

Umatilla Bull Trout

Existing Populations

The Umatilla Bull Trout SMU is comprised of two populations, the upper Umatilla Complex and Meacham (Table 1). Populations were identified according to those defined in the Umatilla - Walla Walla Chapter of the Bull Trout Draft Recovery Plan (USFWS 2004). Both populations exhibit resident and migratory life history strategies.

Table 1. Populations, existence status, and life history of the Umatilla Bull Trout SMU.

Exist	Population	Description	Life History
Yes	Umatilla Complex	North and South Fork Umatilla River Basins	Resident/ migratory
Yes	Meacham	Meacham Cr and tributaries	Resident/ migratory

Distribution

Analysis of the distribution criterion is based on 1:100,000 GIS hydrography of bull trout distribution (Hanson 2001, Buchanan et al. 1997) and information summarized in the Umatilla – Walla Walla Chapter of the Bull Trout Draft Recovery Plan (USFWS 2004). These data are primarily based on summer distribution sampling that often represents the most restricted distribution. A population fails the criterion if spawning and juvenile rearing distribution is 1) less than ten km, 2) not connected to other populations, or 3) occupies less than 50% of the historic distribution when historic distribution data are denoted on GIS. In basins where the GIS hydrography does not depict historical distribution, the results show populations occupy 100% of their historical distribution. These results should be interpreted with caution, since historical data are not always available.

Bull trout in the Umatilla River are found primarily upstream of Pendleton. Adult bull trout rear and overwinter in the upper river, typically upstream of Thorn Hollow Creek. In the past ten years, adult bull trout have been observed in only five instances at dam facilities on the lower river. Adult bull trout are rarely observed rearing in the lower mainstem of Meacham Creek.

Spawning, juvenile rearing, and resident bull trout distribution in the Umatilla SMU is limited to the upper headwaters of the Umatilla River and NF Meacham Creek. In the Umatilla Complex population spawning activity is fragmented and patchy. A majority of the spawning activity occurs in the North Fork Umatilla River inside the North Fork Umatilla Wilderness Area; in the five km reach between Coyote Creek and Woodward Creek. A low percentage of the spawning activity occurs in the South Fork Umatilla River and Shimmiehorn Creek. A total of three redds were observed in the South Fork Umatilla River between 1996 and 2002 (USFWS 2004). Rearing occurs in Buck, Thomas, Spring and Shimmiehorn creeks (USFWS 2004). Based on the total distribution of spawning and juvenile bull trout, the Umatilla Complex population passes the distribution criterion (Table 2).

The spawning distribution within the Meacham population is limited to 6.6 km in the North Fork upstream of the Bear Creek confluence and in Pot Creek. North Fork Meacham Creek below Bear Creek is characterized as high quality spawning and rearing habitat and could potentially support bull trout even though fish have not been observed in this reach. East Meacham Creek and mainstem Meacham Creek between North and East forks are also considered to contain suitable spawning habitat (USFWS 2004) but spawning activity has not been documented. The Meacham population fails the distribution criterion (Table 2).

Connectivity between the Umatilla Complex and Meacham populations is possible but hindered by seasonal low flows and thermal barriers (Table 2)(USFWS 2004). Movement of adults and sub-adults to and from the Columbia River is hampered by water quality issues and instream diversions used to divert flows into irrigation canals and off-channel storage reservoirs. Fish passage concerns at the six major diversions on the Umatilla River have been or are being addressed due to the impact on anadromous salmonids, however the needs of bull trout were not often considered in the design of the modifications (USFWS 2004).

Table 2. Distribution data used to evaluate Umatilla bull trout populations.

Population	Spawning Distribution (km)	% of Historical	Connected to Other Pops.	Pass/Fail
Umatilla Complex	65.1	100	Yes	Pass
Meacham	6.6	55.6	Yes	Fail

Abundance

The Bull Trout Draft Recovery Plan (USFWS 2004) provides estimates of the number of adult bull trout in each population based on average redd counts made between 1999 and 2003 and a 2.3 fish per redd expansion factor (USFWS 2004, Dunham et al. 2001, Ratliff et al. 1996). The assessment of the abundance criterion is based on these estimates (Table 3). Populations of bull trout with fewer than 100 spawning adults are considered at risk of inbreeding and fail the interim risk criterion. The sum of interconnected populations also must exceed 1,000 adults to avoid risk of genetic drift (Rieman and Allendorf 2001). Thus an SMU or an isolated population must total greater than 1,000 reproductive adults in order to pass this criterion

Table 3. Estimated adult abundance of Umatilla bull trout populations (USFWS 2004).

