

Bull Trout



Photo by K.K. Jones, ODFW

Klamath Lake Bull Trout SMU

ESA Designation:
Threatened 1998

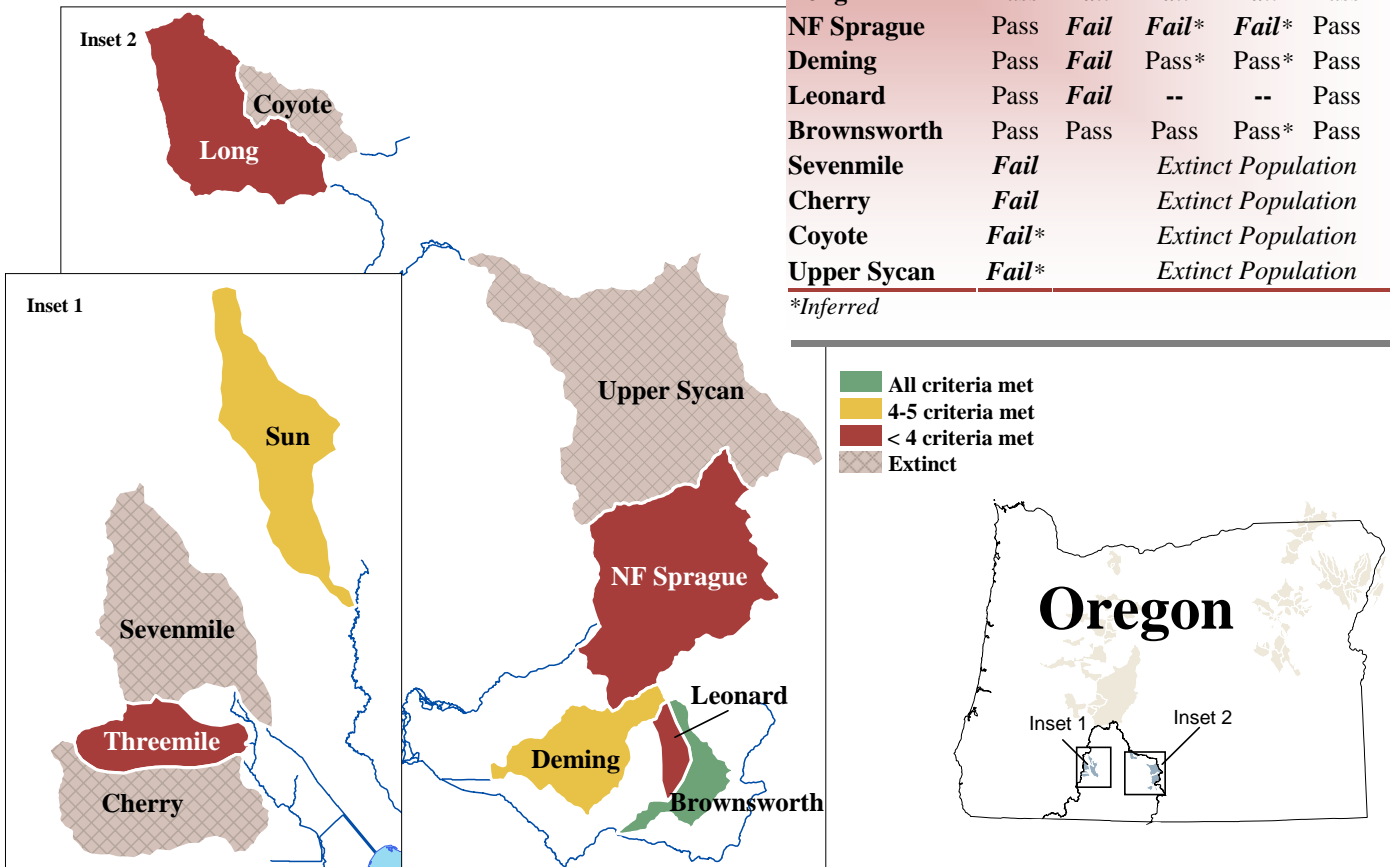
State Status:
Critical

Interim Assessment:
At Risk

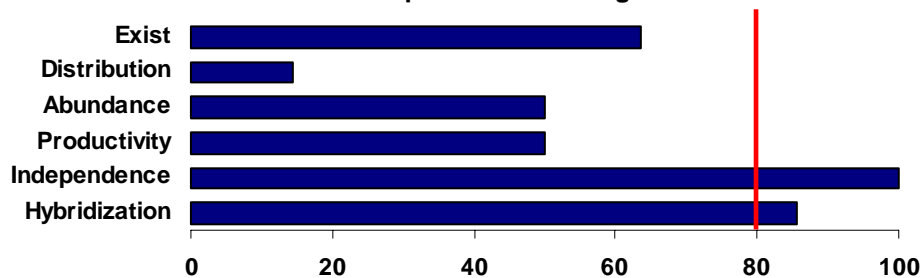
The Klamath Lake Bull Trout SMU is comprised of eleven populations, four of which are considered extinct. Distribution of bull trout within the SMU is highly fragmented and concentrated in a few isolated headwater streams of Sycan and Sprague rivers, and Klamath Lake. Movement between populations is hindered by barriers and poor habitat quality. Abundance is extremely depressed and in some cases considered precariously low. The introduction of non-native salmonids particularly brook trout and brown trout, and degraded habitat quality has impacted the productivity of many populations. The SMU meets only the reproductive independence and hybridization criteria and is classified as ‘at risk’. Limited datasets and inferences from other information for populations in this SMU provide a qualified level of confidence in the assessment of the interim criteria.

Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Sun	Pass	Fail	Pass	Pass*	Pass	Pass
Threemile	Pass	Fail	Fail*	Fail*	Pass	Pass
Long	Pass	Fail	Fail*	Fail*	Pass	Fail
NF Sprague	Pass	Fail	Fail*	Fail*	Pass	Pass
Deming	Pass	Fail	Pass*	Pass*	Pass	Pass
Leonard	Pass	Fail	--	--	Pass	Pass
Brownsworth	Pass	Pass	Pass	Pass*	Pass	Pass
Sevenmile	Fail		Extinct Population			
Cherry	Fail		Extinct Population			
Coyote	Fail*		Extinct Population			
Upper Sycan	Fail*		Extinct Population			

*Inferred



Percent of Populations Meeting Criteria

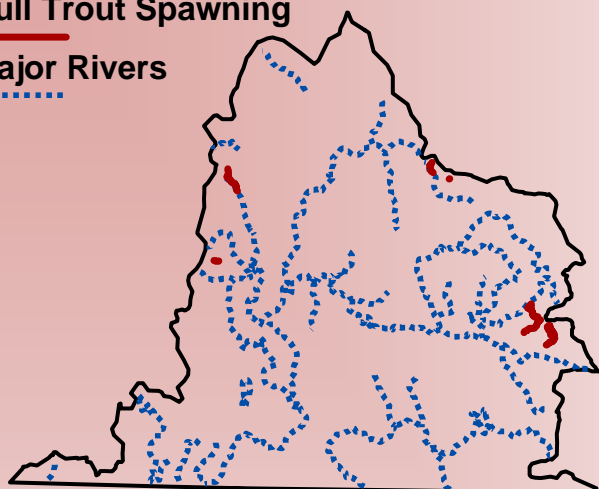


Distribution - Fail

Abundance - Fail

Bull Trout Spawning

Major Rivers



- Current spawning and resident bull trout distribution in Klamath basin is highly fragmented and limited to a few headwater streams. Poor water quality and irrigation diversions have isolated populations, minimizing opportunities for bull trout to express a migratory life history, mix among populations, and colonize unoccupied habitats.
- Only Brownsworth passes the distribution criterion.
- Physical barriers on Deming, Sun, and Threemile prevent connection to migratory corridors and other populations. Bull trout are unable to move between subbasins, further isolating populations.
- Bull trout spawning distribution is limited to less than ten km in Threemile, NF Sprague, Deming, and Leonard.

- Sun, Deming, and Brownsworth populations are estimated to contain greater than 100 adults each. These populations pass the abundance criterion.
- Threemile, Long, and NF Sprague populations are estimated to contain less than 100 adults and fail the abundance criterion. These populations are precariously low and considered at risk of inbreeding.
- Abundance in Leonard has not been evaluated for 15 years (approx. three generations), past estimates may not reflect current status. This population was not assessed due to lack of current population information.
- All populations are considered to be at risk of genetic drift.

Hybridization - Pass

- The first documented introductions of brook trout into Klamath Basin occurred in 1925
- Brook trout exist in Threemile and Long creeks and efforts to remove brook trout are ongoing. Brook trout and hybrids have not been observed in Threemile Creek above the culvert since 2000. Brook trout are still a threat in Long Creek.
- Crater Lake National Park eradicated brook trout in Sun Creek 1999 using antimycin treatments. Brook trout have not been detected in recent surveys and are not considered a threat to bull trout in Sun Creek.

Productivity – Fail

- Productivity data are not available. The criterion was assessed based on professional judgment of agency biologists. Populations with good and improving habitat quality and apparently stable or increasing trends in abundance pass the criterion.
- Threemile, Long, and NF Sprague populations fail the criterion due to low and declining abundance, threats of hybridization with brook trout or competition with brown trout, and declining habitat quality

Additional Information

- Bull trout in the Klamath Lake SMU are naturally produced and all populations passed the reproductive independence criterion.
- Brown trout are present in NF Sprague and Brownsworth populations and potentially depress bull trout populations.

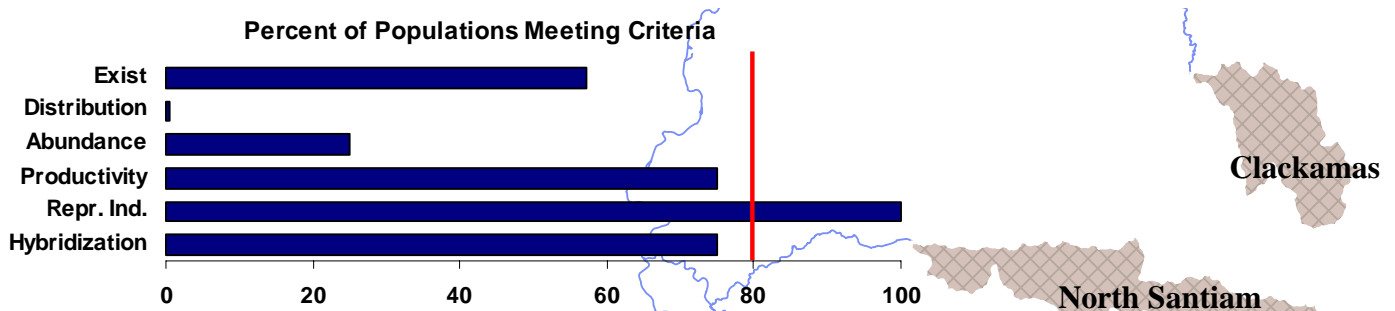
Willamette Bull Trout SMU

ESA Designation:
Threatened 1998

State Status:
Critical

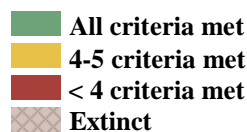
Interim Assessment:
At Risk

The Willamette Bull Trout SMU is comprised of seven populations, three of which are classified as extinct. Sightings of bull trout were last documented before 1960 in Clackamas, North Santiam, and South Santiam basins. All four existing populations have an extremely limited spawning distribution, and three populations are isolated above dams lacking upstream passage. Bull trout abundance in the Middle Fork Willamette population has dropped to precariously low numbers. ODFW and USFS biologists are attempting to restore this population with bull trout from the McKenzie population. The SMU meets only the reproductive independence criterion and is classified as ‘at risk’. Limited datasets and inferences from other populations in this SMU provide a qualified level of confidence in the assessment of the interim criteria.

