

## **Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)**

**Data: Status of Westslope Cutthroat trout in the United States: 2002;**

**Partners: ID, MT, WY, WA, OR, FWS, FS, BLM, NPS, Tribes**

---

**Status of the Westslope Cutthroat trout:** On June 6, 1997, the U.S. Fish and Wildlife Service (Service) received a petition to list the westslope cutthroat trout (*Oncorhynchus clarkii lewisi*) as threatened throughout its range, pursuant to the Endangered Species Act. On April 14, 2000, the Service published a finding (65 FR 20120) that the westslope cutthroat trout was neither a threatened nor an endangered species under the Act and listing was not warranted at that time. On September 3, 2002 and in response to a Court ruling, the Service announced (67 FR 56257) initiation of a new status review for the westslope cutthroat trout and solicited comments from all interested parties. On August 7, 2003, the Service again determined (68 FR 68152) that listing of the westslope cutthroat trout as a threatened or endangered species under the Act was not warranted. Subsequently, that finding was appealed in the U.S. District Court of the District of Columbia. Plaintiff's main issue was that the Service had developed and applied morphological criteria (in response to the Court's previous ruling) versus genetic criteria for including genetically introgressed (i.e., "hybridized") fish in the westslope cutthroat trout considered for listing. In March, 2007, the District Court ruled in favor of the Service. Litigation is ongoing. Each of the states in which westslope cutthroat trout occurs classifies the fish as a native species of concern and/or as a sportfish. In July 2007, Montana finalized a Conservation Agreement signed by eighteen state and federal agencies, conservation groups, and professional organizations to expedite conservation actions for cutthroat trout in Montana (Montana Department of Fish, Wildlife and Parks 2007).

**Sportfishing Status of the Westslope Cutthroat Trout:** Westslope cutthroat trout are managed as a sportfish in Idaho, Montana, Oregon, Washington, and Wyoming

(Yellowstone National Park). They are considered easy to catch by anglers, and most populations are managed by the states with the use of special regulations that protect the integrity of the various populations. Owing to these protective regulations, over-harvest is not considered a critical issue for westslope cutthroat trout. Special regulations that close fishing or require catch-and-release, limited harvest, and/or impose terminal tackle restrictions have been effective in maintaining populations of westslope cutthroat trout and the popularity with trout anglers. Angler support for westslope cutthroat conservation and management programs is strong in all States and considered an important asset to the programs.

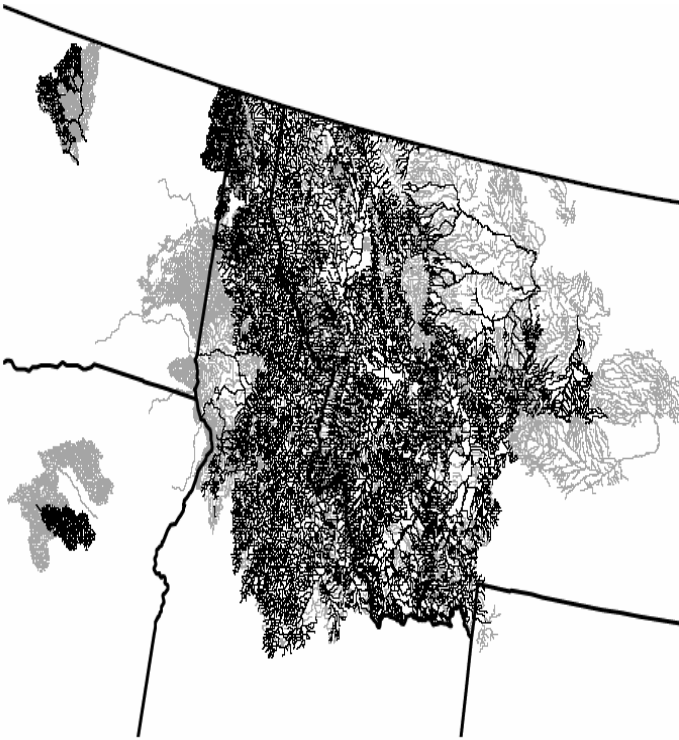
**Distribution of the Westslope Cutthroat Trout:** According to Behnke (1992), westslope cutthroat trout had the greatest area of distribution of all the subspecies of cutthroat trout. They were native to streams and lakes in the upper Columbia River basin of western Montana, northern and central Idaho, and southern British Columbia and Alberta; the upper Missouri River basin of Montana and northwest Wyoming; the upper South Saskatchewan River basin of Montana and Alberta; the Methow River, Pend Oreille River, and Lake Chelan drainages in Washington; and the John Day River drainage in Oregon. Westslope cutthroat trout currently occupy about 33,500 miles (59%) of the nearly 56,500 miles of historical habitat. In Idaho, westslope cutthroat trout occupy 95% of their historical range, although in reduced abundance.

