



## Redband Trout

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Photo by Native Fish Investigations Project, ODFW



# Malheur Lakes Redband Trout SMU

ESA Designation:  
*Not Warranted 2000*

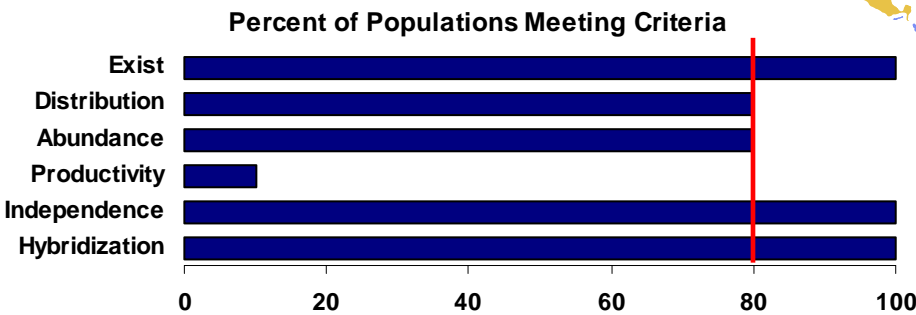
State Status:  
*Vulnerable*

Interim Assessment:  
*Potentially at Risk*

The Malheur Lakes Redband Trout SMU includes ten populations in the closed interior basin of Harney and Malheur lakes. Historically, all streams were interconnected and fish could move to the lakes and among populations. Currently, populations are isolated by natural and manmade barriers. Only the Blitzen population is known to express a migratory life history. Redband trout in the SMU are widely distributed in small and medium sized streams and moderately abundant during high water years. The SMU meets five of the six interim criteria and is classified as ‘potentially at risk’. Population status varies significantly within the SMU. 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
Silver	Pass	Pass	Pass	Fail*	Pass	Pass
Silvies	Pass	Pass	Pass	Fail*	Pass	Pass
Poison	Pass	Pass	Pass	Fail*	Pass	Pass
Prater	Pass	Fail*	Fail*	Fail*	Pass	Pass
Coffeepot	Pass	Fail*	Pass*	Fail*	Pass	Pass
Rattlesnake	Pass	Pass	Pass	Fail*	Pass	Pass
Cow	Pass	Pass	Fail*	Fail*	Pass	Pass
Riddle	Pass	Pass	Pass	Fail*	Pass	Pass
McCoy	Pass	Pass	Pass	Fail*	Pass	Pass
Blitzen	Pass	Pass	Pass	Pass*	Pass	Pass

\*Inferred



## Distribution - Pass



- Year around distribution occurs in small and medium sized streams. Access to lakes and lower mainstem habitats is limited due to warm water temperatures, low flow conditions, and natural and manmade barriers.
- Most populations are isolated from lakes and other populations, which limit the expression of a migratory life history, prevents mixing between populations, and increases risk of extinction. However, many of these populations are naturally isolated; consecutive high water years or a change in climate may be required to reconnect these populations.

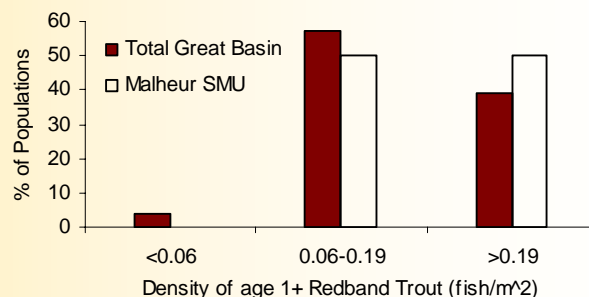
## Productivity – Fail

- Quantitative productivity data are not available. The criterion is assessed based on the qualitative evaluation of distribution, abundance, presence of large fluvial fish, habitat quality, and presence of non-native species.
- Only the Blitzen population expresses a migratory life history and passes the criterion. Other populations are limited by distribution, a lack of connectivity to other populations, and a migratory life history, poor habitat quality, and presence of non-native species.

## Additional Information

- Non-native cutthroat trout are not present in the Malheur Lakes Basin and not a threat to redband trout. All populations pass the hybridization criterion.
- Redband trout abundance and distribution fluctuates considerably between drought and high water years.
- Reduction in the complexity of streamside vegetation, the presence of artificial barriers, and reduced stream flows have degraded habitat quality and availability for redband trout.
- Exotic species (i.e., carp, large mouth bass, small mouth bass, and yellow perch) in lakes and lower mainstem rivers alter habitat, compete for resources, and modify community structure.
- ODFW is currently developing a conservation plan for this species management unit.
- The Steens Mountain Cooperative Management and Protection Act of 2000 improved protection of Riddle, McCoy, and Blitzen populations.

## Abundance - Pass



- A population estimate counted 414,551 (+/- 43%) age 1+ redband trout across all ten populations in 1999.
- Overall mean density (0.156 fish/m<sup>2</sup>) was considered moderate relative to densities through out eastern Oregon, although half of the populations had high densities. These estimates were made during high water years and are expected to fluctuate with habitat quality and instream flows.
- Abundance of Prater and Cow populations is severely depressed. Recent surveys for Malheur mottled sculpin did not document redband trout.

## Independence - Pass

- Hatchery rainbow stocking programs were eliminated in rivers and streams by 1993. Brood stocks used in these programs were not local. Effects of interbreeding do not appear to be significant, however genetic analysis found evidence of minimal introgression in Silvies and McCoy populations. No introgression was detected in Blitzen.
- Current stocking activities occur only in lakes and reservoirs where trout are thought to be unable to escape.