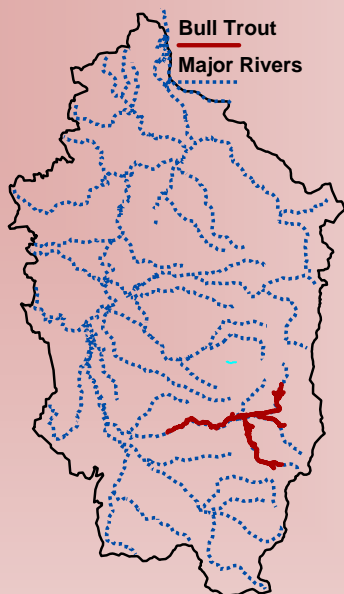


Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Clackamas	<i>Fail</i>		<i>Extinct Population</i>			
North Santiam	<i>Fail</i>		<i>Extinct Population</i>			
South Santiam	<i>Fail</i>		<i>Extinct Population</i>			
Trail Bridge	Pass	<i>Fail</i>	<i>Fail</i>	Pass*	Pass	<i>Fail</i>
McKenzie	Pass	<i>Fail</i>	Pass	Pass*	Pass	Pass
SF McKenzie	Pass	<i>Fail</i>	<i>Fail</i>	Pass*	Pass	Pass
MF Willamette	Pass*	<i>Fail</i>	<i>Fail</i>	<i>Fail</i> *	Pass	Pass

*Inferred

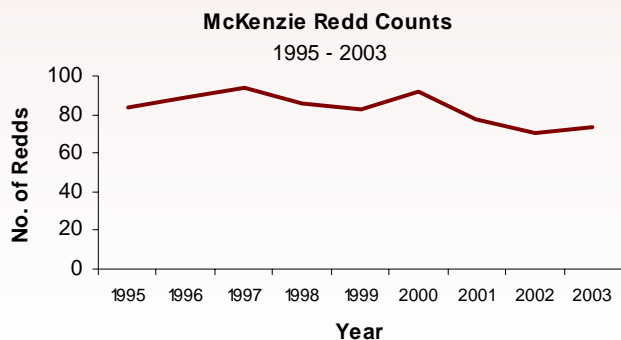


Distribution - Fail



- Historically, bull trout in the McKenzie River basin functioned as a single population. Dam construction in the early 1960s fragmented the population and spawning habitat.
- Currently spawning distribution of each population is less than five Km and movement between populations is impeded by dams. Therefore each existing population fails the distribution criterion.
- Bull trout in the McKenzie population utilize up to 170 km of the McKenzie River and its tributaries throughout their life cycle. Large fluvial adults have been observed downstream of Leaburg Dam and a few individuals pass above the dam each year.

Productivity - Fail



Additional Information

- Bull trout in the Willamette SMU are native fish sustained by natural production. All populations pass the reproductive independence criterion.

Abundance - Fail

- The McKenzie population is estimated to contain 200 adults and passes the abundance criterion.
- Trail Bridge, SF McKenzie, and Middle Fork Willamette populations are very small; each is estimated to contain fewer than 50 adults. These populations fail the criterion and are at risk of inbreeding.
- All existing populations are at risk of the deleterious effects of genetic drift.

Hybridization - Fail

- Brook trout have been stocked in many Cascade Mountain high alpine lakes. Some releases resulted in self-sustaining brook trout populations.
- A population of brook trout is present in Trail Bridge Reservoir, where hybridization between bull trout and brook trout is a threat to bull trout. The Trail Bridge bull trout population fails the criterion.
- Brook trout are present in the Middle Fork Willamette, McKenzie, and SF McKenzie basins, however distribution of bull trout and brook trout do not overlap. Hybridization has not been observed during routine sampling in these bull trout populations, therefore they pass the hybridization criterion.

Hood River Bull Trout SMU

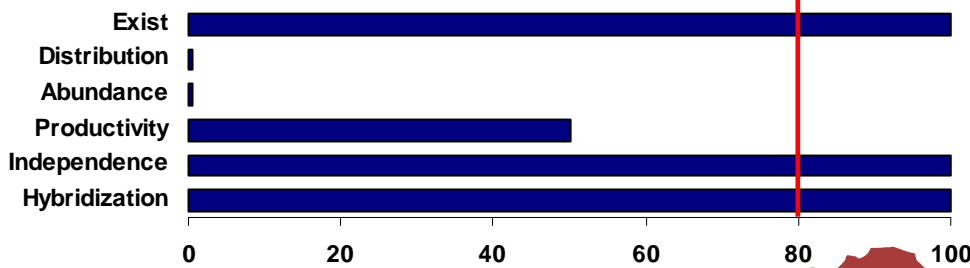
ESA Designation:
Threatened 1998

State Status:
Critical

Interim Assessment:
At Risk

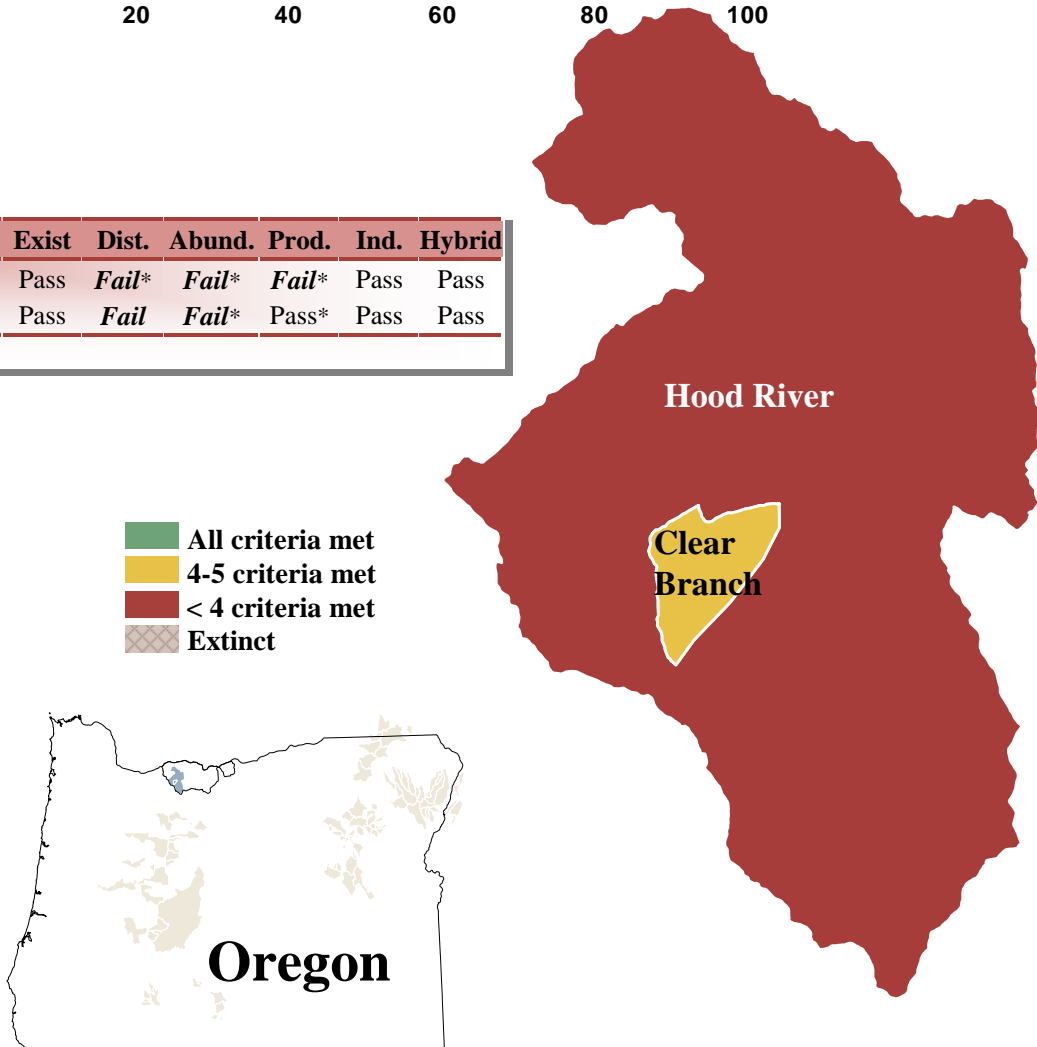
Two populations, Clear Branch and Hood River, comprise the Hood River Bull Trout SMU. Genetic analysis shows Hood River bull trout to be unique; the basin was likely colonized by fish from both coastal and Snake River populations. Historically, bull trout in the Hood River basin functioned as a single population. Construction of the Clear Branch Dam in 1969 fragmented the population and spawning habitat. Distribution of both populations is extremely limited and abundance is precariously low. This SMU meets three of the six interim criteria and is classified as 'at risk'. Limited data sets and inferences from other information for populations in this SMU provide a qualified level of confidence in the assessment of the interim criteria.

Percent of Populations Meeting Criteria



Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Hood River	Pass	<i>Fail*</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	Pass
Clear Branch	Pass	<i>Fail</i>	<i>Fail*</i>	Pass*	Pass	Pass

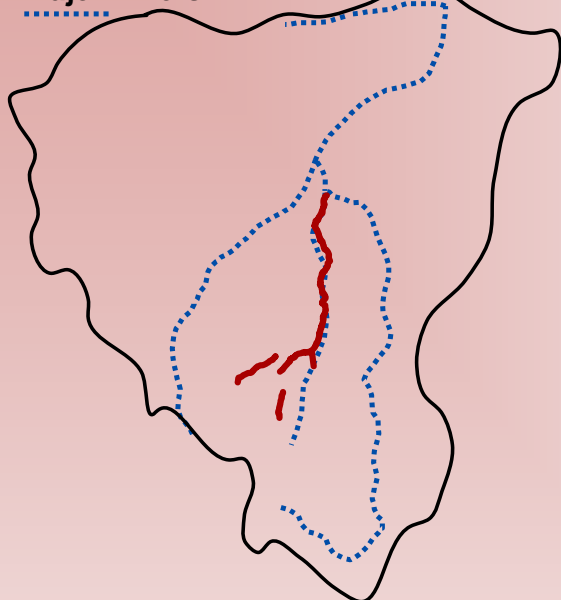
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Distribution - Fail

Bull Trout Spawning /Rearing

Major Rivers



- Current distribution likely reflects historical distribution; however dams and diversions have resulted in fragmentation and limited spawning habitat to a few tributary streams.
- Clear Branch population is isolated above the Clear Branch Dam and spawning distribution is restricted to eight km. This population is at a high risk of extinction due to stochastic events and fails the criterion.
- Spawning distribution of the Hood River population is highly fragmented and limited to a few short stream sections totaling <ten km. Water temperature and glacial melt affects the quality of spawning habitat. This population fails the criterion.
- Migratory bull trout from the Hood River population have been located rearing in the Columbia River.

Additional Information

- Both populations in the Hood River Bull Trout SMU are native fish sustained by natural production and pass the reproductive independence criterion.
 - Powerdale Dam on the Hood River is scheduled for decommissioning and removal starting in 2010.
 - The Sandy River is included in the SMU. Even though a self-sustaining population does not currently exist in the Sandy River, recent bull trout sightings suggest this river as a possible location for recovery.
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Abundance - Fail

- Dam counts, redd surveys, and snorkel observations suggest abundance of both populations is extremely low. Each population likely contains fewer than 100 adults. Counts of adult bull trout over the Powerdale Dam ranged from two to 28 between 1992 and 2001.
- The relative abundance of the Clear Branch population is larger than that of the Hood population, and is considered to be the ‘core’ of the Hood River SMU.
- Bull trout populations in this SMU are at risk of the deleterious effects of genetic drift and inbreeding, and fail the abundance criterion.

Hybridization - Pass

- Brook trout are present in the Hood River Basin, but are not sympatric with bull trout and not considered a threat. Both populations pass this criterion.

Productivity – Fail

- Data specifically describing productivity do not exist.
- Snorkel counts suggest the Clear Branch population is likely stable and sustaining itself. The population passes the criterion.
- The Hood River population fails the criterion due to extremely low abundance, limited distribution, and highly variable capture rates at the Powerdale Dam.

