

= Trout Creek Mountains =

The Trout Creek Mountains are a remote , semi arid Great Basin mountain range mostly in southeastern Oregon and partially in northern Nevada in the United States . The range 's highest point is Orevada View Benchmark , 8 , 506 feet (2 , 593 m) above sea level , in Nevada . Disaster Peak , elevation 7 , 781 feet (2 , 372 m) , is another prominent summit in the Nevada portion of the mountains .

The mountains are characteristic of the Great Basin 's topography of mostly parallel mountain ranges alternating with flat valleys . Oriented generally north to south , the Trout Creek Mountains consist primarily of fault blocks of basalt , which came from an ancient volcano and other vents , on top of older metamorphic rocks . The southern end of the range , however , features many granitic outcrops . As a whole , the faulted terrain is dominated by rolling hills and ridges cut by escarpments and canyons .

Most of the range is public land administered by the federal Bureau of Land Management . There is very little human development in the remote region ? cattle grazing and ranching are the primary human uses ? but former mines at the McDermitt Caldera produced some of the largest amounts of mercury in North America in the 20th century . Public lands in the mountains are open to recreation but are rarely visited . Vegetation includes large swaths of big sagebrush in addition to desert grasses and cottonwood and alder stands . Sage grouse and mountain chickadee are two bird species native to the range , and common mammals include pronghorn and jackrabbits .

Despite the area 's dry climate , a few year round streams provide habitat for the rare Lahontan cutthroat trout . Fish populations in the Trout Creek Mountains declined throughout much of the 20th century . In the 1980s , the effects of grazing allotments on riparian zones and the fish led to land use conflict . The Trout Creek Mountain Working Group was formed in 1988 to help resolve disagreements among livestock owners , environmentalists , government agencies , and other interested parties . The stakeholders met and agreed on changes to land use practices , and since the early 1990s , riparian zones have begun to recover .

= = Geography = =

The Trout Creek Mountains are in a very remote area of southeastern Oregon and northern Nevada , in Harney and Humboldt counties . The nearest human settlements are the Whitehorse Ranch , about 20 miles (32 km) directly north from the middle of the mountains ; Fields , Oregon , about 23 miles (37 km) to the northwest ; Denio , Nevada , about 15 miles (24 km) to the west ; and McDermitt , Nevada ? Oregon , about 30 miles (48 km) to the east . The mountains are about 150 miles (240 km) directly southwest of Boise , Idaho , and about 190 miles (310 km) northeast of Reno , Nevada .

The range and surrounding non mountainous areas cover an area of 811 square miles (2 , 100 km²) . The mountains run 51 miles (82 km) north to south and 36 miles (58 km) east to west . More of the range is in Oregon (78 %) than in Nevada (22 %) . The highest point in the range is Orevada View Benchmark , which is 8 , 506 feet (2 , 593 m) above sea level and is located in Nevada about one mile south of the Oregon border . About two miles southeast of Orevada View is Disaster Peak , " a large , symmetrical butte that is visible throughout the region . " At 7 , 781 feet (2 , 372 m) , Disaster Peak anchors the southern end of the mountains in a sub range called The Granites .

The Oregon Canyon Mountains border the Trout Creek Mountains on the east along the Harney ? Malheur county line (according to the United States Geological Survey 's definitions) , while the Pueblo Mountains are the next range west of the Trout Creek Mountains . The Bilk Creek Mountains in both Oregon and Nevada border the Trout Creek Mountains on the southwest ; the two ranges are separated by Log Cabin Creek and South Fork Cottonwood Creek . South of the Trout Creek Mountains is the Kings River Valley , which separates the Bilk Creek Mountains on the west from the Montana Mountains on the east .