# Catlow Valley Redband Trout SMU

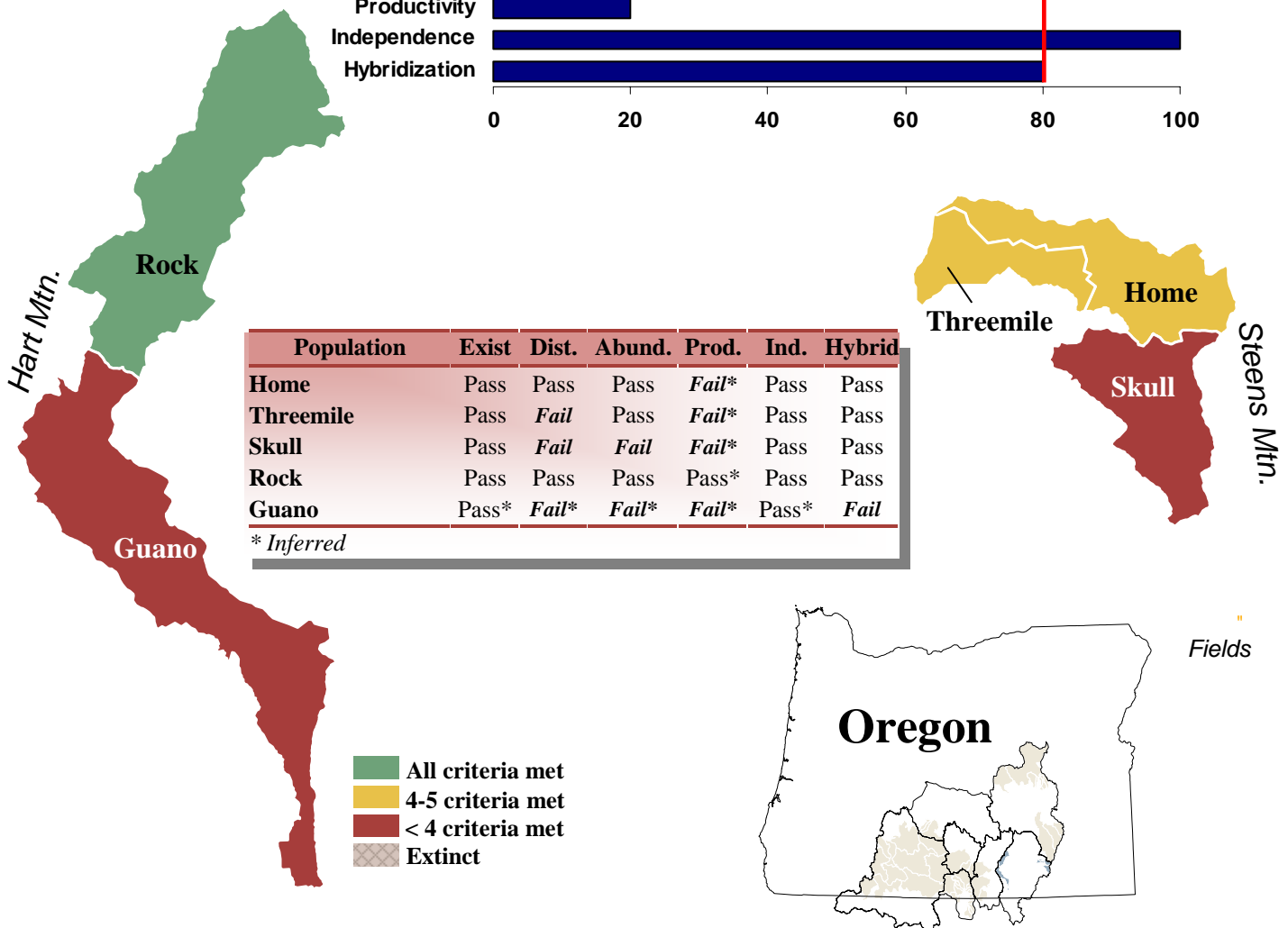
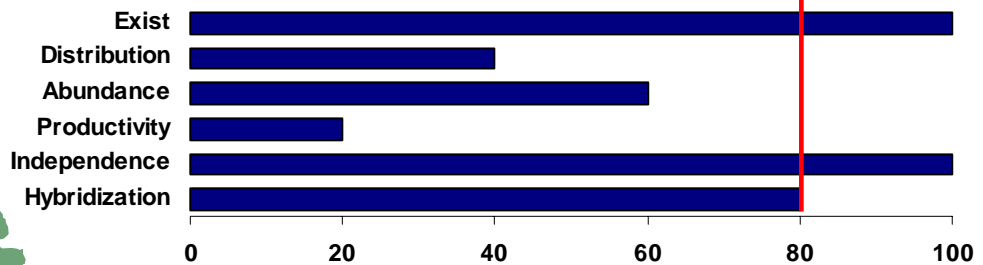
ESA Designation:  
**Not Warranted 2000**

State Status:  
**Vulnerable**

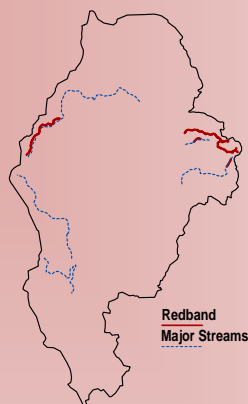
Interim Assessment:  
**At Risk**

The Catlow Valley Redband Trout SMU includes five populations in the closed interior basin of Catlow Valley. Even though redband trout are present in most perennial streams in Catlow Valley, the distribution is highly fragmented. Connection does not exist between any populations, which prevents genetic mixing, limits opportunities to express a migratory life history, and increases risk of extinction from stochastic events. Populations have limited access to lakes minimizing the expression of migratory life history strategies. Densities fluctuate accordingly with water years, although Skull and Guano populations appear perilously depressed in all conditions. The Guano population is also potentially threatened by hybridization with cutthroat trout. Eighty percent of the populations met three of the six interim criteria thereby classifying this SMU 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



## Distribution - Fail



- Year around distribution is fragmented. Lack of connection between populations or to habitats capable of producing large individuals prohibits inter-population mixing and minimizes the expression of multiple life history types.
- Threemile and Skull Creek distributions are limited to less than four kilometers each. Distribution in Guano Creek is undetermined but likely extremely limited. All three populations fail the criterion.
- The distribution of redband trout varies according to annual precipitation and fluctuation of instream flows.

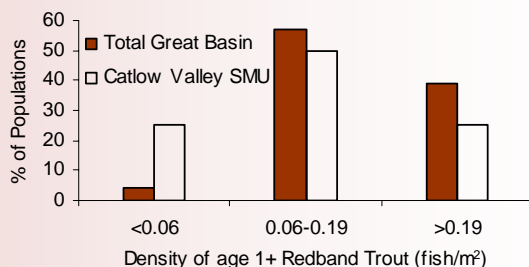
## Productivity - Fail

- Quantitative productivity data are not available. The criterion is assessed based on distribution, abundance, presence of large migratory fish, habitat quality, and presence of non-native species.
- Only the Rock Creek population passes the criterion based on data that show re-colonization of previously dry stream reaches during a high water year.
- The remaining populations fail the criterion due to no evidence of a lack of a migratory life history, limited distribution or abundance, and degraded habitats.

## Additional Information

- Lahontan cutthroat trout were stocked in Guano Creek in 1957, 1967, and 1973 and hybridize with redband trout. This population fails the hybridization criterion.
- Through the Catlow Valley Conservation Agreement, private landowners and Federal and State agencies have implemented a variety of habitat conservation activities on Home, Threemile, and Skull creeks. These actions include creating passage to Skull Creek Reservoir and adjusting grazing practices to allow regeneration of riparian communities. Fish and habitat response to these activities has not been documented.
- ODFW is currently developing a conservation plan for this species management unit.
- Rock and Guano creeks are located on Hart Mountain National Antelope Refuge.

## Abundance - Fail



- A population survey estimated 54,866 (+/- 33%) age 1+ redband trout in four of the five populations in 1999. Guano Creek was not included in this estimate.
- SMU-wide mean density (0.423 fish/m<sup>2</sup>) was considered high relative to densities throughout eastern Oregon, although 25% of the sample sites had very low densities. Only a few sites supported extremely high densities. Estimates were made during high water years and are expected to fluctuate with habitat quality and instream flows. However, density in Skull Creek was estimated to be low even during high water years. This population failed the criterion.
- Abundance in Guano is undetermined but likely extremely low. This population also failed the criterion.

## Independence - Pass

- Stocking of hatchery origin rainbow trout has not occurred in Threemile, Skull, and Home creeks.
- The hatchery rainbow trout stocking program on Rock Creek was eliminated in 1973. Guano Creek was stocked with coastal rainbow trout in the 1960s.
- All populations pass the criterion since rainbow trout are not currently stocked and all populations are managed for natural production.