Deschutes Bull Trout SMU

ESA Designation:
Threatened 1998

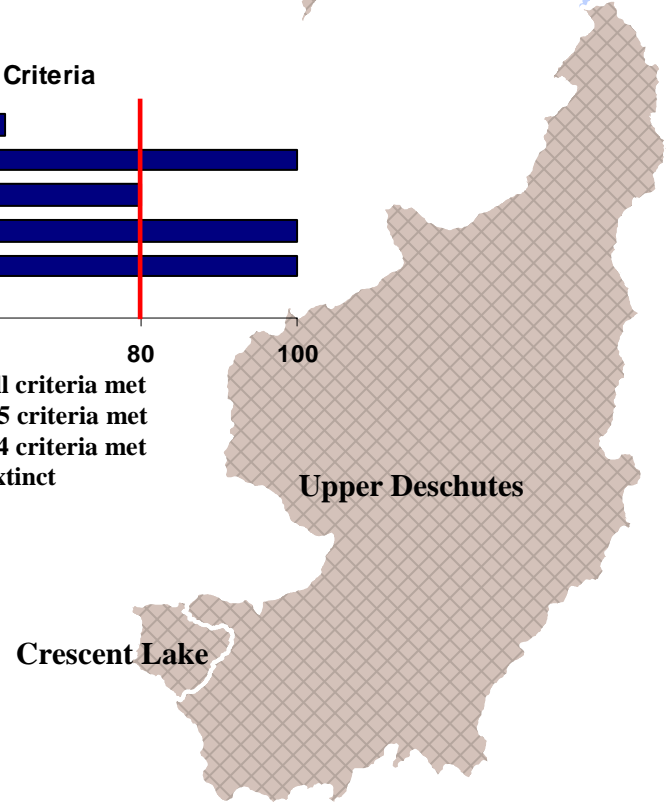
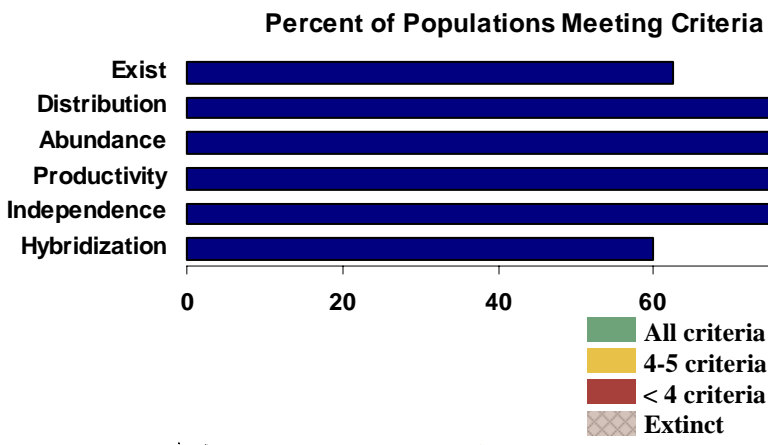
State Status:
Critical

Interim Assessment:
Potentially At Risk

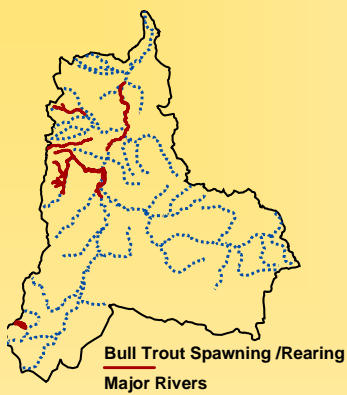
The Deschutes Bull Trout SMU contains eight populations, three of which are considered extinct. Bull trout no longer exist in the upper Deschutes River Basin, Crescent Lake, and Suttle Lake. Movement between populations in the Warm Springs Indian Reservation and the Metolius River Basin is impeded by the Pelton Round Butte Hydroelectric Project. Jack and Jefferson complexes are two of the most abundant and productive in Oregon; both populations pass all interim criteria and are considered ‘not at risk’. The SMU is classified as ‘potentially at risk’, failing the hybridization and extinction criteria. Limited data sets and inferences from other information for populations in this SMU provide a qualified level of confidence in the assessment of the interim criteria.

Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Warm Springs	Pass	Pass	Pass	Pass*	Pass	<i>Fail</i>
Shitike	Pass	Pass	Pass	Pass*	Pass	<i>Fail</i>
Whitewater	Pass	Pass*	<i>Fail*</i>	Pass*	Pass	Pass
Jefferson Complex	Pass	Pass	Pass	Pass*	Pass	Pass
Jack Complex	Pass	Pass	Pass	Pass*	Pass	Pass
Suttle Lake	<i>Fail</i>		<i>Extinct Population</i>			
Upper Deschutes	<i>Fail</i>		<i>Extinct Population</i>			
Crescent	<i>Fail</i>		<i>Extinct Population</i>			

**Inferred*



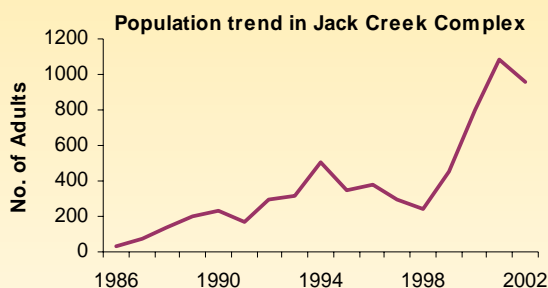
Distribution - Pass



- The spawning distribution within each population is relatively extensive. All existing populations pass the distribution criterion.

- Adult and sub-adult bull trout in the Metolius River rear in Lake Billy Chinook and its larger tributaries, and those from Warm Springs and Shitike creeks utilize the Deschutes River down to Sherars Falls.

Productivity - Pass



- All populations pass the productivity criterion.
- Population trend in the Warm Springs River is stable. Jack and Jefferson complexes and Shitike Creek show increasing trends in abundance. All four populations pass the criterion.
- Productivity information is not available for Whitewater. The population passes the criterion based on trend of other Metolius populations. This review assumes productivity is minimally adequate for the population to sustain itself.

Additional Information

- Bull trout in the Deschutes SMU are native fish sustained by natural production. All populations pass the reproductive independence criterion.
- Harvest of bull trout is illegal in the Deschutes River basin except in Lake Billy Chinook, upstream to Benham Falls where the bull trout bag limit is 1/day over 24 inches. Lake Billy Chinook is the only consumptive bull trout fishery in Oregon and one of two in the nation. All tributaries of the Metolius River below Lake Creek are closed to angling.
- Restoration of fish passage at Pelton Round Butte Hydroelectric project is scheduled for 2010.

Abundance - Pass

- All existing populations except Whitewater are estimated to be >100 adults and not at risk of inbreeding. These populations pass the abundance criterion.
- Whitewater is estimated to be between 0 and 60 adults and fails the criterion. This may be a conservative estimate since conditions make the population difficult to census.
- The Jack Complex is estimated to be the largest population of approximately 700 adults.

Hybridization - Fail

- Brook trout have been introduced into Warm Springs, Shitike, and Canyon creeks (Jack Complex).
- Brook trout are present in Canyon Creek (Jack Complex) but are not sympatric with bull trout; hybridization is rare. The Jack Complex passes the hybridization criterion.
- Data specific to the degree of hybridization in Warm Springs and Shitike are not available. These populations fail the hybridization criterion until they can be better assessed.

Odell Lake Bull Trout SMU

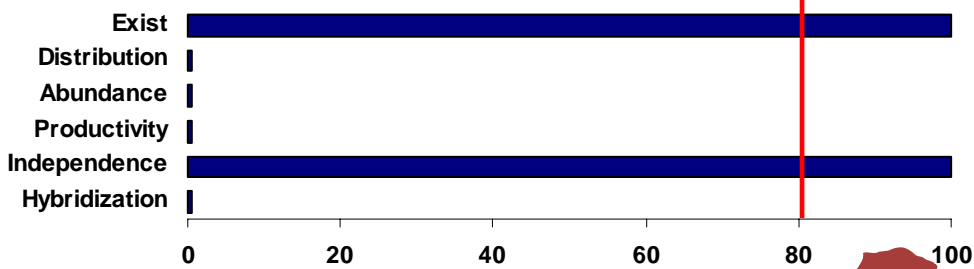
ESA Designation:
Threatened 1998

State Status:
Critical

Interim Assessment:
At Risk

The Odell Lake Bull Trout SMU is comprised of one population, the single remaining natural adfluvial population in Oregon. Odell Lake is physically isolated from the Upper Deschutes River basin by a 5,500 year old lava flow which impounded Odell Creek and created Davis Lake. The abundance of the Odell Lake bull trout population is perilously low and spawning habitat is severely limited and of marginal quality. The presence of non-native salmonids, particularly lake trout, brook trout, and kokanee, drastically limit productivity. The Odell Lake SMU meets two of the six interim criteria and is classified as ‘at risk’. Limited data sets and inferences from other information for populations in this SMU provide a qualified level of confidence in the assessment of interim criteria.

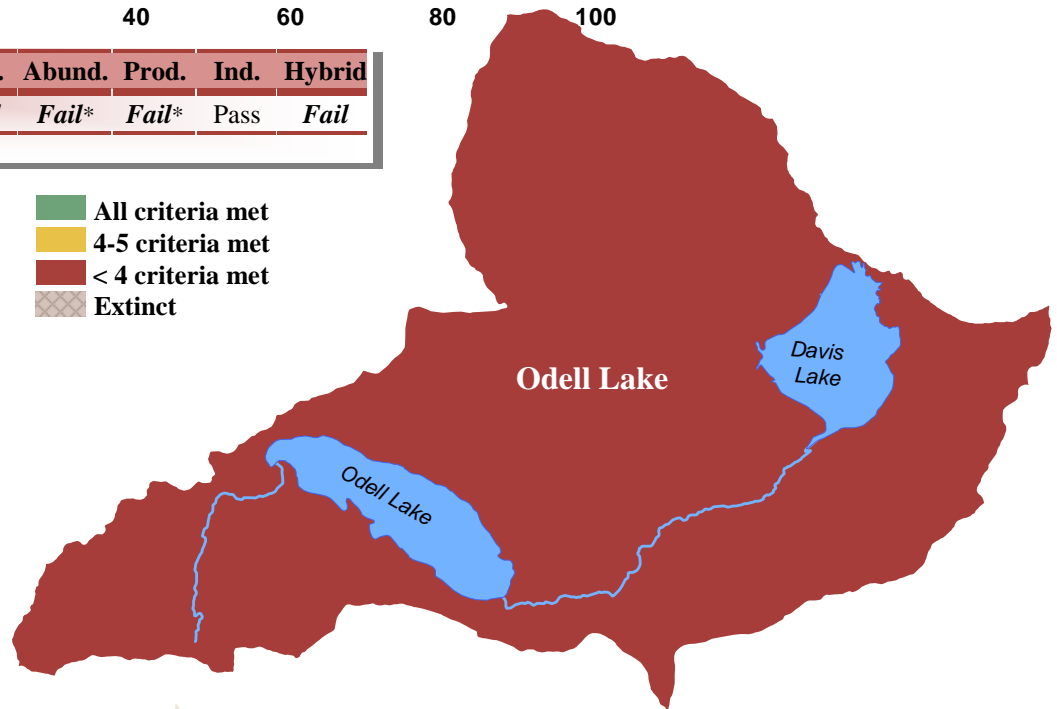
Percent of Populations Meeting Criteria



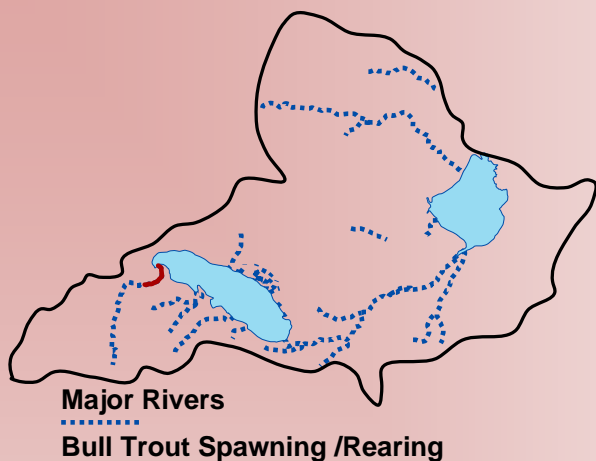
Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Odell Lake	Pass	Fail	Fail*	Fail*	Pass	Fail

* Inferred

- All criteria met
- 4-5 criteria met
- < 4 criteria met
- Extinct



Distribution - Fail



- Bull trout currently occupy Odell Lake, Trapper and Odell creeks, and two Odell Creek tributaries.
- Bull trout spawning distribution is limited to 1.3 km of Trapper Creek between the mouth and a barrier falls. Quality of spawning habitat is marginal, degrading significantly over the past 70 years.
- Crystal Creek historically supported spawning bull trout; however, sediment input from the construction of a railroad crossing impacted habitat quality. Only kokanee currently spawn in Crystal Creek.