Altogether, 563 westslope cutthroat trout "conservation populations" occupy 24,450 miles of habitat, occurring in 67 of the 70 hydrologic units historically occupied by westslope cutthroat trout. Much of the habitat currently occupied by westslope cutthroat trout is located in designated parks (2%), wilderness areas (19%), and roadless

## Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)

areas (40%), and almost 70% of habitats currently occupied lie within federally managed lands. In addition, westslope cutthroat trout distribution has been expanded to non-historical areas through the translocation and stocking of genetically pure populations into waters in the greater Columbia River basin.

### Historical Range of the Westslope Cutthroat:



### **Westslope Cutthroat Trout Habitat**

**Requirements:** Westslope cutthroat trout have three possible life forms, adfluvial (migrates from lakes to rivers to spawn), fluvial (migrates from large rivers to smaller streams to spawn) or resident (lives entirely within small streams). All three life history types may occur in a single drainage. Spawning occurs between March and July when water temperature approach about 10 degrees Celsius. Fertilized eggs are deposited in stream gravels where the developing embryos incubate for several weeks. Within days of

hatching from the egg, westslope cutthroat trout fry emerge from the gravel and disperse into the stream. While resident fish spend their entire life in tributary streams, migratory life forms can travel 100 kilometers or more as they move to spawning habitat. Spawning and rearing streams tend to be cold and nutrient poor. For spawning, westslope cutthroat trout seek out gravel substrate in riffles and pool crests. Fertilized cutthroat trout eggs and developing embryos have long been regarded as sensitive to fine sediment (generally 6.3 mm or smaller in diameter) in gravel substrates. Nevertheless, because of the diversity of the stream environment and ability of fish to choose suitable habitat for spawning, it can be difficult to predict the effects of sediments on embryo survival in the wild.

Westslope cutthroat trout also require cold, high-quality water and suitable winter habitat that includes deep pools important to survive during long harsh winters. Westslope cutthroat trout also tend to thrive in streams with more pool habitat and cover than uniform, simple habitat. Juvenile cutthroat trout overwinter in the interstitial spaces of large stream substrate. To survive the winter, adult cutthroat trout need deep, slow moving pools that do not fill with anchor ice.

### **Issues and concerns or limiting factors related to the Conservation and Improvement of the status of Westslope Cutthroat Trout:**

As with other cutthroat trout subspecies, the distribution and numbers of westslope cutthroat trout have declined due to human-induced influences. As a result of anthropogenic land and water use practices (e.g., agricultural practices, logging, road-building, mining, dam construction), westslope cutthroat trout habitat has been degraded and fragmented over time. Loss of riparian habitat, sedimentation, and placement of barriers to fish migration from these activities have been identified as threats to most life stages of westslope cutthroat trout.

## Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)

Competition from and predation by introduced, nonnative salmonids and coolwater species of sportfish are also considered to be a key issue in the diminishment of westslope cutthroat trout. Genetic introgression with rainbow trout and other cutthroat subspecies; competition from non-native species through stocking; and the incidence of fish diseases are potential concerns. Nonpoint source pollution, sediment and runoff associated with urban development, reduced in-stream flows from drought and/or climate change, and habitat damage from large forest fires are growing concerns.

### Introduced Species Concerns

The introduction and spread of non-native trout and the resultant adverse effects is considered to be a significant long-term threat to westslope cutthroat trout. Across the historical range of westslope cutthroat trout, non-native trout have become extensively colonized. Among these non-native species are brook trout, rainbow trout, brown trout, and lake trout. Rainbow trout and brook trout are considered the most significant competitors with all subspecies of cutthroat trout in streams, leading to the extirpation of westslope cutthroat trout in some areas. Non-native fish species and other cutthroat trout subspecies (e.g. Yellowstone) can also pose threats to the genetic purity of westslope cutthroat trout. In certain drainages, stocking or natural overlap with other native species can lead to diminished abundance, as well as providing the potential for genetic introgression, particularly with rainbow trout or Yellowstone cutthroat trout. The Idaho Department of Fish and Game implemented a statewide sterile hatchery rainbow trout program in 2000 as an important means of significantly reducing the potential for hybridization. Competition and predation in lakes from legally and illegally introduced lake trout, northern pike, and yellow perch, along with degradation of spawning habitat, has

reduced westslope cutthroat trout population in large lakes in Idaho and Montana.