# Warner Lakes Redband Trout SMU

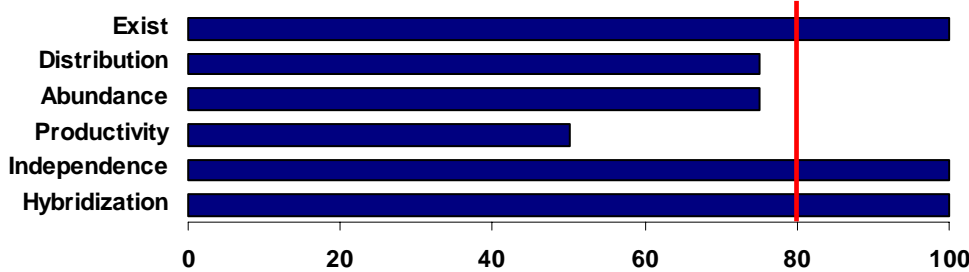
ESA Designation:  
**Not Warranted 2000**

State Status:  
**Vulnerable**

Interim Assessment:  
**At Risk**

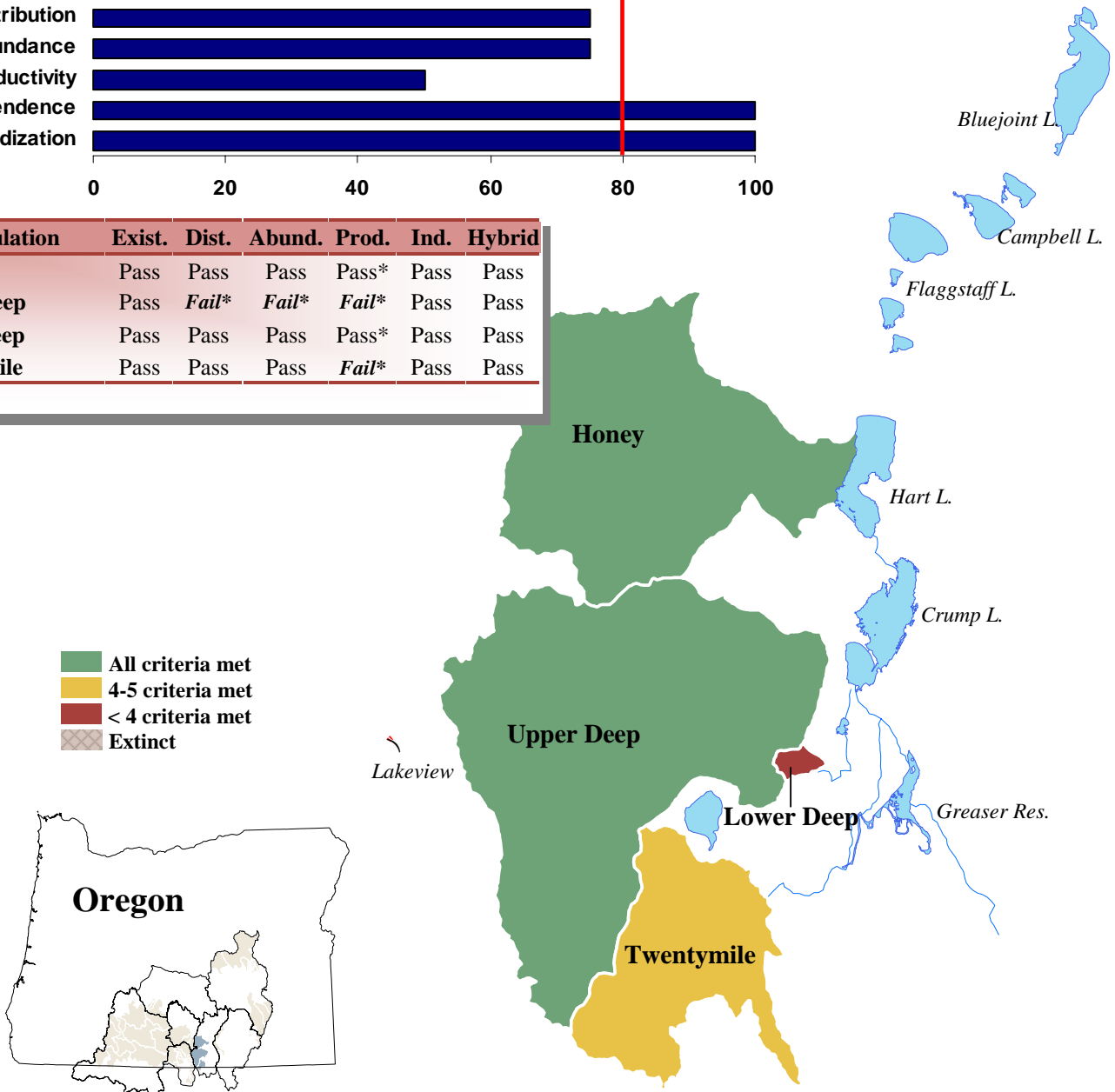
The Warner Lakes Redband Trout SMU includes four populations in the interior basin of pluvial Lake Warner. Distribution is widespread in perennial streams and lakes, although multiple irrigation diversions and the presence of non-native warm water fish in Warner Lakes limits the expression of an adfluvial life history. Although densities and abundance are relatively high in the headwater and mid-reaches, densities in the lower reaches may be low and vulnerable to extreme environmental fluctuations and degraded habitat. Only three of the six interim criteria were met, thereby classifying this SMU 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

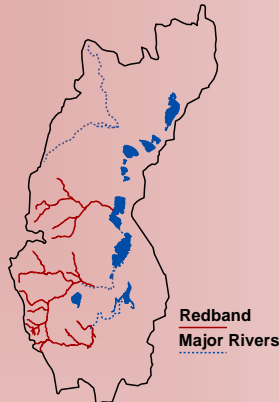


Population	Exist.	Dist.	Abund.	Prod.	Ind.	Hybrid
Honey	Pass	Pass	Pass	Pass*	Pass	Pass
Lower Deep	Pass	Fail*	Fail*	Fail*	Pass	Pass
Upper Deep	Pass	Pass	Pass	Pass*	Pass	Pass
Twentymile	Pass	Pass	Pass	Fail*	Pass	Pass

\* Inferred



## Distribution - Fail



- Redband trout are widespread in perennial streams and lakes.
- The Upper Deep population is isolated upstream by Deep Creek falls and is unable to mix with other populations in the SMU. Twentymile is also isolated from other populations by irrigation dams and diversions.
- Other populations are connected to large lakes and able to intermix in high water years, however irrigation diversions and low water quality limit the expression of an adfluvial life history.
- The distribution of redband trout varies according to annual precipitation and fluctuation of instream flows.

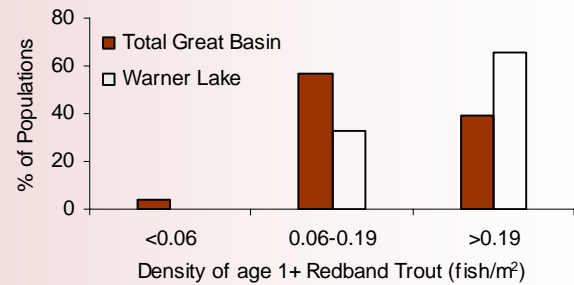
## Productivity - Fail

- Quantitative data necessary to accurately assess productivity do not exist. The criterion is assessed based on the qualitative evaluation of current distribution and abundance, presence of large migratory individuals, habitat quality, and presence of non-native species.
- Populations where distribution and abundance are limited and not connected to habitats capable of supporting multiple life histories fail the criterion.
- Recruitment may be inconsistent as observed in total or partial year class failures. Reduced and episodic population growth may put small populations further at risk.

## Additional Information

- Non-native cutthroat trout are not present in the Warner Lakes Basin and not a threat to redband trout. All populations pass the hybridization criterion.
- Crappie, largemouth bass, and brown bullheads were introduced into many of the Warner Lakes in the 1970s. Non-native warm-water fish species in the lakes and reservoirs compete with redband trout and prey on smaller individuals.
- Upstream and downstream passage is lacking or inadequate in many of the lower reaches and is also a serious issue for Warner Suckers.