Population	Estimated Adult Abundance	Pass/Fail
Umatilla Complex	249	Pass
Meacham	<10	Fail

Given the extremely low number of redds observed in the Meacham Creek annually (Table 4), the Meacham population appears to be precariously small and highly vulnerable. Biologists estimate the population consists of fewer than ten individuals (USFWS 2004). The Meacham population fails the abundance criterion and is considered at risk of inbreeding depression.

Table 4. Total redd counts in Meacham Creek 1994 - 2004 (USFWS 2004, ODFW unpublished data).

Year	1994	1995	1996	1997	1998-2001	2002	2003	2004
Redd Count	3	1	0	0	Not surveyed	2	0	0

The total number of adult bull trout in the SMU is estimated to be less than 1,000 fish, thus Umatilla Basin bull trout are at risk of the deleterious effects of genetic drift.

Productivity

The assessment of the productivity criterion is based on trends of abundance over the past five years. A population passes the criterion if the abundance trend appears stable or increasing. A decreasing trend is cause for a population to fail the criterion. Trends of abundance for the Umatilla SMU populations are evaluated using data sets of annual census redd counts. This review recognizes the difficulties associated with characterizing population trend using redd counts given the inherent variability in redd detection and sources of error (Dunham et al. 2001, Maxell 1999, Rieman and Myers 1997). The evaluation of productivity based on population

trend is made with caution and subject to uncertainty. Standardized redd counts in the Umatilla Complex began in 1994. Over the past five years the population shows a decreasing trend in abundance (Figure 1) and is considered to fail the productivity criterion until productivity can be better assessed.

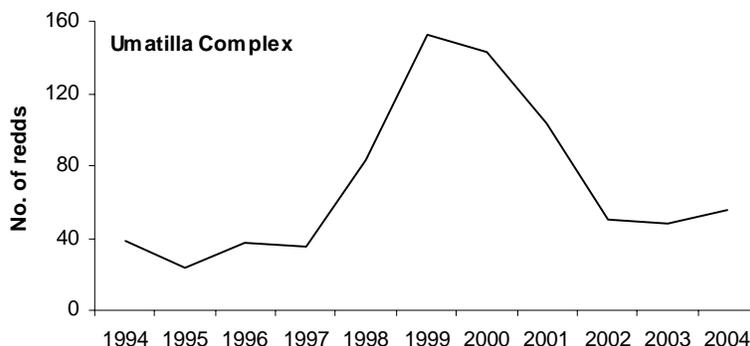


Figure 1. Trends in total redd counts for Umatilla Complex.

Productivity of the Meacham bull trout population is difficult to assess using the available data. Given the extremely low redd counts (Table 4), relatively few observations of bull trout and no evidence of a recent population increase, this population fails the productivity criterion.

Reproductive Independence

All populations in the Umatilla Bull Trout SMU are native fish sustained by natural production and pass the reproductive independence criterion.

Hybridization

Brook trout are not present in the Umatilla basin and not considered a threat to bull trout. Both populations pass the hybridization criterion.

Assessment Conclusions

The Umatilla Bull Trout SMU consists of two populations, one in each of Meacham Creek and Upper Umatilla River. The abundance of the Meacham population is dangerously low and distribution is severely limited. Habitat degradation significantly impacts both populations, particularly in the lower reaches of the Umatilla River, where adult bull trout rear and overwinter. Movement between populations is possible, but undocumented. The SMU passes three of the six interim criteria and is classified as “at risk” (Figure 2). Limited data sets and inferences from other information for populations in the SMU provide a qualified level of confidence in the assessment of the interim criteria.

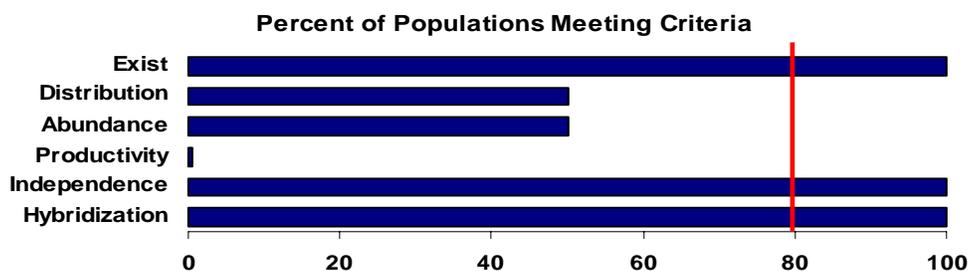


Figure 2. Assessment outcome for each of the six interim criteria with respect to the 80% threshold identified by the NFCP.