

= Chetco River =

The Chetco River is a 56 @-@ mile @-@ long (90 km) stream located in the southwestern portion of the U.S. state of Oregon . It drains approximately 352 square miles (912 km²) of Curry County . Flowing through a rugged and isolated coastal region , it descends rapidly from about 3 @, @ 200 feet (975 m) to sea level at the Pacific Ocean . Except for the lowermost 5 miles (8 km) , the river is located entirely within the Rogue River ? Siskiyou National Forest . The river rises in the Kalmiopsis Wilderness , northwest of Chetco Peak at the junction of the Oregon Coast Range and the Klamath Mountains . It flows generally north , west , and then southwest , before emptying into the ocean between Brookings and Harbor , approximately 6 miles (10 km) north of the California state line . The Chetco River 's watershed remains largely undeveloped , protected by the Rogue River ? Siskiyou National Forest and the Kalmiopsis Wilderness . The upper 45 miles (72 km) of the river have been designated Wild and Scenic since 1988 .

Native Americans have lived in the Chetco River 's watershed for the last one to three thousand years . Several explorers , including Sir Francis Drake , George Vancouver , and Jedediah Smith , visited the region between the 16th and 19th centuries , and found the Chetco people inhabiting the area . Non @-@ indigenous settlers arrived soon after gold and other precious metals were discovered in the 1840s and 1850s . The town of Brookings was founded in the early 20th century , and incorporated in 1951 . Fourteen thousand residents of Brookings and Harbor rely on the Chetco for drinking water .

Supporting a large population of salmon and trout , the Chetco 's water is of very high quality . The watershed is home to many other species , including several that are endemic to the Siskiyou Mountains area . The northernmost grove of Redwoods ? the tallest trees on Earth ? grow in the southern region of the Chetco 's drainage basin . In total , the river is home to over 200 species of animals , and 97 percent of the watershed is forested .

= = Course = =

The Chetco River begins about 4 miles (6 km) east of Chetco Peak , approximately 3 @, @ 201 feet (975 @. @ 7 m) above sea level . It flows north , gathering small tributaries such as the Little Chetco River and Babyfoot Creek . The river turns west near the 5 @, @ 098 @-@ foot @-@ tall (1 @, @ 554 m) Pearsoll Peak , the highest point in the watershed . It receives Box Canyon Creek on the left bank , Tincup Creek on the right bank , and Boulder Creek on the left . It then flows south , gathering the South Fork Chetco River . A few miles farther south , the river passes through a Redwood grove . It flows between Bosley Butte to the north and Mount Emily to the south ; the latter is the impact site of one of only four bombs known to have been dropped in the continental United States by an enemy aircraft . This occurred during the Lookout Air Raids of 1942 .

Turning southwest , the river flows through Alfred A. Loeb State Park and collects the North Fork Chetco River on the right at river mile (RM) 5 (or river kilometer (RK) 8) . The Chetco becomes an estuary about 1 @. @ 7 miles (2 @. @ 7 km) from its mouth . It passes through the communities of Brookings to the north and Harbor to the south , and discharges into the Pacific Ocean .

= = = Discharge = = =

The United States Geological Survey monitors the flow of the Chetco River at a stream gauge at RM 10 @. @ 7 (RK 17 @. @ 2) , which is 6 @. @ 8 miles (11 km) northeast of Brookings . It opened in 1969 , and continues to operate . The average flow was 2 @, @ 263 cubic feet per second (64 @. @ 08 m³ / s) from a drainage area of 271 square miles (702 km²) , about 77 percent of the Chetco 's total drainage basin . The maximum recorded flow was 85 @, @ 400 cubic feet per second (2 @, @ 420 m³ / s) on December 22 , 1964 , during the Pacific Northwest flood of 1964 . The minimum flow was 42 cubic feet per second (1 @. @ 2 m³ / s) on October 14 , 1987 .

= = Watershed = =

The Chetco River drains 352 square miles (912 km²) of the southern Oregon Coast . About 78 percent is owned by the United States Forest Service , and another 5 percent is owned by the Bureau of Land Management . Sixteen percent is privately owned , while the remaining one percent is managed by the cities of Brookings and Harbor , Curry County , and the state of Oregon . Approximately 97 percent of the land is used for forestry , 2 percent for agriculture and rural areas , and 1 percent is urban . Gravel and minerals are mined from the lower and upper regions of the watershed , respectively .

