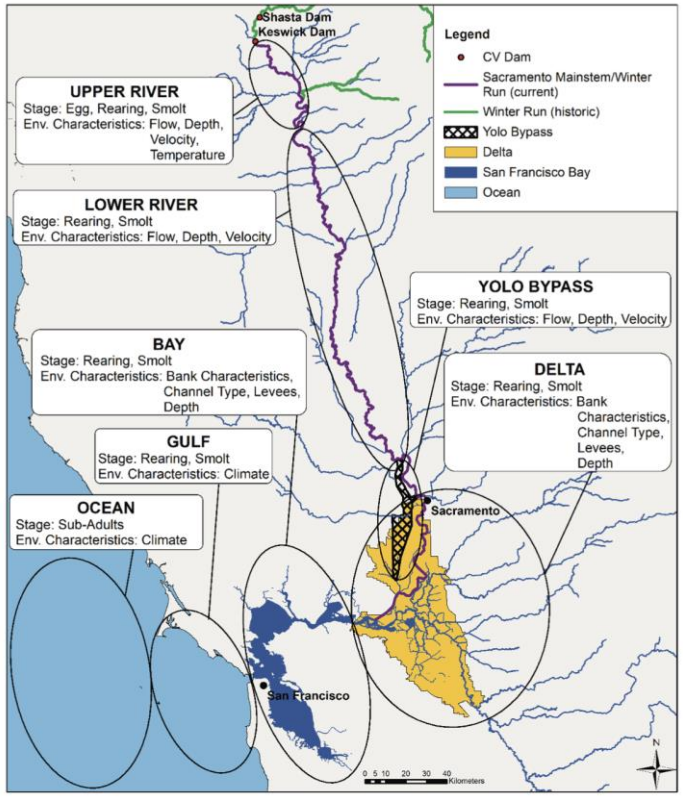




CalSim 3 schematic (just a portion…)