### Genetic Considerations and Concerns

Given the nature and location of most remaining westslope cutthroat trout populations, maintenance of “isolet” and metapopulations is of critical importance. Most of the existing conservation populations are believed to be “isolets” (457 or 81%); however, metapopulations occupied much more of the westslope cutthroat trout range. For the 539 conservation populations for which risks to the population were assessed, more isolet populations were at higher risks due to temporal variability, population size, and isolation than metapopulations, but these isolets were generally at less risk from genetic and disease factors than metapopulations.

Hybridization with introduced rainbow trout, stocked Yellowstone cutthroat trout over generations has caused a reduction in genetic purity of some westslope cutthroat trout populations. As per the range-wide status assessment (Shepard et al. 2003), as of 2002, genetic testing had been completed across about 6,100 miles of habitat (18% of occupied habitat), but sample sizes were variable and sample sizes of 25 fish or more only made up 30% of the samples. Westslope cutthroat trout with no evidence of genetic introgression currently occupy about 3,400 miles (10%) of currently occupied habitats. Another 1,000 miles of currently occupied habitats (3%) contained westslope cutthroat trout that were probably part of a mixed stock where the westslope cutthroat trout were not introgressed. There are undoubtedly many more populations that are genetically pure but their status must await determination by testing. The range-wide status assessment is due for revision beginning in late 2007.

## **Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)**

WCT populations are described using the genetics protocol developed by Utah in 2000 (Utah Division of Wildlife Resources Publication Number 00-26).

### **Habitat Concerns and Obstacles**

Legacy and ongoing habitat degradation are major obstacles to the continued improvement of the status of westslope cutthroat trout, although this concern is ameliorated somewhat by the fact that over 50% of current occupied westslope cutthroat trout habitat is in roadless and wilderness areas. The westslope cutthroat trout range-wide status report and state conservation strategies identify water development, water withdrawal, livestock grazing, oil and gas energy development, mining, forest management, and associated road building as significant, ongoing habitat threats to westslope cutthroat trout.

Numerous management programs and other actions are being implemented to eliminate or mitigate the adverse effects on westslope cutthroat trout of past, present, and proposed land-management activities on state and federal lands in the states of Idaho, Montana, Oregon and Washington. Forestry and grazing “Best Management Practices” are being implemented to maintain and improve water quality and reduce sediment input in westslope cutthroat trout habitats. There are hundreds of planned and ongoing projects and multiple local partnerships that should be funded and nurtured to improve the status of westslope cutthroat trout and reverse decades of habitat loss.

### **Disease and Invasive Species Concerns**

Westslope cutthroat trout are susceptible to common salmonid diseases, including whirling disease (cause by the microscopic organism *Myxobolus cerebralis*). Diseases of concern are not limited to whirling disease, and also include furunculosis and infectious pancreatic necrosis virus. Transmission of diseases to wild cutthroat

trout populations through stocking of hatchery-produced fish is recognized as a potential threat. The states have policies and regulations to address fish health status, disease certification of stocked and imported fish, and stocking protocols, which are designed to reduce disease threats. There is growing concern that new invasive organisms in westslope cutthroat trout habitat, such as the New Zealand mud snail, may eventually cause problems.

### **Regulatory Issues**

There are numerous federal and state regulatory mechanisms in place, that if appropriately administered and implemented, provide a high degree of protection to westslope cutthroat trout and their habitats throughout the range of the subspecies. Federal land management agencies such as the Forest Service and Bureau of Land Management must adhere to federal laws (e.g., National Environmental Policy Act, Clean Water Act) and regulations and policies contained within Forest Plans and Land and Resource Management Plans. As part of implementing or permitting management actions on public lands, federal agencies must routinely interact with state fish and wildlife agencies regarding potential effects on fish and fish habitat. Western states have laws, rules, or regulations addressing forest practices, stream channel and wetlands protection, water quality, water rights and instream flows, habitat mitigation, the import or transport of fish, stocking of private ponds, fishing regulations, and the control of scientific fish collection permits. State fish and wildlife agencies also generally have fish management plans either on a statewide or species-specific basis, or both. These plans tend to be comprehensive in nature and outline how an agency intends to protect and conserve native species and manage recreational or sport fisheries.

