

properly manage and restore these unique species has not been developed. The most studied of the lampreys that occur within the Klamath Basin is the Pacific lamprey. Although the Pacific lamprey is anadromous and sympatric to many Pacific Coast salmonids, current studies demonstrate that their biology and management needs differ dramatically. Some specific examples include differences in genetic population structure, habitat use, passage needs, bioaccumulation of toxins and more. These differences highlight the need to address the major knowledge gaps and consider lampreys during Klamath Basin restoration planning and implementation.

#### Population Genetics of Klamath Basin *Oncorhynchus mykiss*

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In the Klamath Basin, the salmonid fish species *Oncorhynchus mykiss* is present throughout the lower Klamath-Trinity River system as anadromous summer- and winter-run steelhead as well as freshwater resident rainbow trout, all of which are forms of the coastal subspecies *O. m. irideus*. In addition, redband trout (*O. m. newberrii*) occur in the upper Klamath Basin. However, compared with the Columbia River to the north, relatively little is known about the relationships among *O. mykiss* populations within the Klamath River. Although steelhead and other anadromous salmonids historically migrated into the upper Klamath Basin and associated tributaries, the construction of Copco Dam #1 in 1918 and Iron Gate Dam in 1962 stopped all upstream migration of fishes past these barriers. We have conducted population genetic analyses of *O. mykiss* samples collected throughout the Klamath watershed using data from 18 variable microsatellite loci. Samples included steelhead, rainbow and redband trout, presumably representative of ancestral coastal and inland lineages, as well as samples of *O. mykiss* from neighboring inland basins. In addition, the Klamath samples were compared with data from *O. mykiss* populations in other coastal California river systems. Results demonstrate the presence of distinct inland and coastal genetic lineages, as well as divergent lineages represented by samples from the inland lake basins.

#### Status of Coho Salmon in the Scott and Shasta River Watersheds

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The California Department of Fish and Game has operated video fish counting facilities to enumerate coho salmon (*Oncorhynchus kisutch*) on the Shasta River and Scott River watersheds since 2001 and 2007 respectively. The purpose of these counting facilities is to enumerate abundance and describe the run characteristics of adult coho salmon. Video fish counting operations are initiated each season in the early fall and continue through early January unless high in-stream flows force earlier removal. The total number of coho salmon that entered the Scott River during 2007, 2008 and 2009 was 1,622, 62 and 21 respectively. The total number of coho salmon that entered the Shasta River from 2001 to 2009 has ranged from 9 to 373. The hatchery component of coho salmon in the Scott River is thought to be extremely low, as very few marked fish have ever been recovered in the watershed. The proportion of hatchery origin coho salmon returning to the Shasta River in 2008 and 2009 was estimated to be 73 percent and 20 percent respectively. On the Scott River only one data point is available for each cohort, preventing any trend analysis, although it is clear that one of the three brood years is sustaining itself while the remaining two are critically low. All three cohorts on the Shasta River have declined (14

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