Scoggins Creek Steelhead Trout Redd Surveys

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DATE: June 14, 2003

Introduction

The U.S. Bureau of Reclamation (BOR) is the owner of Scoggins Dam, which was completed in 1975 and is on Scoggins Creek, a tributary of the Tualatin River. Hagg Lake, with a storage capacity of 53,600-acre feet, is the impoundment created by Scoggins Dam. Hagg Lake water is currently used for river flow augmentation, municipal water supply and agricultural irrigation needs throughout the watershed. The Lake has park and recreation facilities operated by Washington County. The BOR is currently evaluating the feasibility of raising Scoggins Dam by 20-feet or 40-feet.

A Water Supply Feasibility Study is being completed to address various aspects of raising Scoggins Dam, including the effects on fisheries habitat in Scoggins Creek below the dam. Scoggins Creek, below Scoggins Dam, potentially supports anadromous species (coho salmon and steelhead trout). However, currently Scoggins Dam does not allow upstream fish passage.

The fisheries habitat of Scoggins Creek downstream of Scoggins Dam was described as part of the Water Supply Feasibility Study. Scoggins Creek was given a subjective rating of "*Poor*" to "*Poor* to *Fair*" based on the primary limiting factors for salmonids in Scoggins Creek which include spawning areas, pool and riffle abundance, presence of undercut banks, aquatic invertebrate production, bank cover, and instream structure which were rated *Poor* during the field survey.

However, during the flood events of 1996 an unnamed tributary to Scoggins Creek contributed a significant amount of gravel to Scoggins Creek in an area between the gaging station, slightly downstream of the dam, and Stimson Timber Mainline Bridge crossing for a total linear length of approximately 1,300 feet. This gravel provides the only potential salmonid spawning habitat in Scoggins Creek between Scoggins Dam and its confluence 4.9 river miles downstream with the Tualatin River.

Methods

Beginning in January 2003 steelhead trout redd surveys were conducted in Scoggins Creek downstream of the dam between the gaging station and Stimson Timber Mainline Bridge in the area of tributary gravel deposition the 1996 flood events. Redd surveys were conducted on January 30, February 26, and April 9, 2003. All surveys were conducted during the

morning hours and at release flows of between 10 and 11 cfs. Surveys were conducted by 2 biologists and lead by an experienced fisheries biologist. Surveys began by walking on the bank of Scoggins Creek downstream to the most downstream area of gravel accumulation and potential spawning near the Stimson Timber Mainline Bridge. Scoggins Creek was observed for adult fish when walking on the bank to begin the redd surveys. Near the Stimson Timber Mainline Bridge the biologists would enter Scoggins Creek and begin slowly traversing the channel in an upstream direction looking for steelhead trout redds, adult steelhead trout, or signs of steelhead trout presence.

Special Species Use of Scoggins Creek

Steelhead trout are part of the upper Willamette River ESU as defined by the NMFS and are presently listed under the ESA as a "Threatened" species. The upper Willamette River native winter steelhead trout are a late migrating stock typically entering fresh water from mid January through May (Busby et al., 1996) with spawning occurring beginning in March and continuing into May. This late run characteristic is likely an adaptation for ascending Willamette Falls similarly to spring chinook salmon. Earlier migrating winter and summer steelhead trout have been introduced to the upper Willamette and are thus non-native runs.

Winter steelhead trout inhabit the upper Tualatin Basin. Natural spawning areas include Gales Creek and the mainstem Tualatin River above Scoggins Creek. McKay Creek and the East and West Forks of Dairy Creek also have suitable steelhead trout spawning and rearing habitat (ODFW, 1992).

Coho salmon are not indigenous to the Tualatin River and hold no federal status above Willamette Falls. Resident coastal cutthroat trout may be found in the tributaries and mainstem of Scoggins Creek downstream of the dam and other tributaries of the Tualatin River. Although there are no barriers to spring chinook salmon in the basin, spring chinook salmon have not been documented in the Tualatin basin in recent years.

Prior to conducting each steelhead trout redd survey ODFW daily Willamette Falls fish counts were assessed. The 2003 native winter steelhead trout run appeared to begin in late January and last into May with the peak between mid February and mid April (ODFW, 2003) (Figure 1).