The region is mostly mountainous , characterized by steep river valleys . Elevations in the Chetco River watershed range from sea level to 5 @, @ 098 feet (1 @, @ 554 m) at the summit of Pearsoll Peak . Precipitation averages between 45 and 140 inches (1 @, @ 143 and 3 @, @ 556 mm) per year , with October through June being the wettest months . Seventy percent of surface runoff is collected from rain , and 30 percent from rain on snow . Twenty @-@ five separate wetlands totaling 93 acres (38 ha) have been identified in the watershed . Temperatures average between 32 and 82 ° F (0 and 28 ° C) , although the Brookings effect (or Chetco effect ; similar to a foehn wind) often brings localized hot weather to the Brookings area . The increase in temperature is caused by the geography of the region ; cool air funnels down the Chetco River valley from the Siskiyou and Coast ranges , gradually heating up before eventually reaching Brookings as a warm wind . The mountains also shield the area from cool marine layers . Partially as a result of this phenomenon , Brookings recorded its highest temperature ever , 108 ° F (42 ° C) , on July 8 , 2008 .

Earthquakes are common , and large @-@ scale ones occur around every 300 years . The Cascadia earthquake of 1700 ? estimated at 8 @. @ 7 ? 9 @. @ 2 on the moment magnitude scale ? caused a tsunami to sweep across California , Oregon , Washington , and British Columbia , reaching Japan the next day . It was produced when the entire Cascadia subduction zone , about 680 miles (1 @, @ 100 km) long , slipped approximately 66 feet (20 m) in a megathrust event . Another major earthquake occurred in 1873 near present @-@ day Brookings . With a magnitude of 7 @. @ 3 , the quake was felt from Seattle to San Francisco . Wind is also a factor in the region ; storms can sometimes reach over 100 miles per hour (160 km / h) . The Columbus Day Storm of 1962 brought devastating winds to nearly all of Oregon ; nearby Port Orford recorded gusts exceeding 190 miles per hour (310 km / h) . The storm killed 38 people across the state and caused over \$ 200 million worth of damage . The watershed often experiences wildfires , some of them major . The Biscuit Fire of 2002 burned over 500 @, @ 000 acres (200 @, @ 000 ha) of the Kalmiopsis Wilderness and surrounding regions .

As of the 2010 census , the city of Brookings had a population of 6 @, @ 336 , while nearby Harbor had 2 @, @ 391 . In total , over 14 @, @ 000 residents of the Brookings ? Harbor area depend on the Chetco River for drinking water . Nearby watersheds include the Winchuck and Smith rivers to the south , the Pistol River to the north , and the Illinois River , a tributary of the Rogue River , to the north and east .

= = Flora and fauna = =

The Chetco River watershed is covered primarily by temperate coniferous forest , which includes species such as Douglas fir , western hemlock , white fir , Port Orford cedar , California incense cedar , and Sitka spruce . Jeffrey pine , knobcone pine , and golden chinquapin have also been identified . Hardwoods including tanoak , bigleaf maple , red alder , and Pacific madrone are common . Manzanita , hazelnut , vine maple , western skunk cabbage , and multiple species of berries and grasses make up the understory . Kalmiopsis , a flowering evergreen shrub and the namesake of the Kalmiopsis Wilderness , only grows in the Siskiyou Mountains . Several noxious weeds have also been identified , including gorse , Scotch broom , blackberries , and thistles .

The most prevalent species of the extreme southern portion of the watershed is the coastal redwood , one of the tallest types of trees on Earth . The world 's northernmost redwood grove is located near the south bank of the Chetco at RM 15 (RK 24) , about 8 miles (10 km) north of the California border . Trees here are around 300 to 800 years old , 5 to 13 feet (2 to 4 m) in diameter ,

and some exceed 300 feet (91 m) tall . The redwoods were heavily logged in the early 20th century . Prior to logging , the massive trees created their own microclimate by capturing moisture from fog , and also by the immense amount of shade they produced . The redwoods region is less mountainous than the rest of the watershed , and meandering streams are much more common .

Over 200 species of animals inhabit the river and its tributaries . Birds such as loons , grebes , ducks , kingfishers , and bald eagles are known to live around streams and other regions of the watershed . Auks , gulls , and terns have been spotted around the river 's mouth , and black @-@ legged kittiwakes nest in the area during the winter . The wildlife in the Kalmiopsis region of the Chetco watershed is more diverse than that of any other region in Oregon . Mammals such as American black bears , black @-@ tailed deer , bobcats , ring @-@ tailed cats , and gray foxes are common inhabitants of this region . The rare Siskiyou chipmunk is endemic to the Klamath Mountains . Steelhead and chinook and coho salmon are the most common anadromous fish that inhabit the Chetco River . Steelhead are abundant and have been spotted in most major and minor streams . Chinook salmon usually travel as far as Boulder Creek , about halfway between the Chetco 's headwaters and its mouth . Coho also generally stay in this area , but some have been found in the Granite and Carter Creek area , about 12 miles (19 km) above Boulder Creek . Coastal cutthroat trout can be found all around the watershed ; some migrate to the ocean , while others live in the river and its tributaries year round . Pacific lamprey , three @-@ spined stickleback , and various sculpins have also been observed .