## Abundance - Fail



- A population survey estimated 54,866 (+/- 33%) age 1+ redband trout in Warner Valley in 1999. Mean density was considered high relative to densities throughout Eastern Oregon, although lower reaches of stream in each population unit were under-represented.
- A 2000 population survey of Twentymile documented high densities in the upper reaches and extremely low densities in the lower reaches. The low densities were due to a die off caused by high water temperatures.
- Abundance of adfluvial redband trout in Warner Lakes is severely depressed and significantly less than historical levels.

## Independence - Pass

- Hatchery rainbow trout were stocked in all populations between 1925 and 1989. Stocking programs were eliminated in 1989.
- Effects of interbreeding are uncertain. Warner Valley redband trout is considered genetically distinct and any introgression has reached equilibrium within the SMU.

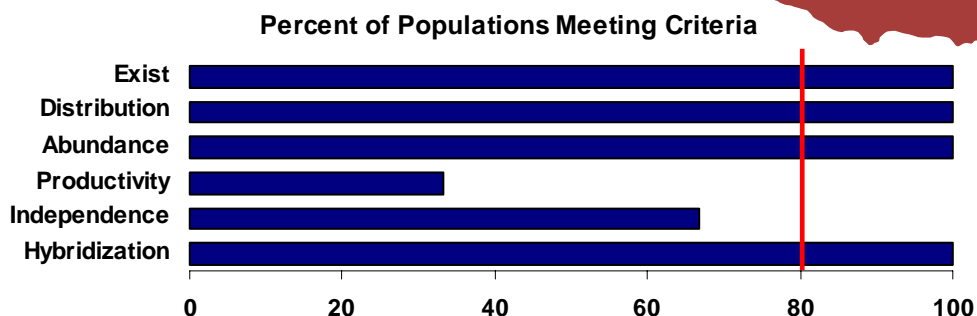
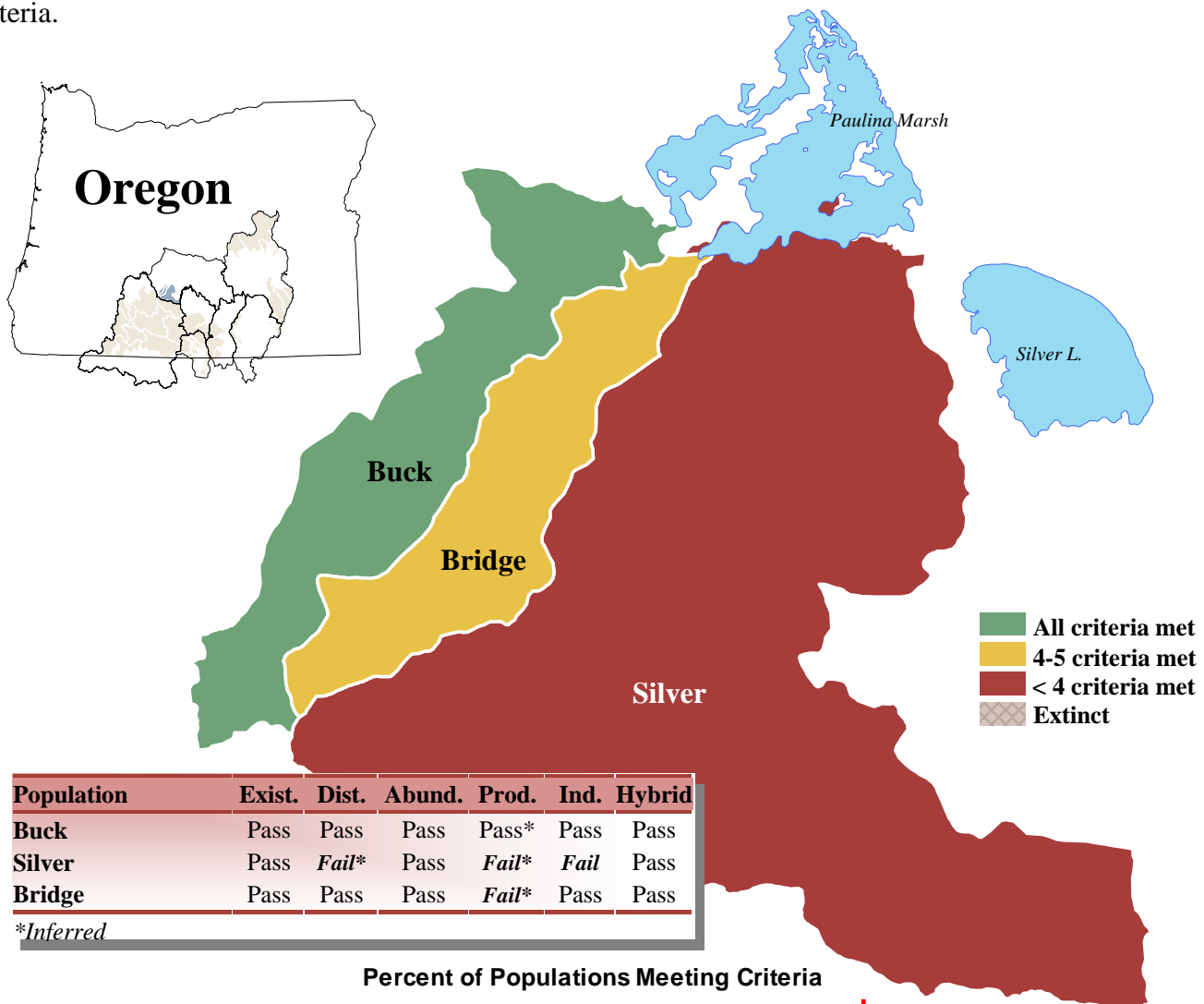
# Fort Rock Redband Trout SMU

ESA Designation:  
*Not Warranted 2000*

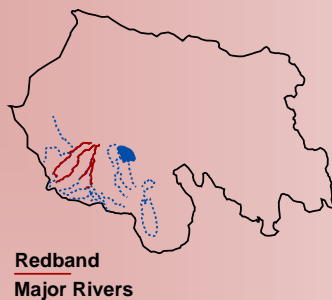
State Status:  
*Vulnerable*

Interim Assessment:  
*At Risk*

The Fort Rock Redband Trout SMU is comprised of three populations in the Silver Lake basin. Populations occupy tributaries of Paulina Marsh which has been diked, channelized, and drained for agricultural purposes. Populations are only connected during consecutive high water years, severely limiting the opportunities for the expression of a migratory life history and inter-population mixing. Lack of a migratory life history and degraded habitat impacts the potential productivity. This SMU is classified as ‘at risk’ because eighty percent of the populations meet only three of the six interim 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.



## Distribution - Fail



- Redband trout occupy three tributary streams of Paulina Marsh. The marsh is diked, channelized, and drained. As a result populations are connected infrequently during consecutive high water years providing sporadic opportunities for inter-population mixing. The expression of migratory life histories is rare.
- Distribution in Silver Creek is limited relative to the size of the basin. Redband are not present in the upper tributaries and Thompson Valley Reservoir is a barrier to upstream movement. Silver Creek failed the distribution criterion.
- Silver Lake, a remnant pluvial lake, is uninhabitable and disconnected from native trout populations.