The terrain in the Trout Creek Mountains varies from broad , flat basins and rolling ridges to high

rock escarpments cut by deep canyons . The canyons have steep walls with loose talus slopes at the bottoms . There are meadows around springs in the mountains , although most streams in the range do not flow year @-@ round . Major streams that flow off the north slopes of the mountains include (from west to east) Cottonwood Creek , Trout Creek , Willow Creek , and Whitehorse Creek . These streams all flow into endorheic basins in Harney County , Oregon . Trout Creek and Whitehorse Creek are the largest of the four . The Kings River and McDermitt Creek each drain an area on the south slopes of the Trout Creek Mountains . The Kings River begins in The Granites and flows south into Nevada , where it meets the Quinn River , which evaporates in the Black Rock Desert . McDermitt Creek begins in Oregon a few miles north of The Granites and flows generally east , crossing the Oregon ? Nevada border five times before disappearing into the floor of the Quinn River Valley south of McDermitt .

= = Geology = =

The mountains lie within the Basin and Range Province or Great Basin of the Western United States , which is characterized by a series of parallel fault blocks that form long north ? south mountain ranges separated by wide , high @-@ desert valleys . The Trout Creek Mountains are uplifted and tilted blocks with steep escarpments along the southern and eastern sides of the range . The southern area of the range , known as The Granites , has numerous outcroppings of Cretaceous age granite . These granite outcrops are commonly found in the eroded valleys below the volcanic ridgelines .

The Trout Creek Mountains are composed mostly of basalt from a shield volcano that once stood where Steens Mountain is today . Crustal thinning and the Yellowstone hotspot , which was then beneath southeastern Oregon , induced eruptions from Steens and nearby vents about 17 million years ago , in the Miocene . The vents produced a series of lava flows that spread across the land now known as the Trout Creek Mountains . Eruptions from the Steens volcano lasted for about one million years , and at least 70 separate lava flows occurred . Under the resulting basalt rock lie much older metamorphic rocks that may be related to some of the Triassic age formations of the Blue Mountains in northeastern Oregon . Within these metamorphic rocks are diorite and granodiorite intrusive bodies which were presumably intruded during the Cretaceous Period .

The broad McDermitt Caldera is a prominent geologic feature in the Trout Creek Mountains . The oval @-@ shaped caldera is a collapsed lava dome that straddles the Oregon ? Nevada border on the eastern side of the range and south of the Oregon Canyon Mountains . It is about 28 miles (45 km) long and 22 miles (35 km) wide . The lava dome was created by volcanic eruptions in the early Miocene . A total of five large ash flows were produced along with a large rhyolite dome structure . The caldera formed when the dome collapsed about 16 million years ago . The caldera contains significant ore deposits , and mercury and uranium have been mined at eight or more sites in and around the caldera . Other areas in the caldera were mined for ores of antimony , cesium , and lithium .

= = Climate = =

The Trout Creek Mountains are semi @-@ arid because they are in the eastern rain shadow of mountain ranges to the west . When moist air from the Pacific Ocean moves eastward over the Oregon and California coastal ranges and the Cascade Range , most precipitation falls in those mountains before reaching the Trout Creek Mountains . As a result , the average annual precipitation in the Trout Creek Mountains is only 8 to 26 inches (200 to 660 mm) per year , with most areas receiving between 8 and 12 inches (200 and 300 mm) annually . Much of the annual precipitation occurs between the beginning of March and the end of June . Most of the rest falls as snow during the fall and winter months . Snowpack at elevations below 6 @, @ 000 feet (1 @, @ 800 m) usually melts by April ; however , at the higher elevations , snow can remain until mid @-@ June . Local flooding often occurs in the spring as the snowpack melts .

The prevailing winds are from the west @-@ southwest , and they are normally strongest in March

and April . Brief , intense thunderstorms are common between April and October . Thunderstorms in the summer months tend to be more isolated and often produce dry lightning strikes .

= = Ecology = =

= = = Flora = = =

Vegetation in the Trout Creek Mountains is dominated by big sagebrush and desert grasses . Other common shrubs include bitterbrush , snowberry , and Ceanothus . There are also patches of mountain mahogany in some areas . Common grass species include Idaho fescue , bluebunch wheatgrass , cheatgrass , western needlegrass , Sandberg 's bluegrass , Thurber 's needlegrass , and bottlebrush squirreltail , as well as basin wildrye in some well @-@ drained areas .