= = Geology = =

The Chetco River flows through the ancient Klamath Mountain terrane , which is between 400 and 100 million years old , the oldest rocks in Oregon . The Klamath microcontinent was originally located beneath the ocean near southern California before separating hundreds of millions of years ago . Plate tectonics pushed the microcontinent north , and bits of granite , sea floor sediment , subduction zones , and coral reefs gradually accreted into small islands . Between 212 and 170 million years ago , a massive volcanic arc erupted on the Klamath microcontinent , binding the islands together in a single block . The Klamath microcontinent went through a period of intense tectonic activity known as the Siskiyou orogeny roughly 170 to 165 million years ago . The process was strong enough to force sedimentary rocks deep into the Earth 's crust , melting them into large plutons of granite , which rose slowly to the surface . Shortly after , a large portion of sea floor was thrust over the older Klamath terranes ; much of it is still visible atop Vulcan and Chetco peaks . This region is known as the Josephine Ophiolite , and contains a rare type of rock called peridotite , originating from the Earth 's mantle .

The mountainous terrain of the Chetco River watershed was created approximately 130 million years ago when the microcontinent collided with the much larger North American continent . The process uplifted the complex and exotic terranes of the microcontinent to form the Klamath Mountains . Many glaciers carved U @-@ shaped valleys and cirques during the last ice age , and several alpine lakes still exist today .

Today , sandstone , shale , granite , and serpentine are the primary rock types in the Chetco region . Various forms of loam comprise its soil . Erosion levels are high due to a combination of high precipitation , steep slopes , and landslides , which can result in earthflows .

= = History = =

Humans have lived in the Chetco River watershed since approximately 1 @,@ 000 to 3 @,@ 000 years ago . The first inhabitants were perhaps ancestors of the Chetco Indians and other Native American tribes , themselves descendants of the first humans who traveled across the Bering land bridge from Siberia over 10 @,@ 000 years ago . At least nine separate villages were constructed along the Chetco River , including two on either side of its mouth . The Native Americans named the river " chit taa @-@ ghii ~ -li ~ ? " .

The first European American to visit the area may have been Sir Francis Drake on June 5 , 1579 ,

during his circumnavigation of the world . The Vancouver Expedition also explored the area in 1792 . In June 1828 Jedediah Smith and his company of fur traders camped on the south bank of the river near a Native American village . Between 1853 and 1855 , many Native Americans were killed and their villages destroyed in skirmishes occurring around the same time as the nearby Rogue River Wars . On July 9 , 1856 , the remaining Chetco were marched north to the Siletz Reservation .

Oregon ? and therefore the Chetco watershed ? was jointly occupied by the United Kingdom and the United States after the Treaty of 1818 was signed . The Oregon Treaty was ratified in 1846 , giving the United States ownership of Oregon . Soon after , the Oregon Territory was established , and Oregon became a U.S. state on February 14 , 1859 .

The discovery of gold and other precious metals in the watershed brought settlers to the region in the 1840s and 1850s . Nickel , cobalt , and chromium were also mined . The town of Harbor was founded on the south bank of the Chetco River in 1891 , and a ferry service across the river opened in 1904 . It was shut down in 1915 when the Chetco Bridge opened . In 1912 , the Brookings Lumber & Box Company moved north from the San Bernardino Mountains in southern California to the southern Oregon coast region . The company constructed a sawmill in 1914 , and founded the town of Brookings . Brookings was not incorporated until 1951 . The region remained relatively isolated due to its mountainous terrain until 1924 , when Highway 101 was extended from Crescent City , California , to Brookings . In 1932 , the Isaac Lee Patterson Bridge was completed over the Rogue River to the north , connecting the region to the rest of the Oregon coast . In 1917 , a 1 @, @ 200 @-@ foot @-@ long (366 m) wharf was built at the mouth of the river . Jetties were constructed on either side of its mouth by the United States Army Corps of Engineers in 1957 .

The Siskiyou National Forest was created on October 5 , 1906 , protecting the entire upper portion of the Chetco watershed . The nearby Rogue River National Forest was combined with it in 2004 , creating the nearly 1 @, @ 800 @, @ 000 @-@ acre (728 @, @ 000 ha) Rogue River ? Siskiyou National Forest . In 1964 , the United States Congress set aside over 80 @, @ 000 acres (32 @, @ 000 ha) of the eastern Chetco River watershed and surrounding regions to create the Kalmiopsis Wilderness . The wilderness was expanded several times in the 1970s , and now encompasses over 180 @, @ 000 acres (72 @, @ 800 ha) .