State fish and wildlife agencies establish fishing regulations to protect native cutthroat trout

## **Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)**

populations. Angling regulations are in place to protect westslope cutthroat trout populations from impacts due to fishing by recreational anglers. In addition, controls governing scientific collection permitting and collection for genetic testing have helped to reduce the risk that monitoring programs could have on the reduction of westslope cutthroat trout populations.

### **Opportunities for Improving the Status of Westslope Cutthroat Trout:**

The goal of westslope cutthroat trout conservation is to ensure the persistence of the subspecies within its historic range in the face of the challenges listed above. Two different conservation management strategies are needed and being implemented to conserve westslope cutthroat trout. This dual approach recognizes differences in conditions between the major westslope cutthroat trout geographical management basins, i.e., the Columbia River versus the Missouri River. The first strategy—commonly used in the Missouri River basin—concentrates on preventing genetic introgression, disease, and competition risks through isolation of westslope cutthroat trout (stopping the losses), while the second strategy—commonly used in the Columbia River basin where bull trout and Pacific salmon necessitate migratory fish passage—concentrates on connecting or reconnecting occupied habitats and populations to preserve metapopulation function and multiple life history stages of the westslope cutthroat trout.

The conservation, recovery, and enhancement of westslope cutthroat trout will depend on an approach that actively addresses the obstacles described above. The specific approaches are described in numerous state and federal agency plans. Actions need to be prioritized and implemented within the five major river basins across the range of the subspecies.

Typically the actions fall within these categories:

- genetic testing and analysis

- fish population manipulation (non-native fish removal, westslope cutthroat trout reintroductions and genetic swamping)
- aquatic habitat manipulation (barrier placement or removal, instream structure placement, enhancing in-stream flows, increasing connectivity, isolation of fragments, etc.)
- regulatory actions (fishing regulations, water use, land management)

### **Westslope cutthroat trout Restoration potential:**

In order to objectively evaluate the restoration or expansion potential within the unoccupied area of the historical range, it was important to determine how much of the historical habitat was currently incapable of supporting westslope cutthroat trout. In the Range-wide Status Assessment (Shepard et al. 2003), approximately 9,300 miles of habitat, 28% of westslope cutthroat trout occupied habitat, supported populations significantly below the potential population levels.

### **Primary Actions to be addressed:**

The basic premise of the management goal for westslope cutthroat trout presented below is to protect existing populations, and ensure the long-term persistence of westslope cutthroat trout within their historical range. In order to protect existing populations and help them persist over time, it will be necessary to increase fish numbers in some, and expand the range in others.

### **Population Surveys, genetic analyses, and fish population manipulation**

At present, there are multiple State, Federal, Tribal, and private programs and conservation efforts that are working to improve the status of westslope cutthroat trout in the western United States and Canada. Project implementation has generally followed a site-specific and opportunity-based approach, rather than a

**Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)**

watershed-based approach, with varied results and accomplishments.

**Key actions include:**

Continue to locate and assess westslope cutthroat trout populations and habitat
Conduct standardized surveys and genetic analyses to measure genetic purity or introgression
Expand westslope cutthroat trout populations through restoration, reintroductions, and non-native fish control in priority watersheds
Implement actions to protect core and conservation westslope cutthroat trout populations
Manage hatchery broodstocks and use of stocked fish to maintain genetic diversity and appropriate fish stocking protocols
Develop interconnected populations where appropriate.
Continue to develop and improve genetic tools to detect introgression (i.e., SNP marker development)
Monitor and evaluate natural impacts like fire and drought on WCT populations

**Westslope Cutthroat Trout Habitat**

**Manipulations:**

Habitat loss and fragmentation, as well as isolation of existing populations, are principal habitat issues facing westslope cutthroat trout. Restoration of westslope cutthroat trout habitat must address both habitat quality and spatial limitations. Current efforts have been directed toward improving instream conditions and restoring limited stream fragments, as well as putting in place protective barriers to isolate key populations, and developing best management practices for use in land management.