Productivity - Fail

- Data are not available to quantitatively assess productivity.
- Productivity is likely depressed by interactions with non-native salmonids; brook trout hybridize with bull trout in Trapper Creek, kokanee redds are frequently superimposed over bull trout redds, and lake trout compete and/or prey on bull trout in Odell Lake.
- Degraded and restricted spawning habitat may also limit productivity.

Additional Information

- Odell Lake bull trout are native trout sustained by natural production and pass the reproductive independence criterion.
 - The USFW implemented a channel restoration project on Trapper Creek in 2002 and 2003. The project was designed to create high quality spawning and rearing habitat for bull trout through the addition of large wood and spawning gravel and by increasing the overall amount of pool habitat.
 - ODFW is currently evaluating the impact of superimposition of kokanee redds on bull trout redds.
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Abundance - Fail

- Total abundance of Odell Lake bull trout is unknown.
- Based on field observations, selected datasets, and professional judgment, biologists estimate fewer than 50 adult bull trout exist in the Odell Lake population.
- Odell Lake bull trout are at risk of the deleterious effects of inbreeding and genetic drift.

Hybridization - Fail

- Historically brook trout were stocked in high mountain lakes in the Odell Lake watershed, including Yoran Lake, headwaters of Trapper Creek.
- Hybridization with brook trout has been observed in Trapper Creek; however the degree to which it occurs is undocumented. Given the extremely small size of the bull trout population, any degree of hybridization is considered a significant impact. The Odell Lake population fails the hybridization criterion.

John Day Bull Trout SMU

ESA Designation:
Threatened 1998

State Status:
Critical

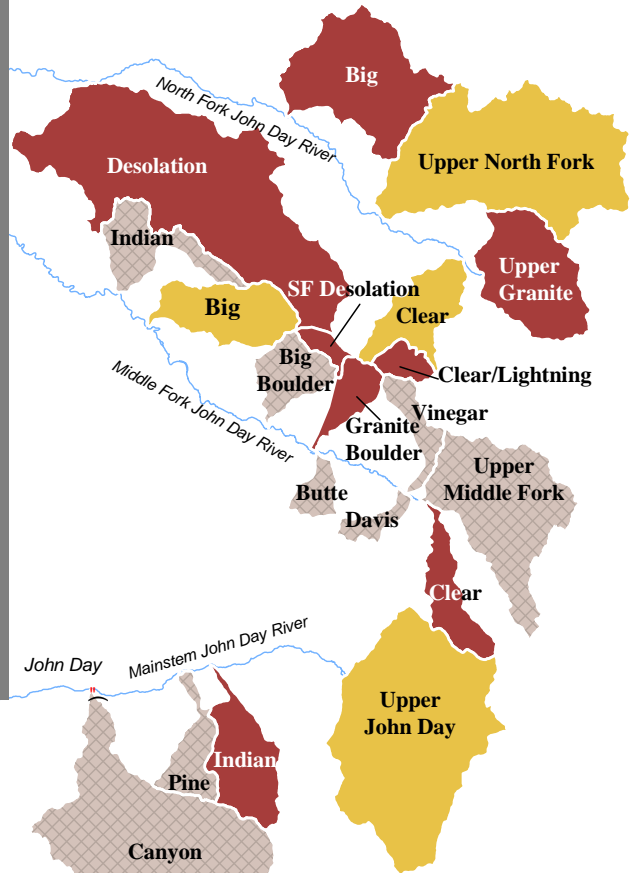
Interim Assessment:
At Risk

The John Day Bull Trout SMU includes 20 populations distributed among headwater streams of the North Fork, Middle Fork, and Upper Mainstem John Day Rivers. Five populations in the Middle Fork John Day and two in the Mainstem John Day Rivers are considered extinct. Overall abundance within the SMU is extremely low and spawning distribution is highly fragmented and restricted to small tributary streams. Productivity of most populations is limited by habitat quality, non-native species, and a lack of a migratory life history. The SMU only meets the reproductive independence criterion and is classified as ‘at risk’. Limited data sets and inferences from other information for populations in this SMU provide a qualified level of confidence in the assessment of the interim criteria.

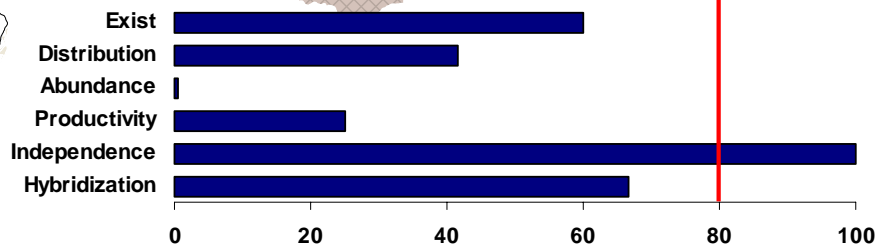
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Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
North Fork						
Upper North Fork	Pass	Pass	Fail*	Pass*	Pass	Fail*
Upper Granite	Pass	Fail	Fail*	Fail*	Pass	Pass
Big	Pass	Fail*	Fail*	Fail*	Pass	Fail*
Clear	Pass	Pass	Fail*	Fail*	Pass	Pass
Clear/Lightning	Pass	Fail*	Fail*	Fail*	Pass	Pass
Desolation	Pass	Pass	Fail*	Fail*	Pass	Fail*
SF Desolation	Pass	Fail	Fail*	Fail*	Pass	Fail*
Middle Fork						
Clear	Pass	Fail	Fail*	Fail*	Pass	Pass
Granite Boulder	Pass	Fail	Fail*	Fail*	Pass	Pass
Big	Pass	Pass	Fail*	Pass*	Pass	Pass
Upper Middle Fork	Fail		Extinct Population			
Big Boulder	Fail		Extinct Population			
Davis	Fail		Extinct Population			
Vinegar	Fail		Extinct Population			
Butte	Fail		Extinct Population			
Indian	Fail		Extinct Population			
Mainstem						
Upper John Day	Pass	Pass	Fail*	Pass*	Pass	Pass*
Indian	Pass	Fail	Fail*	Fail*	Pass	Pass
Pine	Fail		Extinct Population			
Canyon	Fail		Extinct Population			

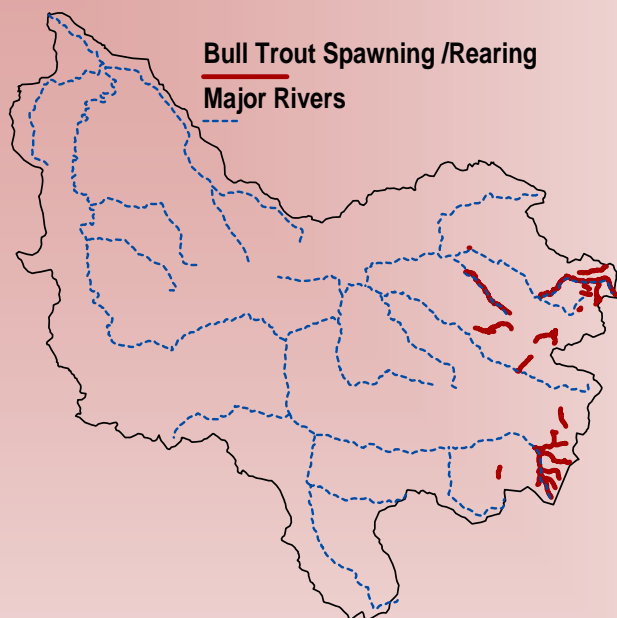
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Percent of Populations Meeting Criteria



Distribution - Fail



- Bull trout distribution in the John Day basin is highly fragmented and constricted to headwater streams.
- Spawning and rearing distribution is limited to less than ten km for at least five of the populations: Clear (MFJD), Granite Boulder, Indian (MSJD), SF Desolation, and Upper Granite.
- Three populations do not have year-around access to migratory corridors or other populations. The SF Desolation population is above a natural barrier and Clear Creek (NFJD) and Indian Creek (MSJD) are above an impassable diversion and dewatered reaches respectively.
- Adult and sub-adult bull trout seasonally utilize the entire North Fork John Day River for rearing and foraging, and in the Upper Mainstem John Day River they are suspected to forage down to the vicinity of the town of John Day. Migratory bull trout have been captured in the Mainstem John Day River near the town of Spray; however use of the lower reaches is sporadic due to warm water temperatures and low flows during the summer months.

Additional Information

- Bull trout in the John Day Basin are native fish sustained by natural production. All populations pass the reproductive independence criterion.
- Elevated water temperature and reduced stream flow due to water diversions in the mainstem rivers and large tributaries act as barriers to migration during summer and early fall, impacting movement between populations.

Abundance- Fail

- Abundance estimates are not available for individual populations. Based on professional opinion, none of the John Day SMU populations exceed 100 reproductive adults. All populations are considered at risk of inbreeding and fail the abundance criterion.
- Abundance of all populations combine does not exceed 1,000 reproductive adults. Bull trout in the SMU are at risk of genetic drift. Basin-wide redd counts estimated 540 ($\pm 38\%$) redds in 2002, 193 ($\pm 31\%$) redds in 2003, and 235 ($\pm 35\%$) redds in 2004 in the John Day SMU.

Hybridization - Fail

- Brook trout were stocked in tributary streams and high alpine lakes in the North Fork John Day and mainstem John Day basins beginning in 1925.
- Four bull trout populations in the North Fork are sympatric with brook trout and hybridization is common. These populations fail the hybridization criterion.
- Brook trout are present in the Upper John Day population; however the incidence of hybridization is rare. This population passes the criterion.
- Brook trout are not present in the Middle Fork John Day Basin. All populations in this basin pass the hybridization criterion.

Productivity - Fail

- Data are not available to quantitatively assess productivity.
- Populations fail the criterion if they are limited in distribution and abundance, are sympatric with brook trout, or do not express a migratory life history.
- Only the North Fork John Day, Upper John Day, and Big (MFJD) populations pass the criterion. These populations appear to be the most abundant and widely distributed with access to habitats capable of supporting a migratory life history strategy.