Models for evaluating salmon population dynamics





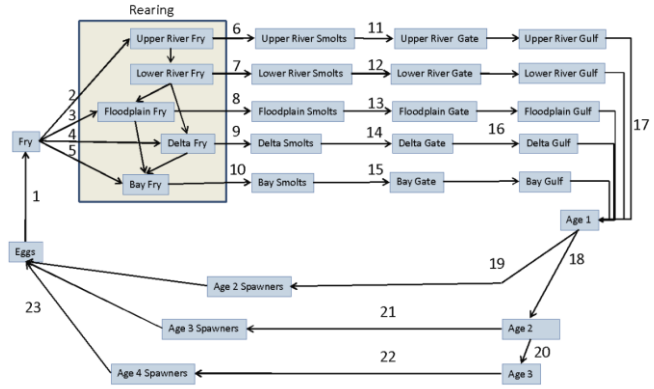
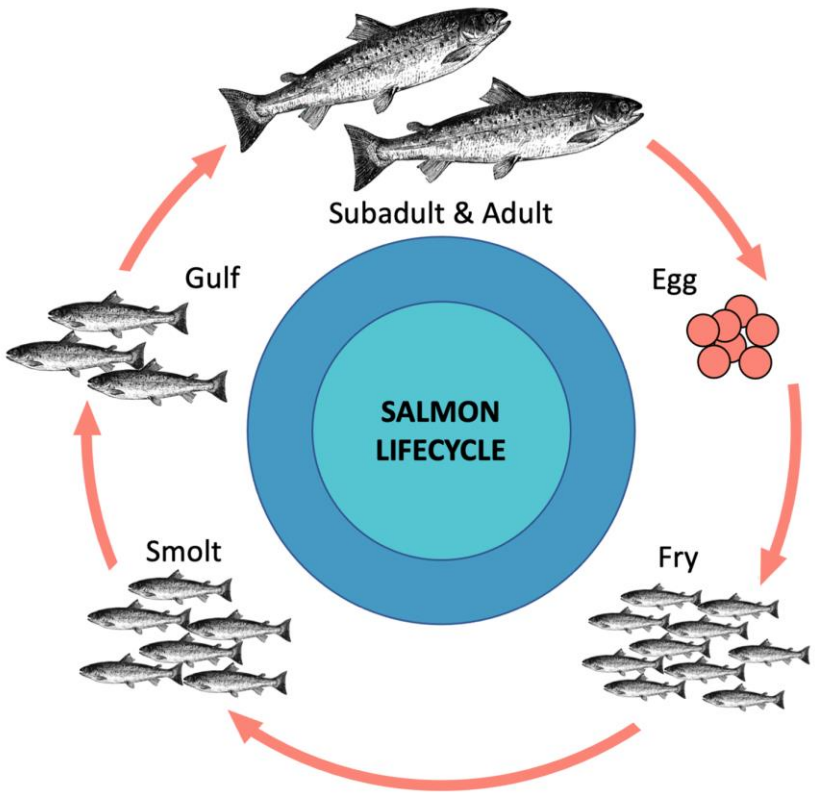
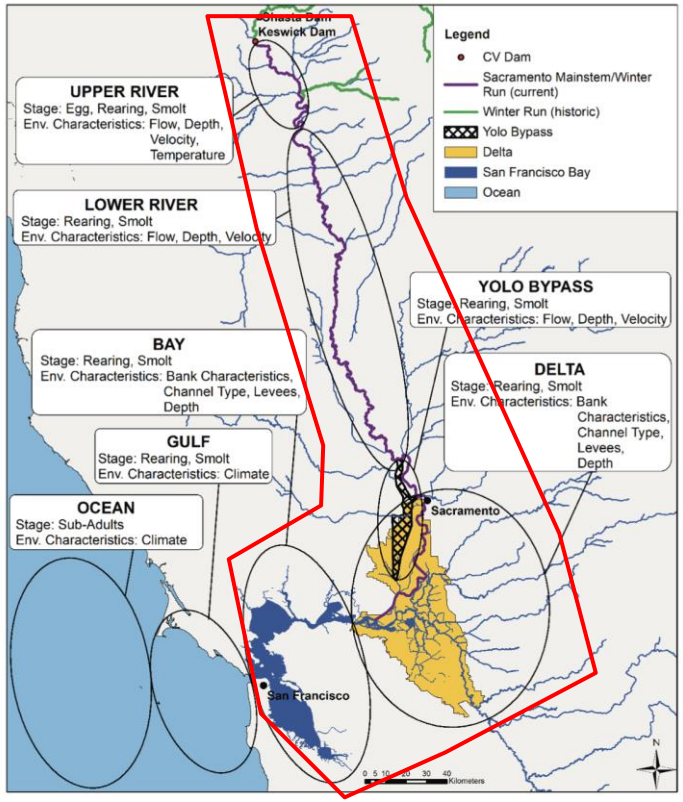


Figure 4. Central Valley Chinook transition stages. Each number represents a transition equation through which we can compute the survival probability of Chinook salmon moving from one life stage in a particular geographic area to another life stage in another geographic area.

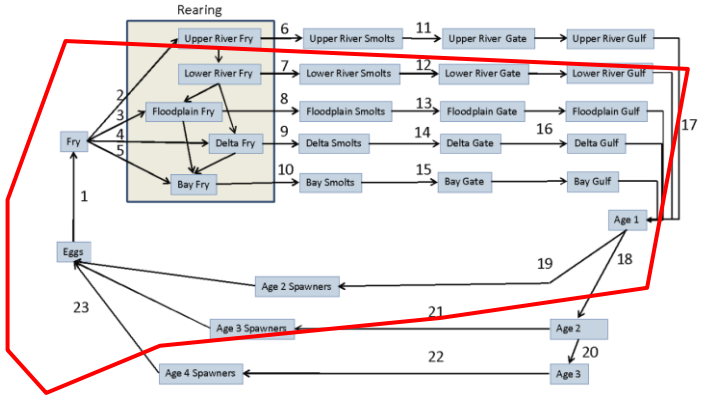
The WRLCM is a salmon population dynamics model supported by hydrological, hydraulic, and water quality models that together form a framework for analyzing the effects of complex water management, habitat restoration, and climate change scenarios on salmon populations.

