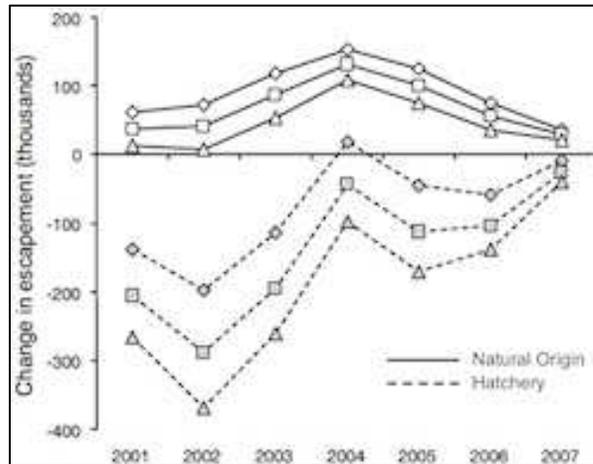


## Can Mark-Selective Fisheries Benefit California Wild Salmon?

California wild Chinook salmon populations, including several populations that are protected under the Endangered Species Act, have declined over the past decades. This has led to increased management restrictions on commercial and recreational fisheries, as well as increased reliance on hatchery-raised fish to support those fisheries. In Oregon and Washington, nearly all hatchery salmon produced for harvest receive a visible mark, while wild salmon remain unmarked and are therefore easily identified. When adult salmon are caught, marked hatchery salmon are kept while unmarked wild salmon are released. This practice of "mark-selective fishing" has enabled many salmon fisheries in Oregon and Washington to continue despite serious concerns for the abundance of wild salmon. Could this practice benefit California wild salmon populations as well? CFS scientists used data on the estimated abundance and harvest of Chinook salmon in California's Central Valley and in the ocean off California over two decades (1988-2007) to examine how mark-selective fishing regulations would have affected harvest and spawner abundance. Under some of the evaluated scenarios, selective fishing was observed to double the number of wild salmon in California rivers while still allowing for substantial harvests of hatchery fish [[click the picture](#) for a larger view]. The study was recently published in *Marine and Coastal Fisheries* and is available as a PDF download: [Implications of Mark-Selective Fishing for Ocean Harvests and Escapements of Sacramento River Fall Chinook Salmon Populations](#). For more information, contact Steve Cramer at (503) 491-9577.



## Lamprey Migration Behavior and Distribution

Pacific lamprey abundance in the Pacific Northwest has declined dramatically in recent decades. Diagnosing causes of decline is difficult because of the lack of information about lamprey biology. To examine these unknowns, a multi-organizational collaboration between Cramer Fish Sciences, the Confederated Tribes of Grande Ronde, Oregon State University, and the Columbia River Inter-Tribal Fish Commission resulted in a two-year study of the migration behavior, distribution, and habitat use of adult Pacific lamprey in the upper Willamette Basin, Oregon. The study found that lamprey exhibit a wide range of migration behaviors, that temperature is not a strong determinant of lamprey movement patterns, that lamprey use the mainstem Willamette River extensively during winter months, and that the Santiam River system may be critical for population persistence. A detailed [project report](#) is available as a PDF.

## Cramer Fish Sciences at the 7<sup>th</sup> Biennial Bay-Delta Science Conference

CFS scientists will be giving six presentations and exhibiting three posters at the conference, which will be held in Sacramento, California from October 16th-18th. CFS presenters will discuss the application of the IOS life-cycle model, using genetic methods to identify salvaged winter-run Chinook salmon, factors driving variation in salvage and survival, using acoustic telemetry and hydrodynamic modeling to assess factors influencing migration behavior, and the results of a radio tagging study in the Lower Stanislaus River. CFS posters will include the spatial distribution of Delta smelt, use of underwater high definition video as a fish sampling tool, and an integrated approach to investigating juvenile salmonid migration behavior and survival in the Delta. Visit the [conference website](#) for the latest schedule and additional conference details.