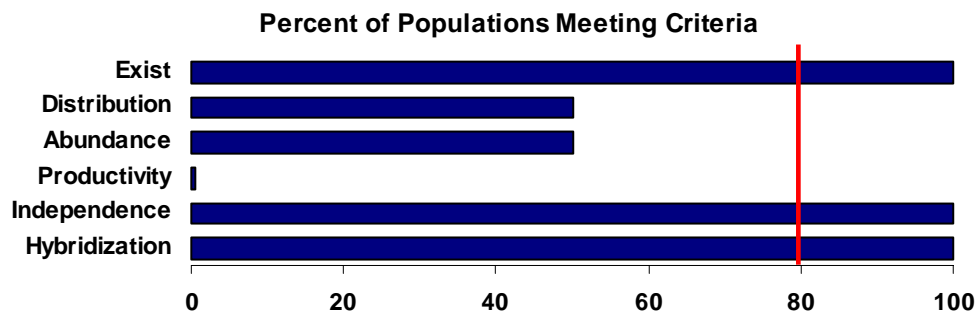
Umatilla Bull Trout SMU

ESA Designation:
Threatened 1998

State Status:
Critical

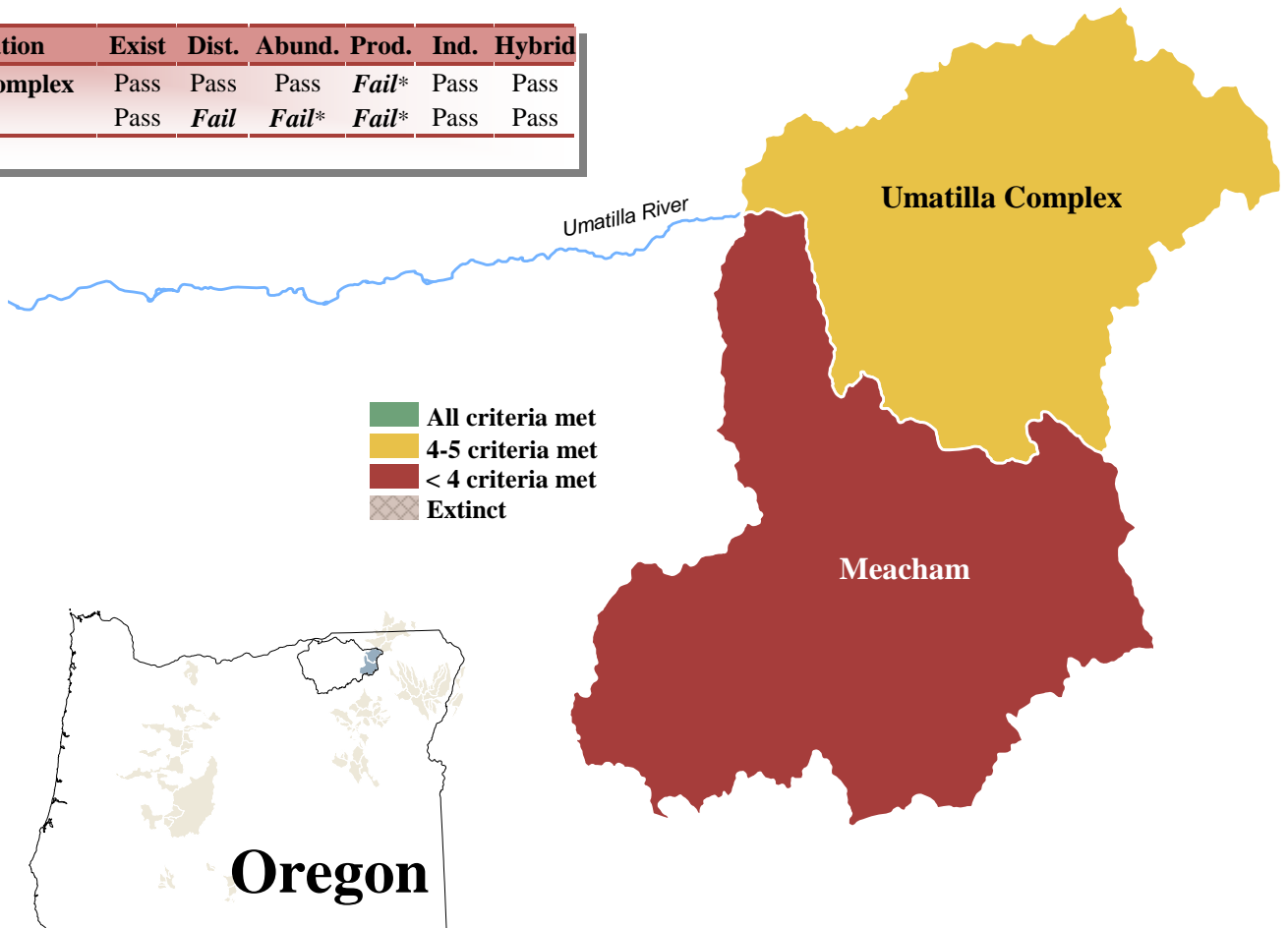
Interim Assessment:
At Risk

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’. 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.

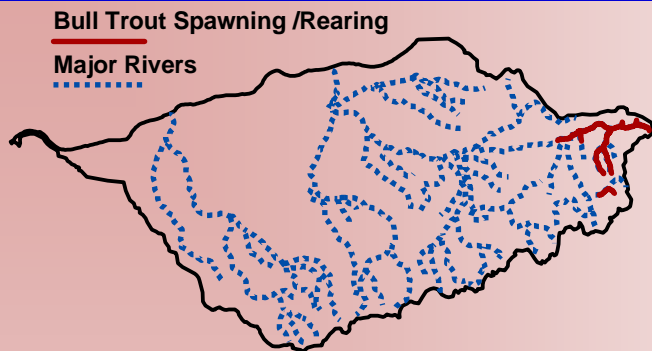


Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Umatilla Complex	Pass	Pass	Pass	<i>Fail*</i>	Pass	Pass
Meacham	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	Pass

**Inferred*



Distribution - Fail

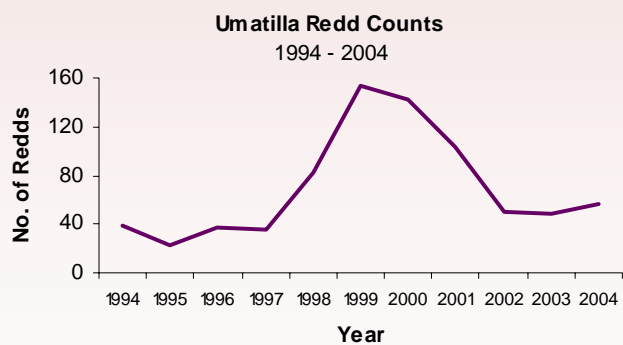


- Spawning, juvenile rearing, and resident bull trout distribution is limited to upper Umatilla River and portions of North Fork Meacham Creek. Spawning and rearing distribution in the Meacham population is limited to less than 10 km. This population fails the criterion.
- Connectivity between populations is hindered by seasonal low flows and thermal barriers. Access further downstream, as well as movement to and from the Columbia River, is hampered by poor water quality and six permanent in-stream diversions.

Hybridization - Pass

- Brook trout are not present in the Umatilla River Basin and not a threat for bull trout.

Productivity - Fail



- The Umatilla Complex shows decreasing trend in abundance over the past five years and is considered to fail the criterion until productivity can be better assessed.
- Productivity in the Meacham population could not be adequately evaluated. Given the extremely low abundance the population fails the criterion.

Additional Information

- Both populations in the Umatilla Bull Trout SMU are native fish sustained by natural production and pass the reproductive independence criterion.
- Angling is closed to direct take of bull trout on non-reservation lands. Tribal members may keep bull trout, however most release those they catch.
- Habitat degradation due to timber harvest and associated road development, agricultural practices, and grazing are considered the most significant threats to bull trout in the Umatilla SMU.

Walla Walla Bull Trout SMU

ESA Designation:
Threatened 1998

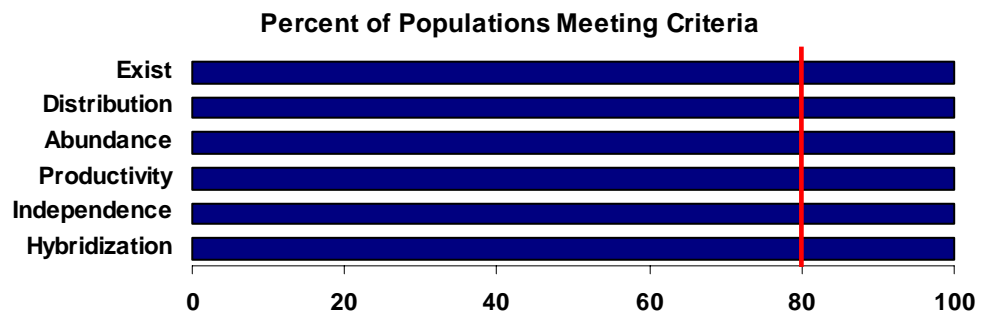
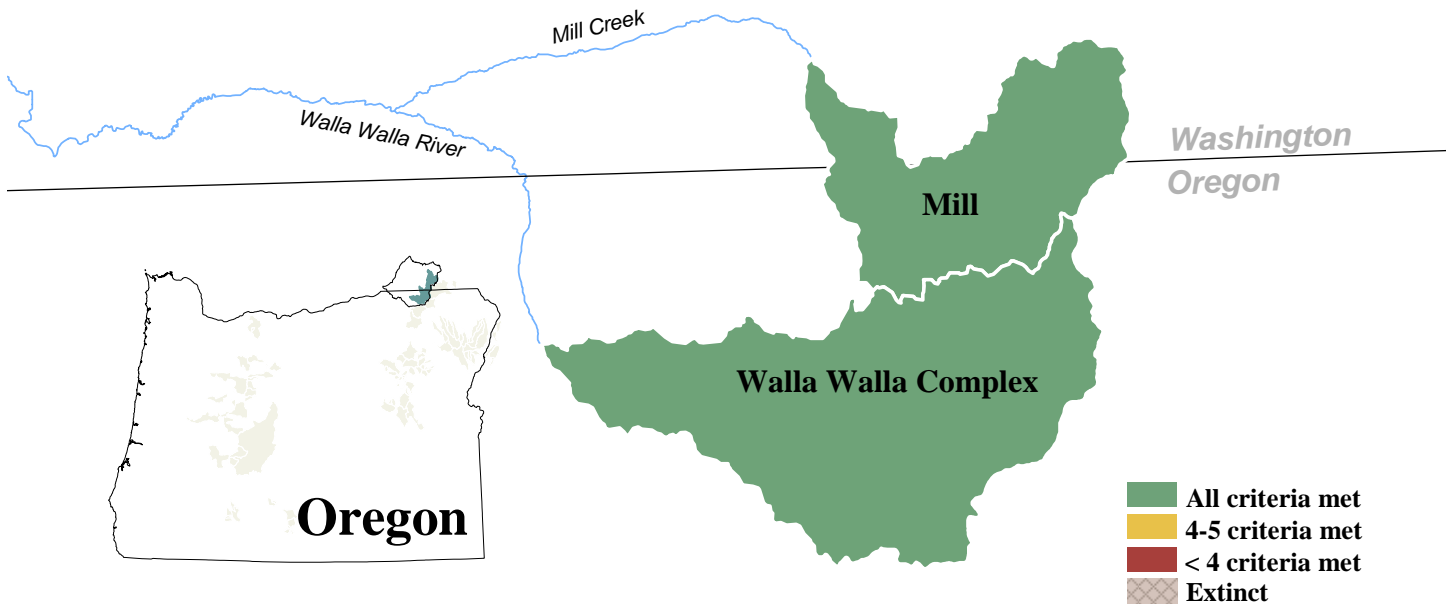
State Status:
Critical

Interim Assessment:
Not At Risk

The Walla Walla Bull Trout SMU consists of two populations, one in each of Upper Walla Walla River and Mill Creek. Three additional populations not considered in this assessment are present in Touchet River, a tributary of the Walla Walla River in Washington. Bull trout in both Oregon populations express a fluvial life history strategy and are relatively abundant and productive. High quality spawning habitat is extensive in the upper reaches of Mill Creek and Walla Walla River, however connectivity between populations is poor from late spring to fall. Both populations pass all six interim criteria and the SMU is classified as ‘not at risk’. Limited data sets and inferences from other information for populations in this SMU provide a qualified level of confidence in the assessment of the interim criteria.

Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Walla Walla Complex	Pass	Pass	Pass	Pass*	Pass	Pass
Mill	Pass	Pass	Pass	Pass*	Pass	Pass

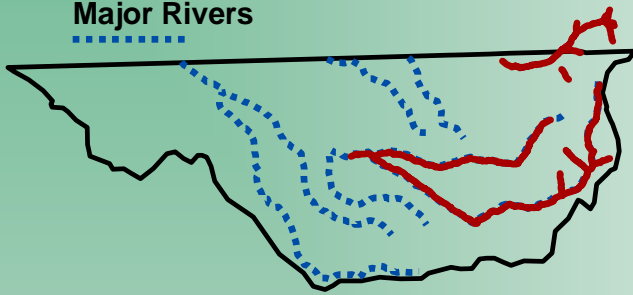
**Inferred*



Distribution – Pass

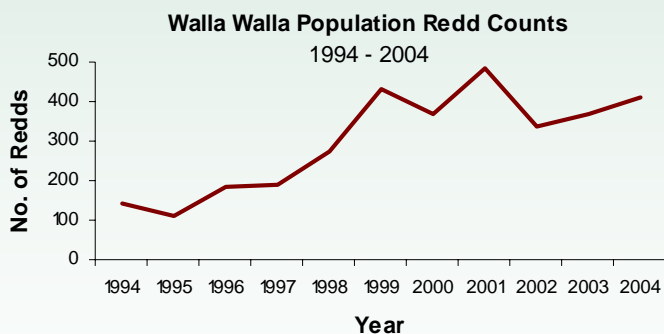
Bull Trout Spawning /Rearing

Major Rivers



- Extensive spawning, juvenile rearing, and resident adult bull trout distribution occurs in the upper reaches of South Fork and North Fork Walla Walla rivers and Mill Creek.
- Bull trout in both populations have access to larger rivers and migratory corridors; however connectivity between populations is poor. Low flow conditions, poor water quality and diversion dams hinder the ability of bull trout to move between populations from late spring through fall.
- Both populations pass the distribution criterion.
- Adult migratory bull trout rear and over winter in the mainstem of the Walla Walla River, upstream of the state border. Occasional sightings exist downstream of the Mill Creek confluence and at Bennington Dam.

Productivity - Pass



- Annual redd counts exhibit an increasing population trend in the Walla Walla Complex and a stable trend in Mill Creek. Both populations pass the productivity criterion.

Additional Information

- Populations in the Walla Walla Bull Trout SMU are native fish sustained by natural production, and pass the reproductive independence criterion.
- Habitat degradation due to dams, timber harvest, road development, and agricultural and grazing practices is considered the most significant threat to bull trout in the Walla Walla SMU.

Abundance - Pass

- Both populations exceed 100 spawning adults, are not considered at risk of inbreeding depression, and pass the criterion. The Walla Walla complex averaged 989 adults over the past five years. The Mill Creek population averaged 480 spawning adults.
- The total number of adults within the SMU exceeds 1,000, minimizing the occurrence of genetic drift. However, connectivity between populations must improve in order to fully avoid these genetic risks.

Hybridization - Pass

- Brook trout are not present in the Walla Walla River Basin and not a threat for bull trout.

Grande Ronde Bull Trout SMU

ESA Designation:
Threatened 1998

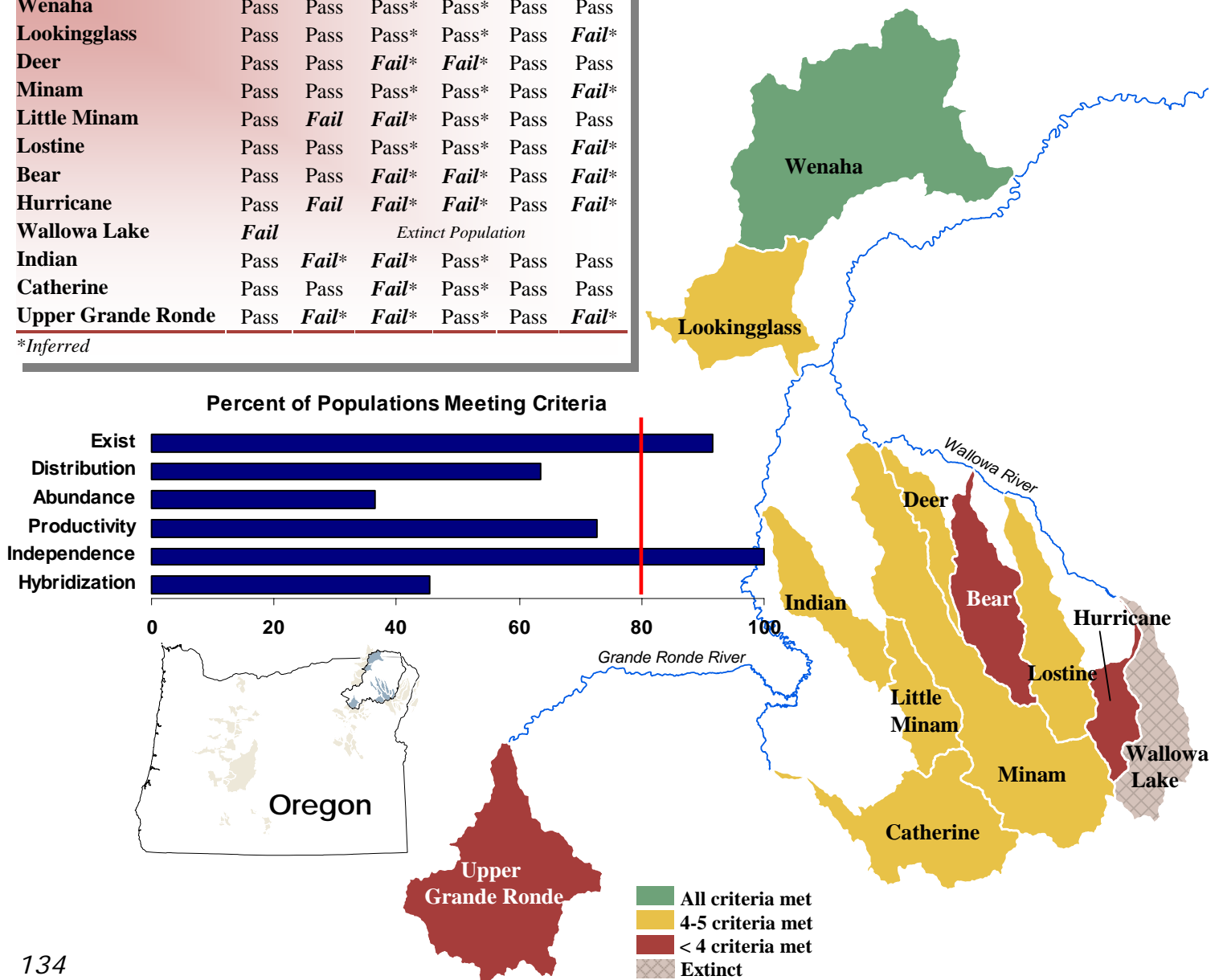
State Status:
Critical

Interim Assessment:
At Risk

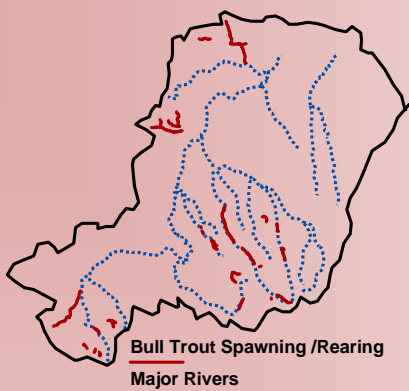
The Grand Ronde Bull trout SMU includes 12 populations, of which over half are concentrated in the Wallowa River basin. The Wallowa Lake population was eliminated by the 1950s and is now considered extinct. The Wenaha River is one of Oregon's most pristine and undisturbed river systems and contains one of the state's healthiest bull trout populations in this SMU. Abundance is considered precariously low in more than half of the populations and hybridization with introduced brook trout has put many populations at risk, particularly in the Wallowa River. The SMU passes two of the six interim criteria and is classified as 'at risk'. 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.

Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Wenaha	Pass	Pass	Pass*	Pass*	Pass	Pass
Lookingglass	Pass	Pass	Pass*	Pass*	Pass	Fail*
Deer	Pass	Pass	Fail*	Fail*	Pass	Pass
Minam	Pass	Pass	Pass*	Pass*	Pass	Fail*
Little Minam	Pass	Fail	Fail*	Pass*	Pass	Pass
Lostine	Pass	Pass	Pass*	Pass*	Pass	Fail*
Bear	Pass	Pass	Fail*	Fail*	Pass	Fail*
Hurricane	Pass	Fail	Fail*	Fail*	Pass	Fail*
Wallowa Lake	Fail	Extinct Population				
Indian	Pass	Fail*	Fail*	Pass*	Pass	Pass
Catherine	Pass	Pass	Fail*	Pass*	Pass	Pass
Upper Grande Ronde	Pass	Fail*	Fail*	Pass*	Pass	Fail*

*Inferred



Distribution - Pass



- Bull trout are distributed throughout the headwaters of the Grande Ronde and Wallowa River basins.
- Two populations, Little Minam and Hurricane, are isolated above natural and manmade barriers and fail the criterion.
- Indian and Upper Grande Ronde populations fail the criterion due to highly fragmented and restricted spawning distributions.

Productivity - Fail

- Data are not available to quantitatively assess productivity. Populations fail the criterion if they are limited in distribution and abundance, are sympatric with brook trout, or do not express a migratory life history.
- Even though many populations are low in abundance, they are considered to exhibit a level of productivity minimally adequate to sustain the population.
- The Bear, Deer, and Hurricane populations fail the productivity criterion due to limited distribution and abundance, degraded habitat quality, and the presence of brook trout.

Additional Information

- Bull trout in the Grande Ronde SMU are native fish sustained by natural production. Stocking or hatchery programs do not currently exist, however, Alaskan Dolly Varden were stocked in Wallowa Lake 1968-1978 as an attempt to reestablish bull trout. The Dolly Varden did not establish a self sustaining population. All populations pass the reproductive independence criterion.
 - Agricultural and grazing practices threaten water quality and bull trout particularly along major migratory corridors.
 - Minam, Little Minam, and Wenaha populations are partially or completely within designated wilderness areas. Impacts to habitat quality are minimal.
-

Abundance - Fail

- Few quantitative abundance data are available to assess each population. Assessment of populations were based on a combination of redd counts, trap data and professional judgment of agency biologists.
- The Wenaha, Lookingglass, Lostine, Minam, and Little Minam are the largest populations in the SMU. All except the Little Minam pass the criterion. Even though, the Little Minam was estimated to contain roughly 750 reproductive adults, it is isolated from other populations by a natural barrier and subject to risks associated with genetic drift and stochastic events.
- The remaining populations fail the criterion based on precariously low measures of abundance or field observations of extremely low densities.

Hybridization - Fail

- Historically brook trout were stocked in rivers, streams, and high alpine lakes in the Grande Ronde starting in the early 1900s.
- Brook trout are present in Minam, Lostine, Bear, Lookingglass, Hurricane, and Upper Grande Ronde populations. Data specific to the degree of hybridization in each population are not available. Populations where brook trout are present fail the hybridization criterion until populations can be thoroughly assessed.