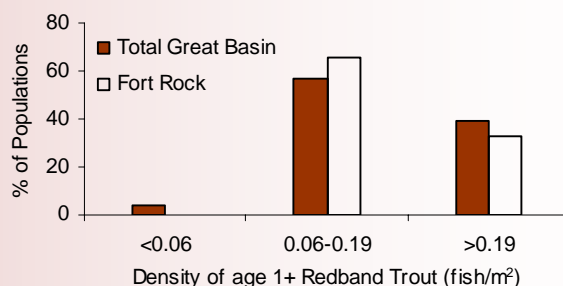
## Productivity – Fail

- Quantitative data necessary to accurately assess productivity do not exist. The criterion is assessed based on the qualitative evaluation of current distribution and abundance, presence of large migratory individuals, habitat quality and presence of non-native species.
- Populations, where distribution and abundance are limited, and not connected to habitats capable of supporting multiple life histories, fail the criterion. High densities of brook trout in the upper reaches of Silver Creek may also limit productivity of that population.
- The Buck population passes the criterion based on sampling in 1976, which documented similar densities found in 1999, suggesting population trend is stable through varying climactic cycles.

## Additional Information

- Non-native cutthroat trout are not present in the Fort Rock Basin and not a threat to redband trout. All populations pass the hybridization criterion.
- Past logging activities may have caused increased sedimentation in the upper reaches. The lower reaches are impacted by grazing, channelization, and flooding. However, due to restoration efforts habitat conditions in upper Buck Creek are improving.

## Abundance - Pass



- A population survey estimated 56,964 (+/- 23%) age 1+ redband trout in Fort Rock Basin in 1999.
- Mean density was considered moderate relative to densities throughout Eastern Oregon. Sites with the highest densities were located in narrow, protected canyon reaches. Given moderate to high densities, all populations meet the abundance criterion.
- This review is based on estimates made during high water years. Densities and total population abundance are expected to fluctuate with instream flow and habitat quality.

## Independence - Fail

- Hatchery rainbow trout were stocked extensively in Silver Creek between 1925 and 1984. Buck and Bridge creeks were stocked periodically through the 1960s. Stocking programs in moving waters were eliminated in 1984.
- The extent and effects of interbreeding between hatchery and wild stocks are unknown.
- Stocking of domestic rainbow trout currently occurs in Thompson Valley Reservoir on Silver Creek. Hatchery fish are able to leave the reservoir during high water years and may potentially spawn with native redband trout. Silver Creek fails the reproductive independence criterion until effects of current stocking programs can be better assessed.

# Chewaucan Redband Trout SMU

ESA Designation:  
*Not Warranted 2000*

State Status:  
*Vulnerable*

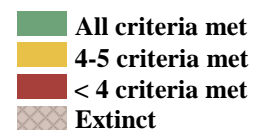
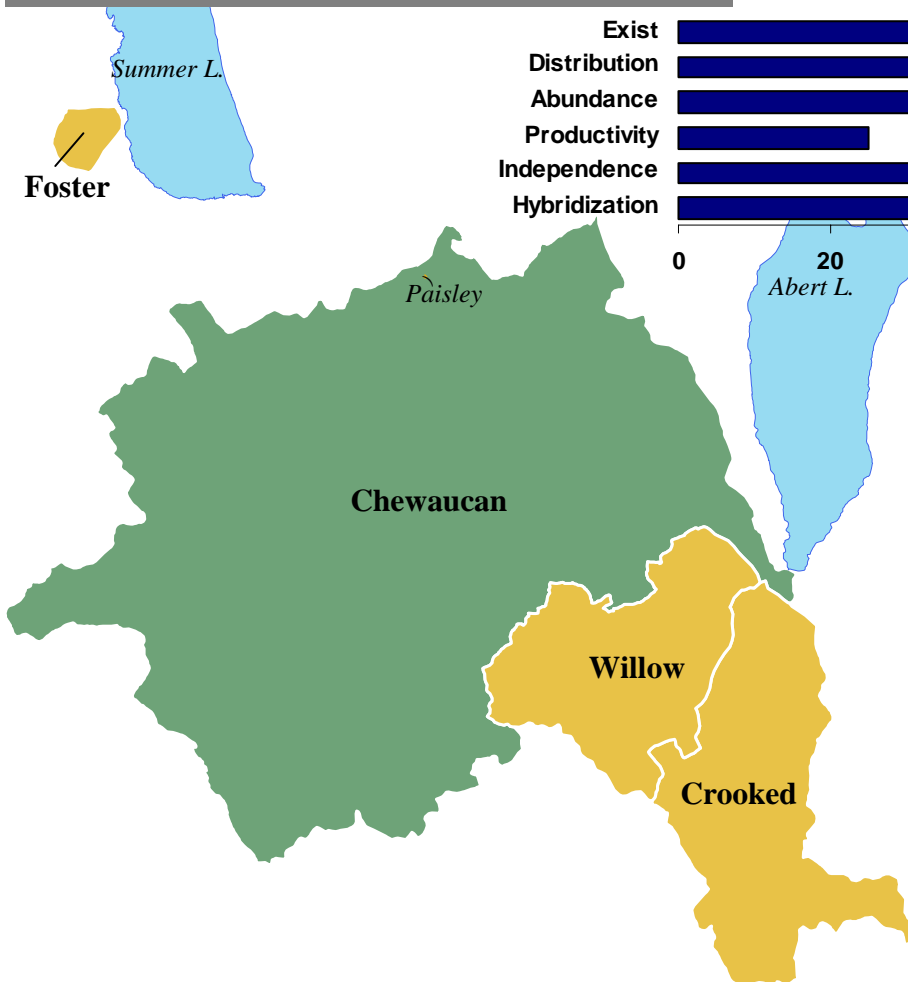
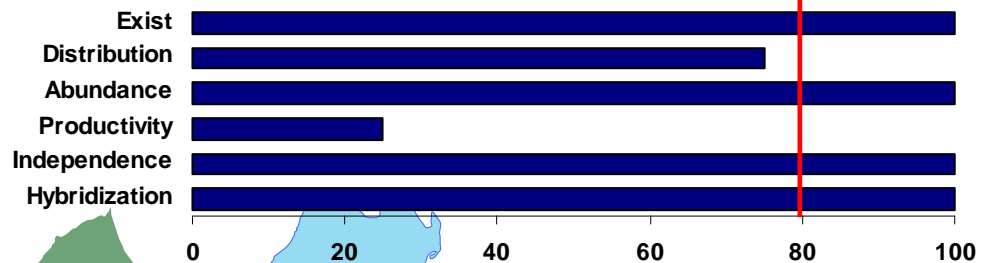
Interim Assessment:  
*Potentially at Risk*

The Chewaucan Redband Trout SMU consists of four populations, three in Lake Abert Basin and one in Summer Lake Basin. Lake Abert and Summer Lake are remnants of ancient Lake Chewaucan and naturally separated by large sand dunes. Redband trout in Lake Abert Basin are distributed throughout the basin and moderately abundant. Degraded habitat conditions and barriers to migration are the most persistent threats to populations in the SMU. Foster Creek population has an extremely limited distribution and is isolated from large water bodies and other populations. The SMU met four of the six interim criteria and is classified as 'potentially 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.