Less than one percent of the range consists of meadow wetlands and riparian greenways (vegetation along stream banks) . However , these areas are vital to the local ecosystem . The meadows surround springs , which are mostly on gently sloping uplands or in stream bottoms , and range in size from about 1 to 5 acres (0 @.@ 40 to 2 @.@ 02 ha) . Narrow riparian greenways follow the year @-@ round streams . Many greenway areas have quaking aspen and willow groves . Cottonwood and alder groves can be found at lower elevations where terrain is flatter and stream channels are wider . Sedges and rushes are also native to these stream bottoms . Years of heavy livestock grazing in parts of the range resulted in the loss of some grass species , riparian vegetation , and young aspen and willow trees . Restoration of riparian areas began in the early 1970s , and plans to reduce grazing were implemented in the 1980s and early 1990s . However , large wildfires in southeastern Oregon during the summer of 2012 burned much of the range 's vegetation , damaging riparian ecosystems and killing hundreds of grazing cattle .

= = = Fauna = = =

Animals in the Trout Creek Mountains are adapted to the environment of the High Desert . Pronghorn are common in the open , sagebrush @-@ covered basins , while mule deer live in the cottonwood and willow groves . There are also bighorn sheep , cougars , and bobcats in the high country . Jackrabbits and coyotes are prevalent throughout the range . Mustangs sometimes pass through the mountains as they roam the Great Basin . Some other mammals include the northern pocket gopher , mountain cottontail , and Belding 's ground squirrel . North American beavers live in and along streams , as do Pacific tree frogs , western spadefoot toads , and garter snakes . Native bird species include the sage grouse , mountain chickadee , gray @-@ headed junco , black @-@ throated gray warbler , Virginia 's warbler , MacGillivray 's warbler , pine siskin , red crossbill , bushtit , hermit thrush , northern goshawk , and species of raven and eagle .

Several streams in the Trout Creek Mountains are home to trout , including the rare Lahontan cutthroat trout subspecies . These include Willow Creek , Whitehorse Creek , Little Whitehorse Creek , Doolittle Creek , Fifteen Mile Creek , Indian Creek , Sage Canyon Creek , Line Canyon Creek , and some tributaries of McDermitt Creek . Lahontan cutthroat trout live in small , isolated populations that are often confined to individual streams , many of them in the Trout Creek Mountains . These populations have significant genetic differences due to their history of isolation . For most of the 20th century , the trout 's numbers declined considerably . It was listed under federal law as an endangered species in 1970 and was reclassified as threatened in 1975 . Reasons for the fish 's decline included habitat degradation from cattle grazing , drought , overfishing , competition with other fish , and hybridization with introduced rainbow trout , which decreased the number of genetically pure Lahontan cutthroat trout . However , reductions in cattle grazing in riparian zones since the 1980s allowed fish habitat and populations to start to recover .

= = Human uses = =

The Bureau of Land Management (BLM) administers most land in the Trout Creek Mountains , but there are also some private lands and some roads in the area . The private lands are mainly used for ranching along mountain streams , while the BLM lands include large grazing allotments for local ranchers ' cattle . At least 100 mining claims in the mountains have been recorded since 1892 , some of which were staked for gold exploration . Commercial mining has occurred in some areas , mostly near the McDermitt Caldera , where uranium and large amounts of mercury have been extracted . Mines in what was called the Opalite Mining District produced 270 @,@ 000 flasks of mercury ? " the richest supply of mercury in the western hemisphere " ? from cinnabar extracted from the caldera in the 20th century . The two leading mercury @-@ producing mines in North America were the Cordero and McDermitt mines on the edge of the caldera in Nevada . Together , they operated from 1933 to 1989 . The McDermitt Mine , the last mercury mine in the United States , closed three years later , in 1992 . However , mineral exploration has continued at the Cordero Mine in the 21st century , and waste containing mercury and arsenic was returned there from the community of McDermitt as part of a U.S. Environmental Protection Agency cleanup project .