Imnaha Bull Trout SMU

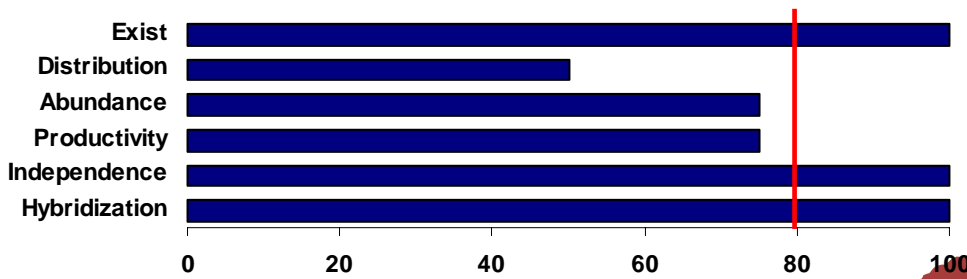
ESA Designation:
Threatened 1998

State Status:
Critical

Interim Assessment:
At Risk

The Imnaha Bull Trout SMU includes four populations in the Imnaha River Basin. Two additional populations occur in close proximity on the Idaho side of the Snake River. Potential of intermixing between all populations exists, but has not been documented. Distribution of McCully, Little Sheep, and Big Sheep populations is negatively impacted by irrigation diversions and barriers to movement. Even though the SMU is classified as ‘at risk’, passing only three of the six criteria, the Imnaha population is considered one of the most abundant and viable in Oregon. Limited data sets and inferences from other information for populations in this SMU provide a qualified level of confidence in the assessment of the interim criteria.

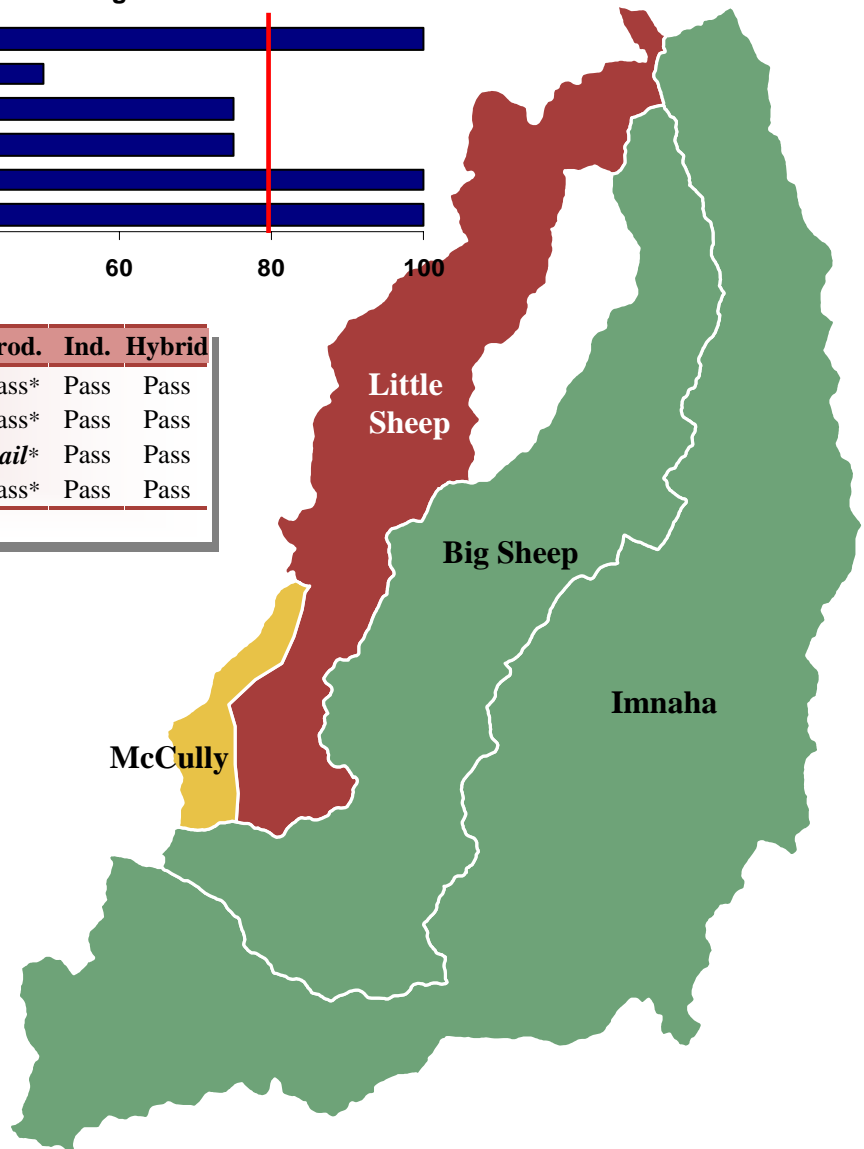
Percent of Populations Meeting Criteria



Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Imnaha	Pass	Pass	Pass*	Pass*	Pass	Pass
Big Sheep	Pass	Pass	Pass*	Pass*	Pass	Pass
Little Sheep	Pass	Fail	Fail*	Fail*	Pass	Pass
McCully	Pass	Fail	Pass*	Pass*	Pass	Pass

*Inferred

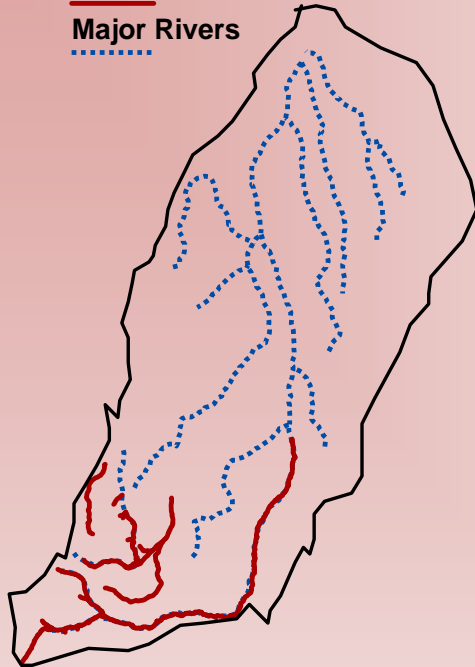
- All criteria met
- 4-5 criteria met
- < 4 criteria met
- Extinct



Distribution - Fail

Bull Trout Spawning /Rearing

Major Rivers



- The Wallowa Valley Improvement (WVI) Canal collects water from streams in the Big Sheep, Little Sheep, and McCully populations and transports it out of basin to the Wallowa River System. Unscreened diversions create barriers to upstream movement and potentially capture bull trout. The McCully population fails the distribution criterion because the entire population is upstream of the canal and isolated from other populations.
- The Little Sheep population fails the criterion due to a restricted and fragmented distribution. The WVI canal bisects the spawning grounds in this creek.
- Migratory bull trout overwinter and rear in the lower reaches of the Imnaha River and in the Snake River.

Additional Information

- Bull trout in the Imnaha SMU are native fish sustained by natural production. Stocking or hatchery programs do not currently exist.
- The headwaters of the Imnaha, McCully, and Big Sheep populations are partially or completely within designated wilderness areas. Impacts to habitat quality are minimal.

Abundance - Fail

- Few quantitative abundance data are available to assess each population. Population assessments were based on 1992 estimates, recent field observations, and professional judgment
- Three populations, Imnaha, McCully, and Big Sheep, were estimated to be large enough to avoid effects of inbreeding (>100 adults). The Imnaha population is arguably one of the most abundant bull trout populations in Oregon.
- Sampling efforts in Little Sheep suggest abundance is extremely low. The population is classified as at a 'high risk of extinction' and fails the abundance criterion.

Hybridization - Pass

- Brook trout are not present in the Imnaha River Basin. All populations pass the criterion.

Productivity – Fail

- Populations pass the criterion if they are abundant and widely distributed, express a migratory life history, and not sympatric with brook trout.
- Little Sheep population fails the productivity criterion due to an extremely limited distribution and low abundance.
- Even though the McCully population is isolated above an irrigation barrier and is limited to a resident life history, it is relatively abundance and apparently stable.

Hells Canyon Bull Trout SMU

ESA Designation:
Threatened 1998

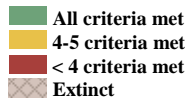
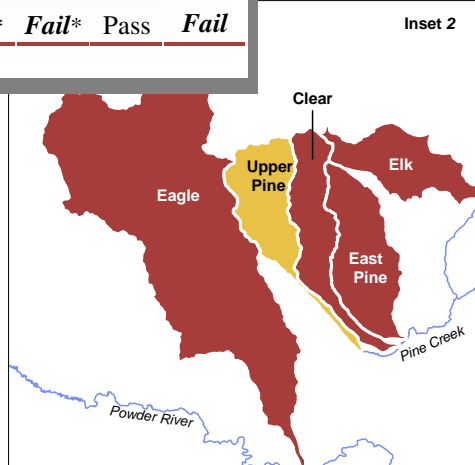
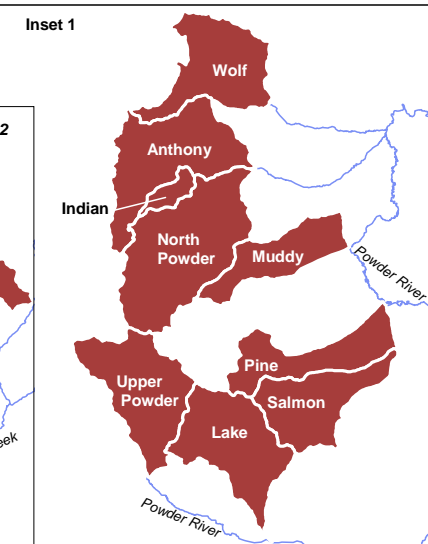
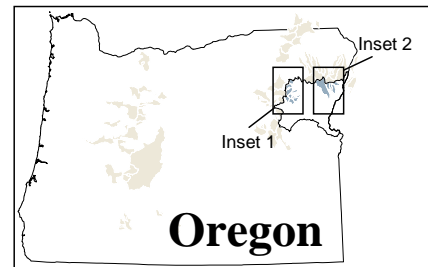
State Status:
Critical

Interim Assessment:
At Risk

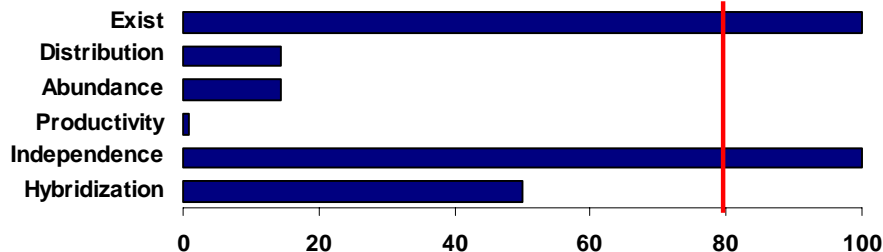
The Hells Canyon Bull Trout SMU includes 14 populations in Pine Creek and Powder River, both of which flow into the Snake River between Weiser River and Hells Canyon Dam. Three additional populations exist in close proximity on the Idaho side of the Snake River. Movement between the Idaho and Pine Creek populations is possible. Most populations in this SMU are characterized by extremely low abundances and restricted distributions. Productivity is hampered by habitat quality and quantity and the inability to express a migratory life history. The SMU passes two of the six criteria and is classified as ‘at risk’. Limited data sets and inferences from other information for populations in this SMU provide a qualified level of confidence in the assessment of the interim criteria.

Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Pine Creek						
Elk	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	Pass*
East Pine	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	Pass
Clear	Pass	Pass	<i>Fail*</i>	<i>Fail*</i>	Pass	<i>Fail</i>
Upper Pine	Pass	<i>Fail</i>	Pass*	<i>Fail*</i>	Pass	Pass*
Powder River						
Eagle	Pass	<i>Fail*</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	<i>Fail</i>
Wolf	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	Pass
Anthony	Pass	Pass	<i>Fail*</i>	<i>Fail*</i>	Pass	<i>Fail</i>
Indian	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	<i>Fail</i>
North Powder	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	<i>Fail</i>
Muddy	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	Pass*
Pine	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	<i>Fail</i>
Salmon	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	Pass
Lake	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	Pass*
Upper Powder	Pass	<i>Fail</i>	Pass*	<i>Fail*</i>	Pass	<i>Fail</i>

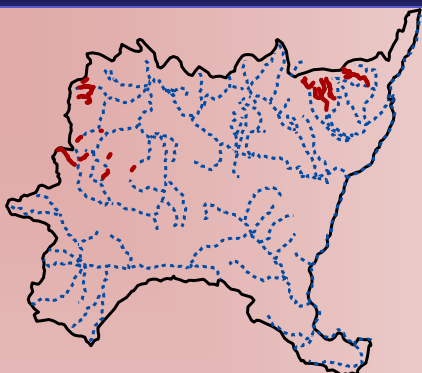
*Inferred



Percent of Populations Meeting Criteria



Distribution - Fail



Bull Trout Spawning /Rearing

Major Rivers

- Bull trout distribution in the SMU is highly fragmented and limited to short isolated segments of headwater streams. Fifty-four percent of the populations have a spawning distribution less than 4 km.
- Two populations, Clear and Anthony, pass the distribution criterion. These populations exceed ten km, occupy more than 50% of their historical distribution, and remain connected to migratory corridors and other populations.
- Large dams including Brownlee and Oxbow on the Snake River, and Thief Valley and Mason on the Powder River, restrict distribution and minimize connection between populations. Unscreened diversions and irrigation canals entrain bull trout and hinder migration and connectivity.

Productivity - Fail

- Quantitative productivity data are not available, however restricted and fragmented distribution, absence of a migratory life history, degraded habitat, low densities encountered during survey efforts, and the presence of brook trout all suggest the productivity of populations within the SMU is extremely depressed.
- None of the populations pass the productivity criterion.

Additional Information

- Bull trout in this SMU are naturally produced. All populations pass the reproductive independence criterion.
-

Abundance - Fail

- This review estimated the minimum number of adults present in each Pine Creek basin population from annual index redd counts. The Upper Pine population is the only population to consistently contain the minimum number of adults necessary to pass the abundance criterion.
- All populations in the Powder River basin, except the Upper Powder, fail the abundance criterion based on field observations of extremely low densities. None of the observations in these populations suggest abundance might exceed levels necessary to avoid the effects of inbreeding.
- A 1999 population survey in Silver Creek (Upper Powder) estimated the reproductive population to exceed levels necessary to avoid the effects of inbreeding. Based on this estimate the Upper Powder population passes the criterion.
- Even though data are not available to assess abundance of all populations, the SMU is considered to contain less than 1,000 reproductive adults and considered at risk of the deleterious effects of genetic drift.

Hybridization - Fail

- Brook trout were stocked in high alpine lakes in the Wallowa and Elkhorn mountains, and many introductions established self-sustaining populations. Most populations where brook trout are present fail the hybridization criterion.
- Brook trout are present in Upper Pine, Elk, Lake, and Muddy, however their distribution does not overlap that of bull trout. These populations pass the criterion.
- Brook trout are not present in East Pine, Salmon, and Wolf creeks. These populations also pass the criterion.

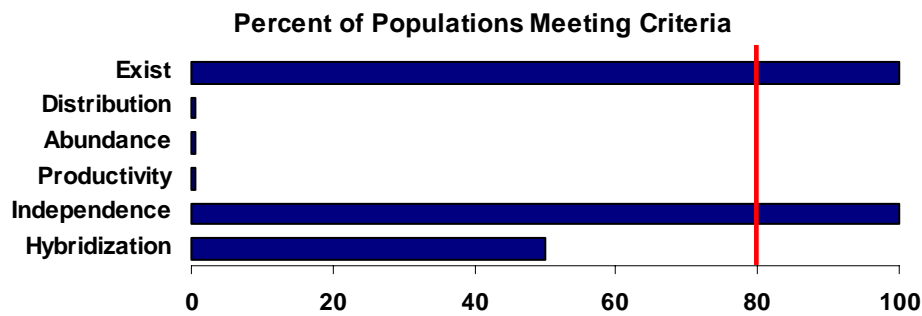
Malheur River Bull Trout SMU

ESA Designation:
Threatened 1998

State Status:
Critical

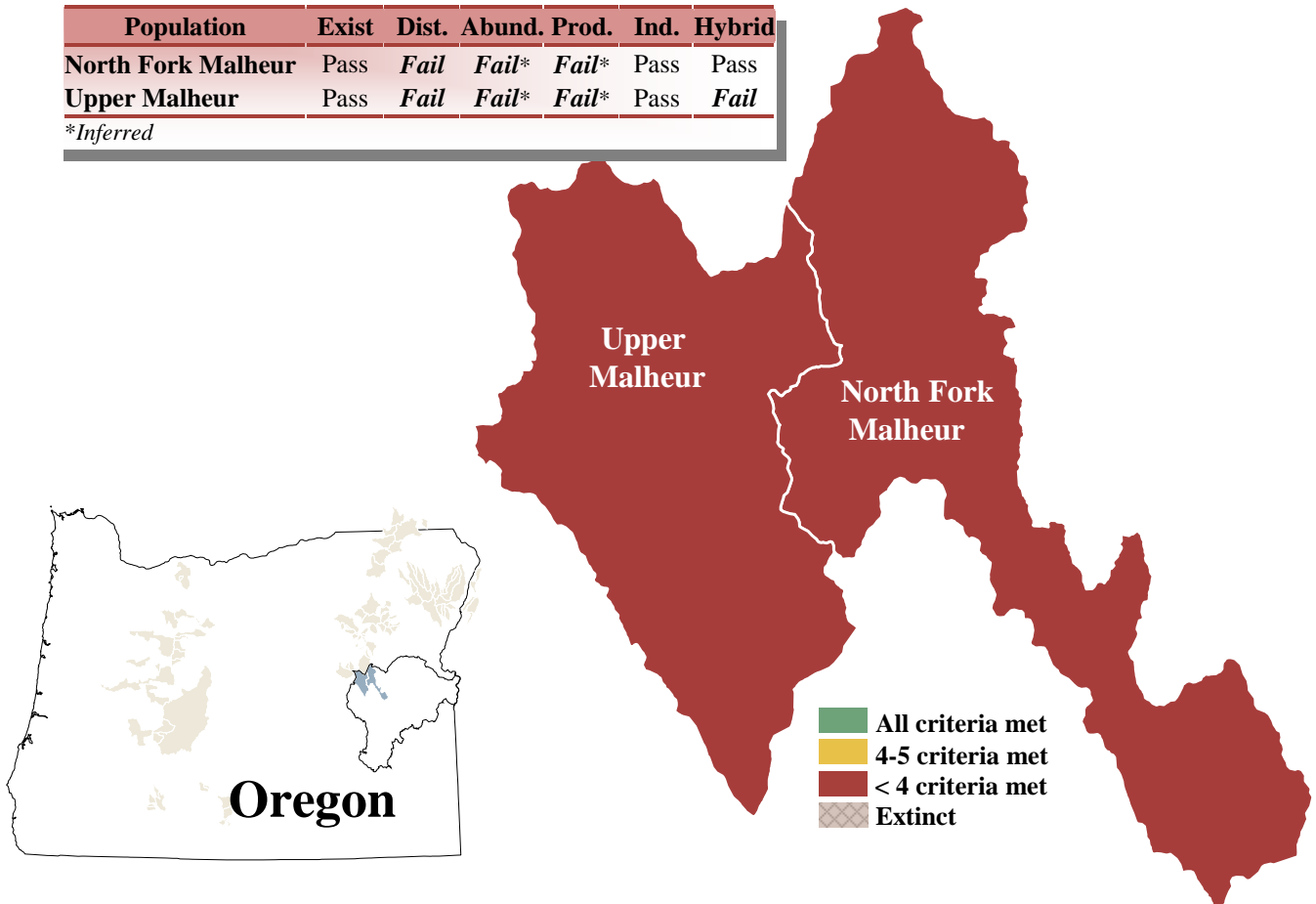
Interim Assessment:
At Risk

The Malheur River Bull Trout SMU consists of two populations, North Fork Malheur and Upper Malheur. Current spawning distribution is widespread, though fragmented, in headwater streams, and both populations are isolated from each other and other Snake River populations by impassable dams on the Malheur and North Fork Malheur Rivers. Brook trout are present and abundant in the Upper Malheur population and likely diminish the productivity of bull trout. The SMU met two of the six interim criteria and is classified as ‘at risk’. Limited data sets and inferences from other information for populations in this SMU provide a qualified level of confidence in the assessment of the interim criteria.

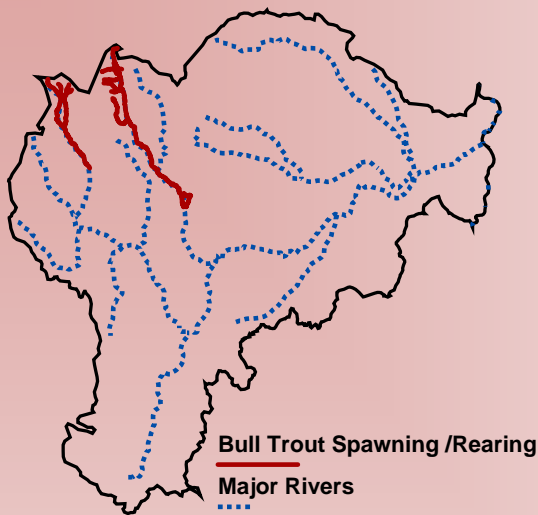


Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
North Fork Malheur	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	Pass
Upper Malheur	Pass	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass	<i>Fail</i>

**Inferred*



Distribution - Fail



- Historically, bull trout were present throughout the entire Malheur River, downstream to the Snake River.
- Current spawning, juvenile rearing, and adult resident habitat is widely distributed in the upper basins. The North Fork Malheur distribution remains similar to when bull trout were first documented in 1955. Upper Malheur distribution is thought to be 54% of what it was historically.
- Current bull trout distribution is disjunct. Populations are isolated above Agency and Warm Springs dams and gene flow between populations is not possible. Given the lack of connectivity to other populations, both populations fail the distribution criterion.
- Migratory bull trout in the North Fork population rear and over winter in Beulah Reservoir and large river reaches upstream of the reservoir.

Hybridization - Fail

- Stocking of brook trout in the Malheur River basin was first recorded in the late 1920s and 1930s (ODFW stocking records). Some of the brook trout releases resulted in self-sustaining populations.
- Brook trout are present and abundant in the Upper Malheur population. Bull trout x brook trout hybrids are common. This population fails the hybridization criterion.
- Brook trout are not present in the North Fork Malheur population and the population passes the hybridization criterion.

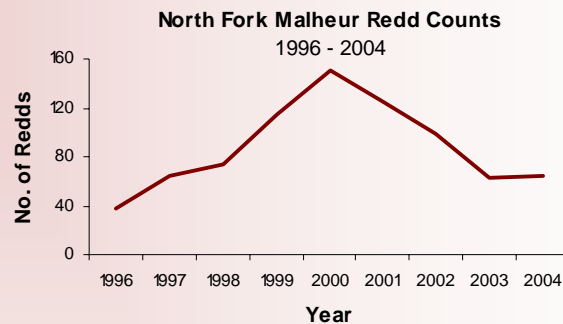
Additional Information

- Both populations in the Malheur River SMU are native fish sustained by natural production and pass the reproductive independence criterion.

Abundance - Fail

- Abundance of bull trout in the North Fork Malheur population exceeds that necessary to avoid the negative effects of inbreeding.
- Methods used to evaluate abundance of bull trout in the Upper Malheur population are confounded by the presence of brook trout. Field observations suggest densities are relatively low in this population, except in Meadow Fork of Big Creek, where densities appear highest.
- The total number of adults in the SMU is estimated to be fewer than 1,000. Given the lack of connectivity and the low estimate of abundance, the SMU is at risk of the deleterious effects of genetic drift. Both populations and the SMU fail the abundance criterion.

Productivity - Fail



- Annual redd counts in the North Fork Malheur population reflect a recent decreasing trend in abundance over the past five years.
- Data adequate to assess productivity of the Upper Malheur are not available. The population is considered to fail the criterion due to low abundance, an isolated and fragmented spawning distribution, and the presence of a large population of brook trout.