

Occurrence of Anadromous Brown Trout in Two Lower Columbia River Tributaries

PETER A. BISSON AND JENNIFER L. NIELSEN

*Weyerhaeuser Company
Tacoma, Washington 98477, USA*

MARK W. CHILCOTE, BRUCE CRAWFORD,
AND STEVEN A. LEIDER

*Washington Department of Game
600 North Capitol Way
Olympia, Washington 98504, USA*

Abstract.—In the Pacific northwest, brown trout (*Salmo trutta*) are found in selected streams and lakes east of the Cascade Mountain Range but have not been reported heretofore from coastal streams or tributaries of the lower Columbia River. Two brown trout were captured—one in 1979 at Kalama Falls salmon hatchery and the other in 1984 in Herrington Creek, a tributary of the South Fork Toutle River in Washington. Both fish probably came from previous plantings elsewhere. Viable anadromous populations via upriver or lake plantings have not yet been established in the lower Columbia River tributaries but could become so in the future.

Brown trout (*Salmo trutta*) are native to Europe, Asia, and northern Africa, but have been widely transplanted throughout the world and now occur in all continents except Antarctica (MacCrimmon and Marshall 1968; MacCrimmon et al. 1970). In the Pacific northwest, brown trout are found in selected streams and lakes east of the Cascade Mountain Range but have not been reported from coastal streams or from tributaries of the lower Columbia River (Schultz 1938; Reimers 1964; Bond 1973). The only known Pacific coastal populations of brown trout occur in streams on the east coast of Vancouver Island—the Cowichan and Little Qualicum rivers—where they resulted from successful plantings beginning in 1932 (Carl et al. 1967). Where there is access to a lake or ocean, naturalized brown trout populations often adopt a migratory life cycle (MacCrimmon and Marshall 1968). Anadromous runs have developed from many stream and river introductions in eastern Canada (Scott and Crossman 1973), and Carl et al. (1967) reported that the Vancouver Island populations extend to the estuaries of both rivers and have spread through the ocean to nearby creeks. However, truly anadromous runs apparently have

not developed in either river system, according to G. E. Reid, British Columbia Ministry of Environment. Because brown trout have been planted in several middle and upper Columbia River tributaries and also are stocked in a few Cascade Mountain lakes with outlets to the Columbia River system, the potential exists for the establishment of viable anadromous populations in the Columbia drainage. Such events could have an impact on native salmon and trout because brown trout are known to both compete with and prey upon other salmonids (Moyle 1976).

Two adult brown trout were captured recently in tributaries of the lower Columbia River (Figure 1). The first specimen was a male, 376 mm in total length, taken in the migrant trapping facility at Kalama Falls salmon hatchery on 3 July 1979. It possessed 123 lateral line scales and 10 anal fin rays. Coloration was silvery with faint halos around dark spots. Scale analysis indicated that the fish had spent 1 year in fresh water and approximately 2 years in either an estuarine or marine environment. The scale pattern did not suggest an early life period of hatchery residence. The second specimen was captured and subsequently released alive in Herrington Creek, a tributary of the South Fork Toutle River, on 9 October 1984. Herrington Creek flows through a mudflow terrace created by the 1980 Mount St. Helens eruption, and it has been used for spawning and rearing by steelhead (*Salmo gairdneri*), coho salmon (*Oncorhynchus kisutch*), and possibly sea-run cutthroat trout (*Salmo clarki*). The enlarged jaws with kype, rounded anal fin, and deep yellow-gold coloration indicated that this fish was a male in spawning condition. Scale samples revealed that it had spent 1 year in fresh water and 1 year at sea before returning to spawn. Although the Herrington Creek brown trout was definitely younger than the first specimen, it had undergone a period of very rapid ocean growth and had returned to fresh water approximately the same size (360 mm in fork length) as the Kalama River fish. Like the other specimen, there was no indication in the scale pattern of hatchery rearing.

There have been occasional anecdotal reports from sport fishermen of large brown trout being caught in the Kalama and Toutle drainages. How-

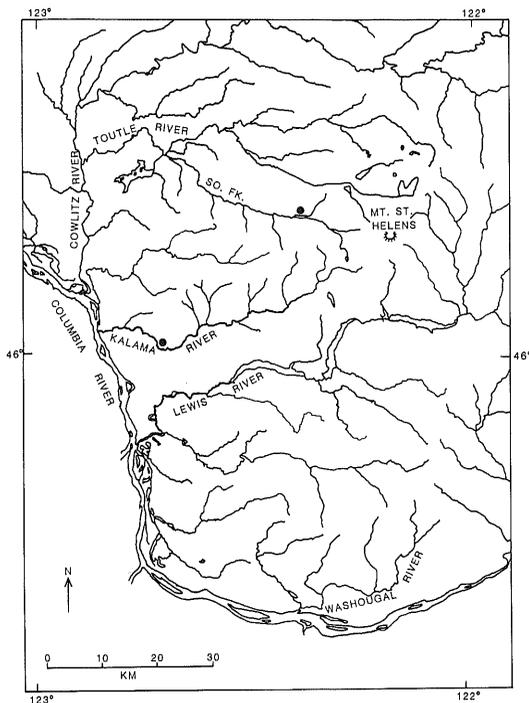


FIGURE 1.—Lower Columbia River drainage of southwestern Washington, showing some of the river systems mentioned in the text. Closed circles indicate brown trout capture locations.

ever, there is no evidence that this species has successfully spawned in either stream. Extensive surveys of both river systems in recent years (Chilcote et al. 1983; Martin et al. 1984) have failed to detect either adult spawners or rearing juveniles, and no brown trout smolts have been recovered in downstream migrant traps (Chilcote et al. 1983; Martin et al. 1984; Bisson et al. 1985).

It is likely that the 1979 Kalama River specimen originated from an upstream Columbia River population. Beginning in 1981, brown trout were planted in Lacamas Lake, which is part of the Washougal River drainage. The Washougal River enters the lower Columbia River upstream from both the Kalama and Cowlitz rivers. The Lacamas Lake plant was the first recent introduction of brown trout into the lower Columbia system; however, both Horseshoe Lake (Lewis River drainage) and the upper Cowlitz River received brown trout plants in 1984. The 1979 specimen preceded these plantings and could not have originated from the lower Columbia River unless by a clandestine release. The 1984 Herrington Creek specimen may have come from a lake plant or from one of the

upper Columbia River populations, although the former source seems unlikely in view of the scale readings.

Whether or not the naturalization of anadromous brown trout in southwestern Washington streams would harm native salmon and trout populations is unknown. In a study of the food habits of brown trout in the Cowichan River, Idyll (1942) found that juveniles up to 100 mm long ate only aquatic invertebrates, whereas larger fish (>310 mm) consumed significant numbers of fish, chiefly salmonid fry. Brown trout also were observed to feed heavily on salmon eggs in winter. Due to the apparent rarity of adult brown trout in lower Columbia River tributaries, we conclude that the establishment of viable anadromous populations via upriver or lake plantings has not yet occurred. However, because brown trout are likely to be planted in additional southwestern Washington waters, increases in the frequency of anadromous individuals may warrant further study.

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