**Modeling the Effects of Sites Reservoir on Floodplain Rearing Habitat in the Sacramento Valley**

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Sites Reservoir is a proposed off-stream reservoir in California's Sacramento Valley that would be capable of diverting and storing up to 1.5 million acre-feet of excess winter runoff from the Sacramento River and using it to improve water reliability in drier periods. The operations of Sites Reservoir will influence the quantity and quality of off-channel rearing habitat for juvenile salmonids. We performed hydrologic, hydraulic, and ecological modeling to determine the relationships between flows in the Sacramento River and the total area of potentially suitable habitats in the Sacramento River channel, Sutter Bypass, and Yolo Bypass, considering various hydrologic conditions and Sites Reservoir operational scenarios. Existing conditions were evaluated against potential Sites Project diversion scenarios by evaluating changes in the frequency of potential inundation events for different flows that satisfied requisite duration criteria, and changes in average monthly inundated areas that satisfied physical criteria. This process is applicable to other watersheds.

Depending on reservoir operations and hydrologic conditions, Sites Reservoir had variable effects on rearing habitat acreage within the study area; for some scenarios Sites improved the frequencies of floodplain rearing habitat inundation, and for some scenarios, it slightly decreased the frequencies of inundation.

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