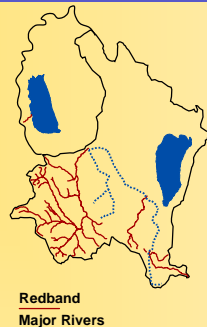
Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Chewaucan	Pass	Pass	Pass	Pass*	Pass	Pass
Willow	Pass	Pass	Pass	Fail*	Pass	Pass
Crooked	Pass	Pass	Pass	Fail*	Pass	Pass
Foster	Pass	Fail	Pass*	Fail*	Pass	Pass

\* *Inferred*

Percent of Populations Meeting Criteria



## Distribution - Fail



- Year-around distribution is widespread in headwater and mid order streams.
- All streams in the Lake Abert Basin are connected to Rivers End Reservoir where migratory redband trout rear before returning to their natal streams. However three large irrigation weirs exist on the Chewaucan River, as well as one on each of Willow and Crooked creeks. The weirs on Willow and Crooked creeks are impassable preventing upstream migration and inter-population mixing. Fish ladders on all Chewaucan River weirs will be completed in 2006 ensuring passage.
- Foster Creek population (Summer Lake Basin) is extremely limited, < 2 km of habitat, and isolated from other populations and water bodies. The Foster population fails the criterion.

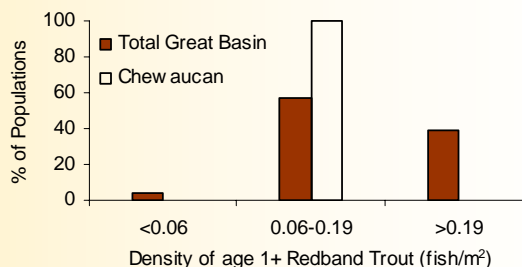
## Productivity - Fail

- Quantitative data necessary to accurately assess productivity do not exist. The criterion is assessed based on the qualitative evaluation of current distribution and abundance, presence of large migratory individuals, habitat quality, and presence of non-native species.
- The Chewaucan population passes the productivity criterion based on diverse habitats in the upper basin and connectivity to the Rivers End Reservoir through trap and haul efforts.
- The other populations fail the criterion due to degraded habitat conditions and the inability of migratory individuals to return to the spawning grounds.

## Additional Information

- Non-native cutthroat trout are not present in the Fort Rock Basin and not a threat to redband trout. All populations pass the hybridization criterion.
- Non-native largemouth bass and brown bullheads are present in the lower reaches of Chewaucan River and brook trout inhabit the headwater streams.

## Abundance - Pass



- A population survey estimated 147,878 (95%CI +/- 41%) age 1+ redband trout in the Lake Abert Basin in 1999.
- All sites had moderate densities of age 1+ fish relative to densities throughout the Great Basin. Estimates were made during high water years and are expected to fluctuate with habitat quality and instream flows.
- Survey data from Foster Creek suggests density of redband trout is comparable to populations in the Lake Abert Basin. It is unknown if a 2002 forest fire impacted densities in this population.
- All populations pass the abundance criterion.

## Independence - Pass

- The hatchery rainbow trout stocking program in the Chewaucan Basin was eliminated in 1998. The extent and effects of interbreeding between hatchery and wild stocks are uncertain.
- Hatchery rainbow trout were not stocked in Foster Creek.
- All populations pass the criterion since stocking of hatchery rainbow trout in the basin has ceased.

# Goose Lake Redband Trout SMU

ESA Designation:  
**Not Warranted 2000**

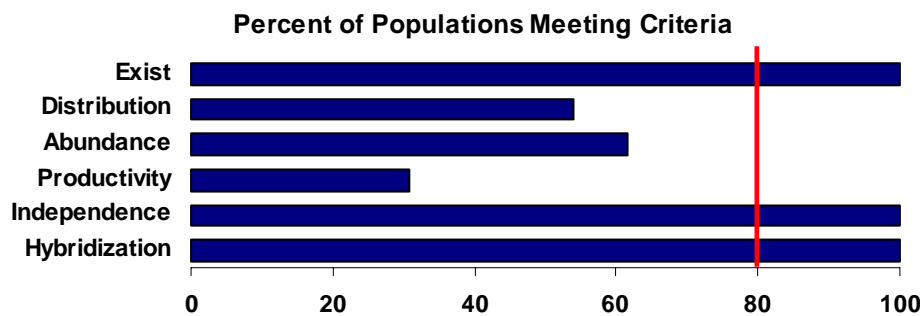
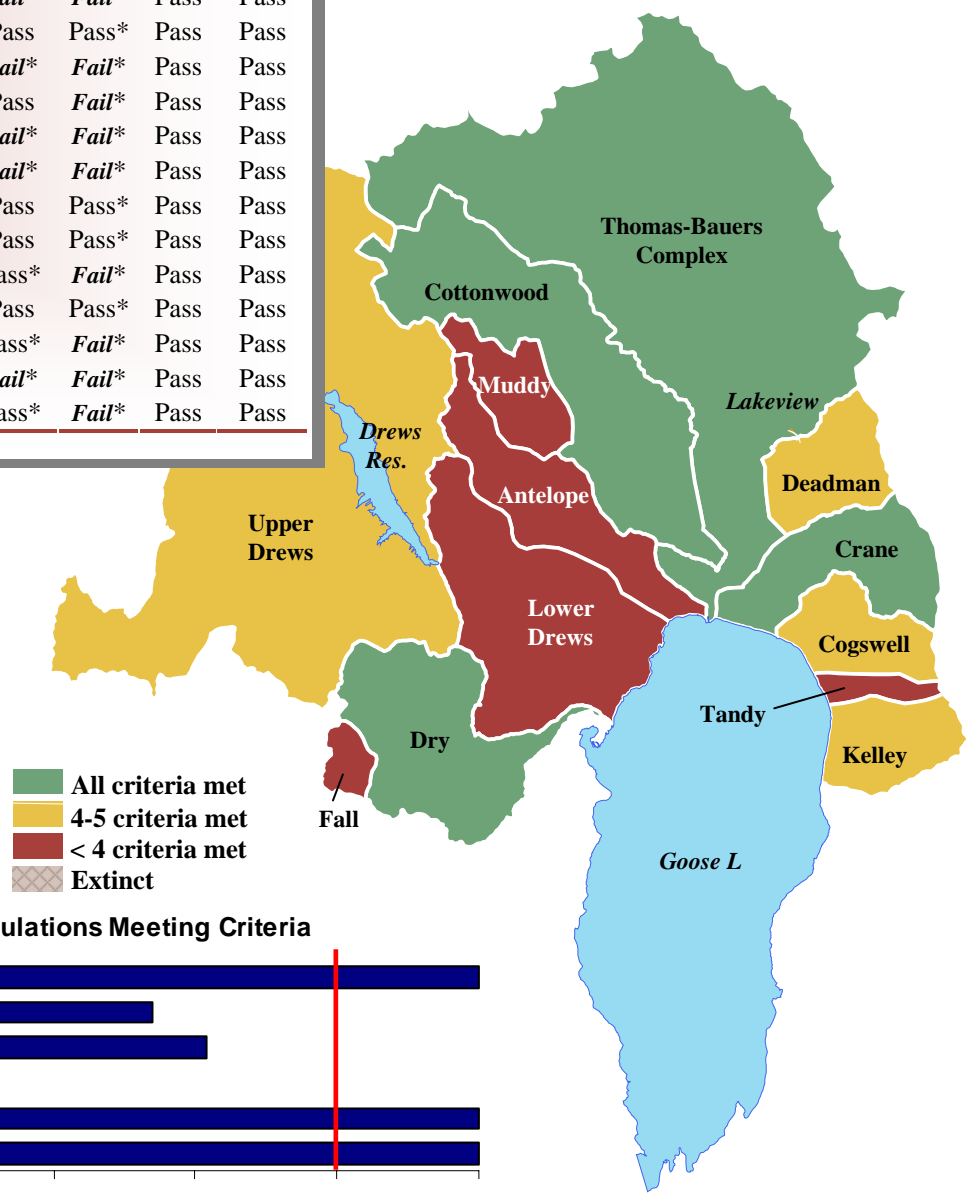
State Status:  
**Vulnerable**

