

Steelhead Populations, Movement, and Habitat Use in Rock Creek

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Abstract:

The Rock Creek watershed is located in Klickitat County. The Rock Creek watershed encompasses an area of approximately 223 square miles of southeastern Washington. The headwaters of Rock Creek originate in the Simcoe Mountains and flow in a southerly to southeasterly direction to the Columbia River. Rock Creek joins the Columbia River at river mile (RM) 230, approximately 12 miles upstream of John Day Dam. Rock Creek currently supports fall Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), summer steelhead (*O. mykiss*), resident rainbow trout (*O. mykiss*), and other native and introduced fish species throughout much of its watershed.

The Rock Creek Fish and Habitat Assessment project's primary goals are to gather information on the anadromous salmonid populations' (steelhead, fall chinook, and coho) status within the subbasin, assess habitat conditions, and identify factors limiting anadromous salmonid populations. Information collected includes the abundance, growth, genetics, diseases, habitat use, and life-history of salmonids in Rock Creek.

Spawner abundance and redd count surveys are conducted each year to learn adult steelhead distribution and abundance in the watershed. Electrofishing and PIT-tagging were conducted to assess the current distribution, abundance (using mark-recapture), growth, and life histories of juvenile steelhead in the anadromous portion of Rock Creek. Two instream PIT-tag interrogation systems were installed at RM 3 and RM 8. These systems are used to assess parr-to-smolt survival and smolt-to adult survival. PIT-tag interrogation also evaluates the kelting rate and use of Rock Creek by stray adult and juvenile steelhead.

Genetic tissue samples were collected during the fish surveys for analysis of the genetic composition of the *O. mykiss* population in the Rock Creek system. Genetic analyses will establish a baseline signature of genetic divergence among sub-populations and allow managers to determine the Rock Creek *O. mykiss* population's association with, and importance to, the rest of the Middle Columbia Steelhead DPS. Genetic analyses will also allow us to understand the proportion of stray hatchery fish competing or introgressing with the native steelhead population.