

Adult Coastal Cutthroat Trout Movement and Habitat Use in the Lower Columbia River

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Extended Abstract.—Coastal cutthroat trout *Oncorhynchus clarkii clarkii* were tracked in 2004 and 2005 to assess adult movement and habitat use in the lower Columbia River basin. The objective was to describe adult coastal cutthroat trout movement patterns and duration of time spent in the lower Columbia River main stem and estuary, proximity to the shipping channel, and potential causes of mortality. The impetus of this project was the channel deepening project in the lower Columbia River and how it may affect this species. A better understanding of adult coastal cutthroat trout behavior, spatially and temporally, in this habitat will help guide management decisions that may affect this species.

Coastal cutthroat trout kelts were collected from Mill Creek, Washington (river km [rkm] 87) in February 2004, and from Mill Creek, Abernathy Creek (rkm 88), and Germany Creek (rkm 91), Washington in February and March 2005 (Figure 1). A total of 44 captured individuals were implanted with 360 day radio tags and tracking was conducted via automobile and boat through September 2005 between Longview, Washington and Astoria, Oregon (Figure 1). In 2004, tracking occurred three times a week from February through November, and then at least once a week until February 2005. Beginning in February 2005, tracking occurred every day until late May, and then continued through September at least once every other week.

Adult coastal cutthroat trout that left tributaries (n = 30) occupied the lower Columbia River main channel, side channels, backwaters, and other tributaries. These individuals remained in the lower Columbia River from 1-60 d before mortality or migrating toward the river mouth. Main stem movement appears to be influenced by the tidal cycle and that movement may occur within the main channel and/or side channels. However, all fish that initially moved upstream eventually turned and headed downstream if not a mortality. Coastal cutthroat trout tagged in Mill Creek that utilized multiple tributaries (n = 5) were observed in Abernathy Creek (Washington), Green Creek (Oregon), and the Clatskanie River (Oregon) and occupied those tributaries for 1-34 d (Figure 1). Thirteen fish made one to five moves across the shipping channel during the period of tracking, comprising 36.9% of the observed moves exhibited by these individuals. Suspected or confirmed mortalities (n = 26) through the duration of the study were of unknown cause or via avian or marine mammal

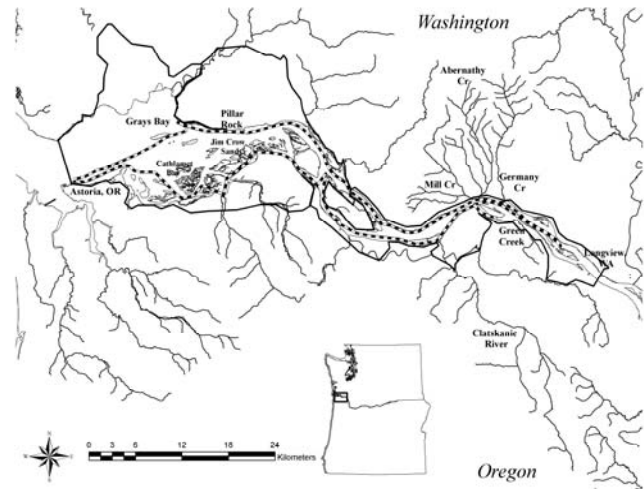


FIGURE 1.—Locations of tributaries sampled and routes followed for active telemetry. The dashed inner loop represents the path followed during boat tracking. The solid outer loop represents the path followed during car tracking.

predation, and resulted in a cumulative mortality rate of 59.1%.

While there is limited information available on migratory coastal cutthroat trout movement, patterns seen in the Lower Columbia River have been seen in other parts of the species range and on different scales (Jones and Seifert 1997; L. Krentz, Oregon Department of Fish and Wildlife, unpublished data). However, Jones and Seifert (1997) did not detect coastal cutthroat trout crossing larger open waterways. Tagged adults in this study regularly moved from one side of the river to the other across the shipping channel. In some places, this equates to 3-5 km from the Oregon shoreline to the Washington shoreline. Overall movement was large with cumulative movements over 90 km when fish moved from the tributaries to the mouth of the lower Columbia River. However, movement was generally not sustained. Factors affecting sustained movement included tidal cycle, structures that provided temporary cover (e.g., pilings), use of additional tributaries, and predation. Avian and marine mammal predation may present a threat to coastal cutthroat trout in the lower Columbia River. Colonies of Caspian terns and double crested cormorants are known to significantly impact salmonid numbers in the Columbia River (Collis et al. 2001). It is estimated that the tern population consumes approximately 11.2% of out-migrating salmonid smolts that survive to the estuary, but reliable estimates on adult and

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juvenile coastal cutthroat trout predation rates are not available due to a lack of monitoring efforts.

This data and associated studies (Johnson et al. 2008; Zydlewski et al. 2008) demonstrate that multiple life stages and age classes of coastal cutthroat trout may be found in the lower Columbia River main stem and estuary throughout the year. Therefore, management activities should be timed to minimize impacts to coastal cutthroat trout. Furthermore, these activities should consider impacts on habitat, both in stream supporting coastal cutthroat trout and out-of-stream supporting potential predators.

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