Interim Assessment:  
**At Risk**

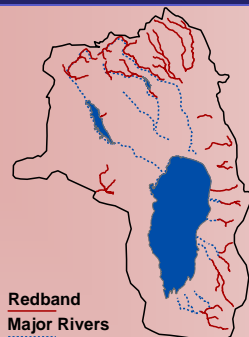
The Goose Lake Redband Trout SMU is comprised of thirteen populations. Six populations exist in the California, but are not assessed in this review. Spawning and resident fish distribution is fragmented and limited to headwater and mid-order streams. Abundance of redband trout fluctuates with instream flows and habitat quality. Migratory redband trout are present when rearing conditions in Goose Lake are adequate, though irrigation activities and degraded habitat quality hinder movement between the lake and the spawning grounds. Eighty percent of the populations meet three of the six interim criteria, thereby classifying this SMU 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
Fall	Pass	Fail	Fail*	Fail*	Pass	Pass
Dry	Pass	Pass	Pass	Pass*	Pass	Pass
Lower Drews	Pass	Fail*	Fail*	Fail*	Pass	Pass
Upper Drews	Pass	Fail	Pass	Fail*	Pass	Pass
Antelope	Pass	Fail*	Fail*	Fail*	Pass	Pass
Muddy	Pass	Fail*	Fail*	Fail*	Pass	Pass
Cottonwood	Pass	Pass	Pass	Pass*	Pass	Pass
Thomas-Bauers Complex	Pass	Pass	Pass	Pass*	Pass	Pass
Deadman	Pass	Pass	Pass*	Fail*	Pass	Pass
Crane	Pass	Pass	Pass	Pass*	Pass	Pass
Cogswell	Pass	Pass	Pass*	Fail*	Pass	Pass
Tandy	Pass	Fail*	Fail*	Fail*	Pass	Pass
Kelley	Pass	Pass	Pass*	Fail*	Pass	Pass

\* Inferred



## Distribution - Fail



- Populations with connections to Goose Lake have migratory fish and potentially inter-mix with other populations. Cottonwood, Tandy, Muddy, and Upper Drews have no access to the lake or other populations due to irrigation withdrawal and migration barriers. Redband trout in Fall Creek are isolated above a barrier falls. These populations have no opportunity to mix with other populations.
- Distribution in Tandy, Muddy, Antelope, and Lower Drews is not documented. These populations are assumed to be extremely limited until distribution can be better assessed.
- The distribution of redband trout varies according to annual precipitation and fluctuation of instream flows.

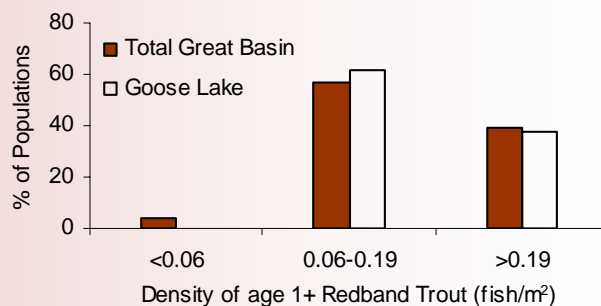
## Productivity - Fail

- Quantitative data necessary to assess productivity do not exist. The criterion is assessed based on the qualitative evaluation of distribution, abundance, presence of large fluvial fish, habitat quality, and presence of non-native species.
- Populations where distribution and abundance are limited and not connected to habitats capable of supporting multiple life history fail the productivity criterion.

## Additional Information

- Non-native cutthroat trout are not present in the Goose Lake Basin and not a threat to redband trout. All populations pass the hybridization criterion.
- Goose Lake redband trout are unique and thought to be a distinct subspecies. Genetic analysis suggest they evolved from the Sacramento redband trout lineage and are most similar to the Warner Lake basin redband trout
- Habitat quality in Goose Lake basin is severely degraded. Thirty nine percent of streams with redband trout are temperature limited. Water resources within the basin are over appropriated and irrigation diversions hinder migratory fish movement. Lower floodplain reaches have eroding banks, headcuts, a loss of meanders, and incised channels.
- Goose Lake provides highly productive rearing environment for redband trout but few drainages retain adequate and regular connectivity to the lake.

## Abundance - Fail



- A population survey estimated 102,352 (+/- 32%) age 1+ redband trout in Goose Lake Basin in 1999. Mean density for the SMU was considered moderate relative to densities throughout Eastern Oregon. Estimates were made during high water years and are expected to fluctuate with instream flow and habitat quality.
- Populations in Antelope, Lower Drews, Muddy, and Tandy do not have current measures of abundance and have low quality habitat. These populations fail the abundance criterion until they can be better assessed. These populations are not included in the survey mentioned above.
- Data are limited pertaining to the abundance of adfluvial redband trout in Goose Lake.

## Independence - Pass

- Hatchery rainbow trout were stocked in all populations between 1925 and 1961. Stocking programs were eliminated in streams in 1961. Because stocking programs do not currently exist in moving waters all populations pass the reproductive independence criterion.
- Current stocking activities occur in Cottonwood Meadows Reservoir where domestic rainbow trout rarely escape.
- Effects of interbreeding are unknown. A recent sample from Thomas Creek indicates interbreeding with hatchery rainbow trout.

