

There's something in the water: Salmonid pathogen distribution in California's
Central Valley

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California Central Valley Chinook Salmon (*Oncorhynchus tshawytscha*) face many challenges throughout their life cycle, but a particularly high risk of mortality occurs during early life stages in freshwater during outmigration. During this stage salmon experience fluctuating river conditions and may face elevated risk for pathogen infection, a poorly understood interaction. To that end, we conducted sentinel fish exposure studies across major migratory corridors of Central Valley Chinook Salmon. Coinciding with peak outmigration, we deployed hatchery-reared juvenile Chinook Salmon in cages (n=30 x three cages) in April of 2021 at two sites in the Feather River, two sites in the North Sacramento River, two sites in the Sacramento River (Delta), and three sites in the San Joaquin River; and sampled unexposed hatchery fish for comparison (reference controls). Fifteen fish per site were subsampled at days seven and fourteen post-deployment for gill, kidney and intestinal tissue. Water samples were collected at deployment sites for eDNA pathogen detection, concurrently with tissue sample collections. We targeted 47 common salmonid pathogens to assess prevalence in water and tissue samples. Five pathogens were regularly detected, including the two myxozoan parasites, *Ceratomyxa shasta*, and *Parvicapsula minibicornis*; two epithelial parasites, *Dermocystidium salmonis*, and *Ichthyophthirius multifiliis*; and one bacteria, *Candidatus Branchiomonas cysticola*. We anticipate further analysis of these data to describe the landscape of infection across these migration corridors and its correlation with environmental conditions, with implications for fisheries, water management, and restoration efforts.