Scoggins Creek Channel Characteristics

The area of Scoggins Creek, downstream of dam to the Stimson Timber Company Mainline Bridge is approximately 2,640 feet. The reach has a low gradient (less than 1 percent) and functions as a transportation channel for water out of Hagg Lake. Because of its intended function, water transport, the reach is 99 percent glide habitat and 1 percent riffle

The reach is man-made as part of Scoggins Dam and begins as a deep plunge pool at the base of the dam spillway. Progressing downstream from the spillway, the creek transitions into a U-shaped channel with a 2-terrace floodplain. The substrate is hard pan clay and sand that provides no structure or complexity for salmonid use. The wetted channel is 24 feet wide with a bankfull depth of 4.5 feet deep, as measured from the top of the lower terrace. Riparian cover consists of grasses with no canopy closure, thereby not providing

salmonids protection from predators. Although the riparian vegetation consists primarily of grass this reach would be considered to be temperature sensitive however, water from Hagg Lake is typically very cool (50 – 55^{0}F) because water is released from the bottom of the reservoir. In addition, this reach is relatively short thereby limiting the effects of thermal loading.

Approximately 985 feet downstream of the dam spillway a tributary overflow joins Scoggins Creek from the northeast via a corrugated metal pipe (cmp) culvert. The tributary's natural channel confluence with Scoggins Creek is an additional 985 feet downstream. At the location of the overflow cmp, Scoggins Creek decreases to a wetted depth of 2.5 feet and the substrate consists of 90 percent gravel and 10 percent sand/silt. The gravels are believed to have been deposited by the overflow cmp during the 1996 floods. Riparian vegetation along the channel continues to be grasses, providing no instream cover or habitat structure. The terraced topography is flat and becomes inundated with water when spill over Scoggins Dam is increased by the Tualatin Valley Irrigation Department.

Approximately 650 feet upstream of the Stimson Timber Company Mainline bridge, the historic Scoggins Creek stream channel converges from the southwest with the man-made channel. The creek deepens to 5 feet and the riparian vegetation transitions from grasses to a greater abundance of shrubs and deciduous trees. The creek retains its entrenched U-shaped channel, with vertical banks increasing to 10-16 feet in height. Substrate conditions become less favorable for salmonid spawning when compared to the upstream portion of the reach due to the increased proportion of sand/silt and increased embeddedness. This increase in smaller sized sediment is likely to result from the historic Scoggins Creek and previously mentioned tributary, which visually contribute turbid flows within the reach.

This area of Scoggins Creek has multiple limiting factors for use by salmonids, including temperature sensitivity, limited protection from predators (lack of overhead, bank, or instream cover from large woody debris), as well as a lack of hydraulic diversity for use during various life stages of salmonids and various flows. Substrate conditions are also unfavorable for salmonid spawning, due to limited availability of appropriately sized substrate.

Steelhead Trout Redd Survey Results

The Scoggins Creek channel in the area of the surveys is approximately 12-16 feet wide and at flows of 10 to 11 cfs the water depth ranges between 6 inches in the limited faster moving riffle type areas and 3 feet in glide type habitat units. Gravel in Scoggins Creek downstream of the tributary overflow channel (near the gaging station) is typically less than 1.5 inches in diameter. The gravel is loosely consolidated throughout the area indicating that the gravel layer is only a few inches deep. The gravel deposits begin downstream of the gaging station with the substrate being composed of approximately 80 percent small gravel and 20 percent sand/silt. Proceeding downstream the amount of gravel decreases and the embeddedness increases to between 40 and 50 percent. Gravel of this size and nature is typically considered suboptimal for steelhead trout spawning and spawning success.

No adult, juvenile, or steelhead trout redds were observed in Scoggins Creek downstream of Scoggins Dam between Stimson Mainline Bridge and the gaging station during any of the

redd surveys. The only aquatic species observed in this area during any of the surveys were 1 sculpin, 1 centrarchid 4-5 inches long (warmwater game fish, species unknown), and 1 lamprey ammocoete (juvenile lamprey).

Literature Cited

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Figure 1. 2003 Native Winter Steelhead Trout Daily Willamette Falls Counts