

## Executive Summary

Bull trout were abundant and widely distributed in the Clackamas River Subbasin. They were a historical component of the river's native fish assemblage that evolved over thousands of years. Presently, bull trout are extirpated from the Clackamas River Subbasin. Bull trout were listed as threatened under the Endangered Species Act by the U.S. Fish and Wildlife Service in 1998. The 2002 draft bull trout recovery plan specified the need for completing an assessment to determine the feasibility of reintroduction in the Clackamas River Subbasin. Accordingly, the Clackamas River Bull Trout Working Group (CRBTWG) completed the following feasibility assessment. The feasibility assessment focuses on whether or not a reintroduction is biologically possible (i.e., "Can it be done?"). Four questions are examined:

- Is there a high level of confidence that bull trout are no longer present that would serve as a natural gene bank?
- Is there suitable habitat remaining, what conditions or stressors currently prevent bull trout from occupying suitable habitats, and have these been corrected?
- Is suitable habitat reasonably expected to be recolonized through natural processes if conditions are improved?
- Is a suitable or compatible donor population(s) available that can itself tolerate some removal of individuals?

The feasibility assessment does not attempt to determine "Should a reintroduction be done?" or "How should it be done?" Answering these two latter questions would be done after a proposed action is developed in a coordinated, multi-agency manner, including public involvement.

There is a very high level of confidence that bull trout have been locally extirpated from the subbasin. Primary factors for their decline began in the early 20<sup>th</sup> Century and extended into the 1970s. They include migration barriers from hydroelectric and diversion dams, direct and incidental harvest in the sport and commercial fisheries, targeted eradication with bounty fisheries, and habitat and water quality degradation from forest management and agricultural activities. These factors are believed to be sufficiently remedied such that they would not impede the success of a reintroduction attempt.

Bull trout require very cold water for spawning and rearing. The portion of the subbasin providing suitable bull trout spawning and rearing habitat today includes the tributaries and headwaters of the Clackamas River upstream of the Collawash River confluence. This portion of the subbasin contains six separate habitat patches totaling approximately 70 miles of suitable spawning and rearing habitat. Habitat patches range in size, configuration, and condition.

The nearest five potential donor stocks in the Lower Columbia River portion of the Coastal evolutionary lineage of bull trout were examined. They are found in the nearby Willamette, Lewis, Hood, Klickitat, and Deschutes river basins. The donor stocks are located considerable distances from the Clackamas River Subbasin, and in many cases migration barriers preclude their movement making natural recolonization of the subbasin extremely unlikely. Two river basins contain bull trout that likely have the necessary characteristics and associated low level of risk (both demographically and genetically) to serve as donor stocks for a reintroduction into the Clackamas River:

- Lewis River Basin – Two interacting local populations: Pine Creek and Rush Creek.
- Lower Deschutes River Basin (Metolius River Subbasin) – Three interacting local populations: Whitewater River; Jefferson, Candle, and Abbot River Complex; and Canyon, Jack, Heising, and Mainstem Metolius River Complex.

Other potential bull trout donor stocks that contain the necessary characteristics but are at an intermediate level of risk (both demographically and genetically) include:

- The Mainstem McKenzie River local population in the Willamette River Basin (McKenzie River Subbasin).
- The Warm Springs River and Shitike Creek local populations in the Lower Deschutes River Basin.

Nonnative brook trout can have significant negative effects on bull trout distribution and abundance. However, recent studies suggest that certain habitat variables play a strong role in determining the level of effect. Brook trout are present in low abundance in one of the six suitable habitat patches (Upper Clackamas River above Cub Creek) where a bull trout reintroduction could take place. Their presence is due to several decades of stocking headwater lakes with outflow tributaries that connect to downstream suitable habitat. The Oregon Department of Fish and Wildlife discontinued stocking brook trout in the early part of this decade in those headwater lakes in any of the suitable habitat patches where there is an outflow connection to downstream suitable bull trout spawning and rearing habitat. As such, brook trout would not be a significant factor in determining the success of a reintroduction of bull trout in the Clackamas River Subbasin.

Bull trout coexisted with a multitude of other native fish species in the Clackamas River for thousands of years, likely feeding on a variety of different prey species. Historically, anadromous salmon and steelhead were likely the most abundant fish in the subbasin and they probably comprised a significant portion of the bull trout diet. However, current abundance and distribution of anadromous salmon and steelhead in the subbasin is greatly reduced from historic levels. Bull trout, if reintroduced, may be more dependent upon other native fish species as a prey base, such as mountain whitefish and large-scaled suckers, both of which are present and abundant along with other potential prey such as dace, sculpin, northern pike minnow, and several species of trout. Available information on bull trout populations in the Lower Columbia River Basin suggest that, while possibly important, bull trout persistence is not dependent upon the presence of anadromous salmon in all systems.

Due to the multitude of variables that contribute to mortality of juvenile Pacific salmon, including other fish and avian predators, the rate of bull trout predation on juvenile salmon and the potential effect of that predation are unquantifiable. Despite evidence that bull trout prey on juvenile anadromous salmonids when they are available, bull trout and Pacific salmon co-occur in many areas throughout the western United States. Although the distribution and abundance of Pacific salmon in the Clackamas River is reduced significantly from historical levels, the remaining native fish assemblage is considered by local fish biologists to be healthy. For these reasons, it is believed there is a sufficient forage base to support a bull trout reintroduction in the Clackamas River and further, that if reintroduced, predation on juvenile salmon would not likely negatively affect the status of salmon and steelhead populations in the subbasin.

In sum, given the following:

- a high level of confidence that bull trout have been locally extirpated,
- the causes for their decline have been sufficiently mitigated,
- high quality habitat is available in sufficient amounts,
- nearby donor stocks are unlikely to naturally recolonize,
- suitable donor stocks are available that can withstand extraction of individuals,
- nonnative brook trout presence is restricted to a small portion of the suitable habitat and not a likely threat, and
- a diverse and abundant fish assemblage would serve as a sufficient prey base with no obvious threats posed by bull trout to these species,

the overall conclusion based on the scope of the assessment is: *reintroduction of bull trout into the Clackamas River Subbasin is feasible.*

Other factors to be considered in developing a proposed action for reintroduction include: establishment of goals and objectives; specific donor stock(s) to be used; type, quantity, and duration of propagule extraction from the donor stock(s); method of translocation; fish disease screening; specific location(s) and habitat patch(es) for propagule release; additional management actions needed; and specific monitoring and evaluation requirements. Once a proposed action is developed in a collaborative, multi-agency/stakeholder manner involving public review and input, additional considerations and environmental analysis including some of the following need to be further investigated: socio-economic impacts (positive and negative); ecological affects to other native fish species; and ESA regulatory responsibilities for affected agencies and parties. Should a reintroduction be implemented, an adaptive management approach is encouraged in order to incorporate monitoring and evaluation results and feedback into necessary adjustments to achieve developed goals and objectives.