# Upper Klamath Basin Redband Trout SMU

ESA Designation:  
*Not Proposed*

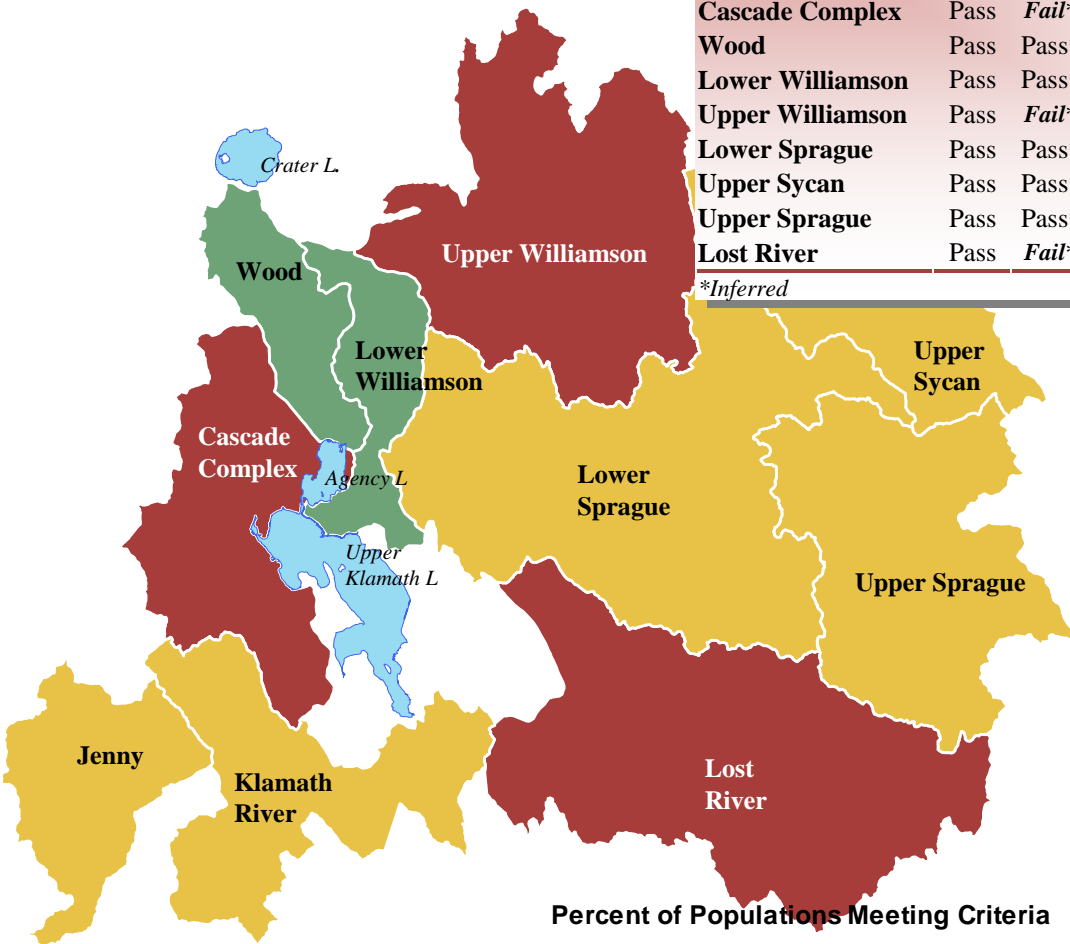
State Status:  
*Vulnerable*

Interim Assessment:  
*At Risk*

The Upper Klamath Lake basin contains the remnants of Pleistocene Lake Modoc, which redband trout may have entered from interior connections. Currently, the Upper Klamath Lake Basin supports the largest and most functional adfluvial redband trout populations of Oregon interior basins, however, some populations are severely limited in distribution and abundance by habitat quality and non-native species. The SMU is comprised of 10 populations that vary in life history, genetics, disease resistance, and status. Eighty percent of the populations meet three of the six interim criteria, thereby classifying this SMU 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

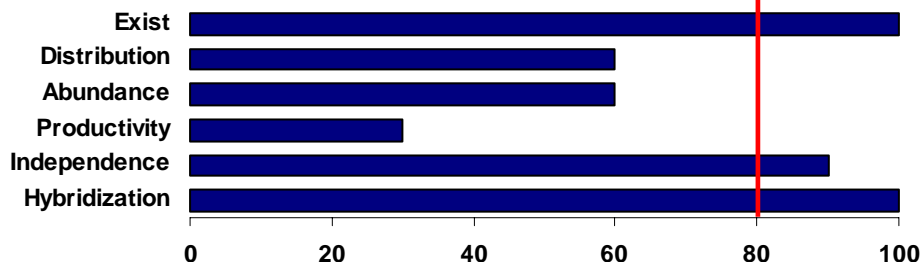
Population	Exist.	Dist.	Abund.	Prod.	Ind.	Hybrid
Jenny	Pass	Fail*	Pass*	Pass*	Fail	Pass
Klamath River	Pass	Pass*	Pass*	Fail*	Pass	Pass
Cascade Complex	Pass	Fail*	Fail*	Fail*	Pass	Pass
Wood	Pass	Pass*	Pass	Pass	Pass	Pass
Lower Williamson	Pass	Pass*	Pass	Pass	Pass	Pass
Upper Williamson	Pass	Fail*	Fail*	Fail*	Pass	Pass
Lower Sprague	Pass	Pass*	Pass*	Fail*	Pass	Pass
Upper Sycan	Pass	Pass*	Fail*	Fail*	Pass	Pass
Upper Sprague	Pass	Pass*	Pass*	Fail*	Pass	Pass
Lost River	Pass	Fail*	Fail*	Fail*	Pass	Pass

\*Inferred



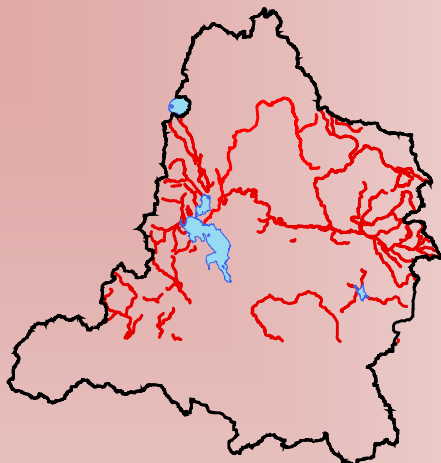
■ All criteria met  
■ 4-5 criteria met  
■ < 4 criteria met  
■ Extinct

Percent of Populations Meeting Criteria



## ***Distribution - Fail***

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### **Redband Distribution**

- Redband trout are widely distributed throughout the upper Klamath basin. Resident and/or migratory redband trout are present in Klamath River, the major tributaries of Upper Klamath and Agency Lakes, and headwater streams of the Gearhart and Cascade mountains.
- Four populations fail the distribution criterion. Jenny and Upper Williamson are isolated above natural barriers to migration. Distributions in Cascade and Lost River populations are extremely limited.
- Distribution of resident redband varies according to annual precipitation and instream flows.

## ***Productivity - Fail***

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- Quantitative productivity data are not available. The criterion is assessed based on the qualitative evaluation of distribution, abundance, presence of large fluvial fish, habitat quality, and presence of non-native species.
- Long term redd counts in the Wood and Lower Williamson populations reflect stable or increasing trends in abundance. Both populations pass the criterion. The Jenny population passes the criterion based on habitat quality and diversity.
- Remaining populations fail due to degraded habitat conditions, presence of brown trout and brook trout, or limited expression of a migratory life history.

## ***Additional Information***

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- Adult passage over the J.C. Boyle Dam has declined dramatically over the past 50 years. In 1959, 5,529 redband trout moved over the J.C. Boyle Dam; 70 redband trout passed the dam in 1991. These data demonstrate the severity of the impact that J.C Boyle Dam has had on movement and migratory behavior of redband trout.
  - Current and past agricultural and timber practices have degraded stream habitat in much of the basin; stream habitat suffers from channelization, sedimentation, irrigation diversions, and water withdrawal. Consequently some streams and populations are fragmented and have lost connection to lakes and marshes.
  - Federal, private, and tribal landowners are implementing habitat restoration projects including wetland restoration and riparian fencing.
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## ***Abundance - Fail***

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- The Wood and Lower Williamson populations are extremely abundant and may be the largest of Oregon's interior basins.
- Densities in the headwater populations, particularly Upper Williamson and Upper Sycan are apparently low and abundance is depressed. These populations fail the criterion. The Cascade Complex and Lost River populations also fail the criterion.
- Abundance fluctuates with water year and habitat quality.

## ***Independence - Pass***

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- Stocking in moving waters, except Spring Creek, ceased in 1991.
- A coastal rainbow trout stock is planted in Spring Creek. These fish are susceptible to *C. shasta* and thought to not survive to reproduce with native fish. The Lower Williamson population passes the reproductive independence criterion but assumptions should be verified with genetic analysis.
- Coastal rainbow trout stocks are planted in Hyatt and Little Hyatt reservoirs and are assumed able to move into Jenny Creek. This population fails the criterion.
- The extent and impact of interbreeding with coastal rainbow trout stocks is unknown. Genetics studies have found evidence of introgression in the Jenny population and is suspected in Lost River.