The entire mountain range is very remote ; as a result , there are few visitors , and the range offers a wilderness @-@ like experience . Camping , hunting , fishing , and hiking are the most popular activities . The only developed recreation site nearby is at Willow Creek Hot Springs , just south of the Whitehorse Ranch , where nearby there are miles of trails designated for four @-@ wheel off @-@ road vehicles . Hunters come to the mountains seeking trophy mule deer , pronghorn , chukars , and rabbits . Fishing on some streams is sometimes permitted on a catch @-@ and @-@ release basis . The mountains are also suitable for hiking cross @-@ country or on game trails in natural corridors along canyons and creek bottoms . There are more than 100 archaeological sites in the range that document use by Northern Paiute people as long as 7 @,@ 000 years ago .

Cattle grazing in the Trout Creek Mountains began in the late 19th century , and the BLM currently oversees grazing allotments in the area . Cattle can be found grazing in some areas during the spring and summer months . The effects of grazing on the local environment were the subject of controversy in the 1980s .

= = Land @-@ management compromise = =

By the 1970s and 1980s , a century of intense cattle grazing had reduced much of the riparian vegetation along stream banks in the Trout Creek Mountains and elsewhere in the Great Basin . As a result , stream banks were eroding and upland vegetation was encroaching into riparian zones . Aspen populations declined as grazing cattle eliminated young trees , decreasing shade over streams and raising water temperatures . These conditions put the rare Lahontan cutthroat trout population at risk . Since the Lahontan was officially designated as a threatened species , environmental groups began advocating the cancellation of grazing permits in the Trout Creek Mountains .

Beginning in the early 1970s , the Bureau of Land Management identified damaged riparian zones and began projects to restore natural habitat in those areas . Approximately 20 @,@ 000 willow trees were planted along streams , small dams were put together to create more pools in the streams , and fencing was added to protect riparian zones from grazing . Next , the agency sought to reform land @-@ use plans to change grazing practices , which became a complex and controversial project .

As environmentalists pressed the BLM to close much of the Trout Creek Mountains to grazing , frustrated ranchers joined the Sagebrush Rebellion seeking to protect their grazing allotments . Initially , it appeared that the issue of grazing in the range would produce prolonged litigation with appeals potentially lasting decades . However , in 1988 , interest groups representing all sides of the issue joined to form the Trout Creek Mountain Working Group . The group 's goal was to find a solution acceptable to everyone ? a plan that would protect both the land 's ecological health and ranchers ' economic needs .

Initial members of the Trout Creek Mountain Working Group included :

Over the next several years , the group continued to meet and discuss options for restoring the land

while meeting the economic needs of local ranchers . Meetings were all open to the public .

The group eventually endorsed a grazing management plan that provided for both the ecological health of sensitive riparian areas and the economic well @-@ being of ranchers . In 1989 , the Whitehorse Ranch agreed to rest two grazing allotments totaling 50 @,@ 000 acres (20 @,@ 000 ha) to restore critical stream greenways and mountain pastures . The ranch 's allotment on Fifteen Mile Creek was rested for three years , and its Willow Creek pasture received a five @-@ year rest before grazing was resumed . In addition , the grazing season in mountain pastures was reduced from four months to two , and the total number of cattle released in the allotment areas was reduced from 3 @,@ 800 to 2 @,@ 200 . Finally , sensitive areas were fenced to protect them from cattle , and additional water sources were constructed away from streams . Other ranches also agreed to rest specific pastures including the Trout Creek , Cottonwood Creek , and Whitehorse Butte allotments .

In 1991 , the Bureau of Land Management approved a new grazing allotment management plan . It was based on the agreements made by the Trout Creek Mountain Working Group , and it took effect in 1992 . Since then , vegetation in riparian areas of the Trout Creek Mountains has recovered , and studies by the United States Fish and Wildlife Service have found that the Lahontan cutthroat trout population , still listed as threatened , is also recovering .