**Key actions include:**

Restore and improve altered stream channel and riparian zone habitats
---

Restore and enhance in-stream flow, water quality, and sediment regimes and physical integrity of channels where feasible
Expand small, isolated populations where possible and maintain or develop high quality habitats to prevent extirpation due to small population size or stochastic events
Implement best management practices on Forest Service, BLM, and private lands to benefit westslope cutthroat trout habitats

**Regulatory and Administrative Actions to enhance Westslope Cutthroat Trout status:**

State agencies must maintain the sport fish/game fish status of westslope cutthroat trout (is there a risk of sportfish status changing?). Managing sport fisheries for westslope cutthroat trout across its range keeps anglers engaged in the management of the subspecies and maintains interest in conservation. State and federal agencies and their constituents must continue fostering close working relationships in order to effectively ensure that regulatory and administrative mechanisms are understood, maintained, and implemented to protect and restore westslope cutthroat trout.

**Key Actions include:**

State fish and wildlife agencies shall enforce existing fishing regulations and promulgate new regulations if necessary to protect westslope cutthroat trout populations.
Maintain and protect westslope cutthroat trout habitat from degradation through compliance with existing laws, regulations, guidelines, and policies.
Agencies should provide technical assistance, cost-share on funding, and expertise to private landowners, water users, and industry to protect westslope cutthroat trout habitat on private

## Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)

lands.
State and federal agencies must become more vigilant regarding fish diseases and aquatic nuisance species, and promulgate or enhance existing regulatory mechanisms.
State and federal agencies should devote more resources as is feasible, both financial and personnel, to habitat restoration activities to benefit westslope cutthroat trout.
Continue to review the effectiveness of existing regulatory mechanisms that provide benefits to westslope cutthroat trout.

### **Recommended Actions to improve the status of the Westslope Cutthroat Trout:**

Highest Priority Actions for the westslope cutthroat trout include the following actions:

- A Memorandum of Agreement for the Conservation of westslope cutthroat trout between the States, and key Federal Agencies should be developed with an objective of prioritizing the key actions that need to be accomplished to improve the status of westslope cutthroat trout and seek funding through the various Partnerships being developed.
- The state fish and wildlife agencies and appropriate partners, with the lead agency being the Idaho Department of Fish and Game, should update the range-wide status assessment for westslope cutthroat trout.
- The States, with key Partners, need to describe and prioritize the key action components of the Westslope MOA (see above) that need to be addressed over the next 5 Years.
- Implement actions to protect core and conservation westslope cutthroat trout populations.
- Expand westslope cutthroat trout populations through restoration,

- reintroductions, and non-native fish control in priority watersheds.
- Restore and improve altered channel and riparian zone habitats.
- Restore and enhance in-stream flow, water quality, sediment regimes, and physical integrity of channels where feasible.
- Enforce existing fishing regulations and promulgate new regulations if necessary to protect westslope cutthroat trout populations.
- Maintain and protect westslope cutthroat trout habitat from degradation through compliance with existing laws, regulations, guidelines, and policies.
- Manage hatchery broodstocks and use of stocked fish to maintain genetic diversity and appropriate fish stocking protocols
- Protect key watershed areas from development or land management impacts through the use of conservation easements or land purchases.
- Prevent further introduction of invasive, nuisance, and non-native species.

### **Potential or existing Partners or Joint-ventures:**

- 1. Non-Governmental Organizations including Yellowstone Park Foundation, National Fish and Wildlife Foundation – Jackson Hole One Fly Foundation Project, and Trout Unlimited**
- 2. Native American Tribes**

### **Literature Cited:**

1. Behnke, R. 1992. Native trout of western North America. American Fisheries Society Monograph 6. Bethesda, MD.
2. Shepard, B.B., B.E. May, and W. Urie. 2003. Status of westslope cutthroat trout (*Oncorhynchus clarkii lewisi*) in the United

## **Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)**

---

States: 2002. Available at  
<http://www.fwp.state.mt.us/wildthings/westslope/content.asp>.

3. Utah Division of Wildlife Resources. 2000.  
*Cutthroat trout management: a position paper. Genetic considerations associated with cutthroat trout management. A position paper prepared by the fish and wildlife agencies of seven western States.* Utah Division of Wildlife Resources Publication Number 00-26. Salt Lake City, UT.  
Available at  
<http://wildlife.utah.gov/pdf/cuttpos.pdf>.