Models for evaluating salmon population dynamics…





Freshwater stages are critical



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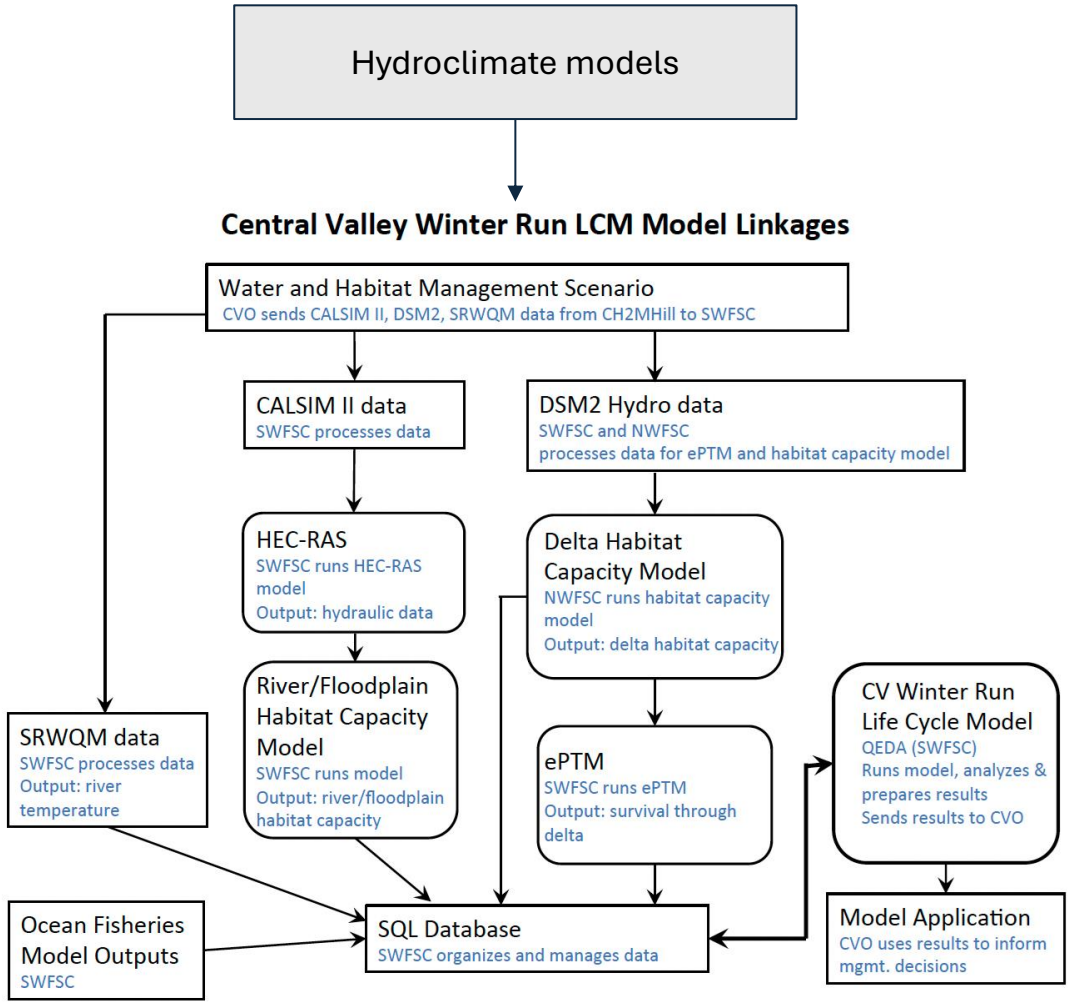
The WRLCM is a salmon population dynamics model supported by hydrological, hydraulic, and water quality models that together form a framework for analyzing the effects of complex water management, habitat restoration, and climate change scenarios on salmon populations.

Many sub models



In order to make all these linkages, we need data from:

Physical models:

- CalSim
- HEC-RAS
- DSM2
- SRQWM
- etc…

Biological models:

- River habitat capacity
- Floodplain habitat capacity
- Delta habitat capacity
- Delta survival
- etc…

Submodels are evolving / improving over time…

Based on different scales, programing languages, etc.

When one model changes slightly, can “break” the workflow

The Winter-run Life Cycle Model is just one example

We need a consistent, efficient, and robust system moving forward:

- The integration of new information
  - New science
  - New data
  - New models
- Other runs of salmon
- Other species of interest
- Economic models, etc.

Additional benefits from collaboratory