On October 28 , 1988 , a 44 @. @ 5 @-@ mile (71 @. @ 6 km) stretch of the Chetco River was designated a National Wild and Scenic River , from its headwaters to the boundary of the Rogue River ? Siskiyou National Forest . In a court case in 1994 , the Chetco was determined to be navigable . In 2002 , over 500 @, @ 000 acres (202 @, @ 000 ha) of the eastern portion of the watershed and surrounding regions were destroyed in the Biscuit Fire . Originally five separate fires , it was caused by several lightning strikes between July 12 and 15 . By August 17 , all five had burned together , creating one massive fire . It burned for over five months and was not fully extinguished until December 31 .

In 2002 , 45 acres (18 ha) of land on the Little Chetco River were sold to Washington real estate developer David Rutan , only several months after the Biscuit Fire tore through the region . He opened a gold mining camp on the site in 2007 , flying in customers by helicopter . Curry County officials soon stated that the camp violated zoning and sanitation laws , but inspections were stymied because of the area 's inaccessibility . Rutan bought several more claims in the Wild and Scenic section of the Chetco River in the following years , beginning 6 miles (10 km) inside the Kalmiopsis Wilderness , and ending 24 miles (39 km) downstream . Despite environmentalists ' concerns , he proposed mining the Chetco riverbed for gold and minerals via commercial suction dredges , permitted by the General Mining Act of 1872 . In 2010 , the Chetco River was identified as the seventh most endangered river in America by advocacy organization American Rivers , facing a threat of " motorized instream mining " . Oregon 's governor , Ted Kulongoski , two senators , Ron Wyden and Jeff Merkley , and congressman Peter DeFazio all asked the United States Department of Agriculture to withdraw the Chetco River from the 1872 Mining Act , thus preventing mineral mining on the river . However , Rutan forfeited his claims by not paying his annual filing fees to the Bureau of Land Management in 2011 .

= = Pollution = =

The Oregon Department of Environmental Quality (DEQ) has monitored the Chetco River for eight different parameters that affect water quality : temperature , oxygen saturation , pH , nutrients , bacteria , chemical contaminants such as pesticides and metals , turbidity , and alkalinity . Streams that exceed the standard level are then placed on the DEQ 303d list in accordance with the Clean Water Act . The Chetco from Box Canyon Creek to its mouth exceeded the standard level for temperature and turbidity . The North Fork , South Fork , and other tributaries were also listed for temperature and turbidity . All tributaries of the Chetco usually exceed the 64 ° F (18 ° C) temperature standard . Water temperatures range from 62 @. @ 6 ° F (17 @. @ 0 ° C) at Bosley Creek to 76 ° F (24 ° C) at Willow Bar . High turbidity levels in the Chetco River watershed are usually caused by landslides , various forms of erosion , and plugged road culverts .

On the Oregon Water Quality Index (OWQI) used by DEQ , water quality scores can vary from 10 (worst) to 100 (ideal) . The average for the Chetco River at RM 10 @. @ 8 (RK 17 @. @ 4) between 1998 and 2007 was 95 (excellent) in the summer and 90 in the fall , winter , and spring . These scores are comparable to the 1986 to 1995 results of 94 and 93 . Despite the excellent ratings , the Chetco River actually ranks as the second most polluted stream in Curry County , after nearby Floras Creek , a tributary of the New River .

= = Recreation = =

Fishing , four @-@ wheel driving , swimming , boating , camping , sightseeing , and picnicking are the primary recreational activities in the watershed . Whitewater kayaking is also popular in the winter months when water levels are high . Several trails are maintained throughout the Kalmiopsis Wilderness , as well as other regions in the watershed . Eight boat launches are located on the river between its confluence with the south fork and its mouth . Alfred A. Loeb State Park , located on the banks of the Chetco , has three cabins and 48 camping sites .

Several large parks are located in Brookings . The 33 @-@ acre (13 ha) Azalea Park in Brookings features five species of wild azaleas . The park was designated an Oregon State Park in 1939 , but was given to Brookings in 1993 . It hosts the American Music Festival from June until September . The Nature 's Coastal Holiday light show is displayed in Azalea Park every December . Chetco Point Park , located near the wharf , has several fire rings and picnic tables , as well as views of the river , the Pacific Ocean , and the Port of Brookings Harbor . It is home to the rare Wolf 's Evening Primrose .