



Bear Creek Subwatershed

Location and Size

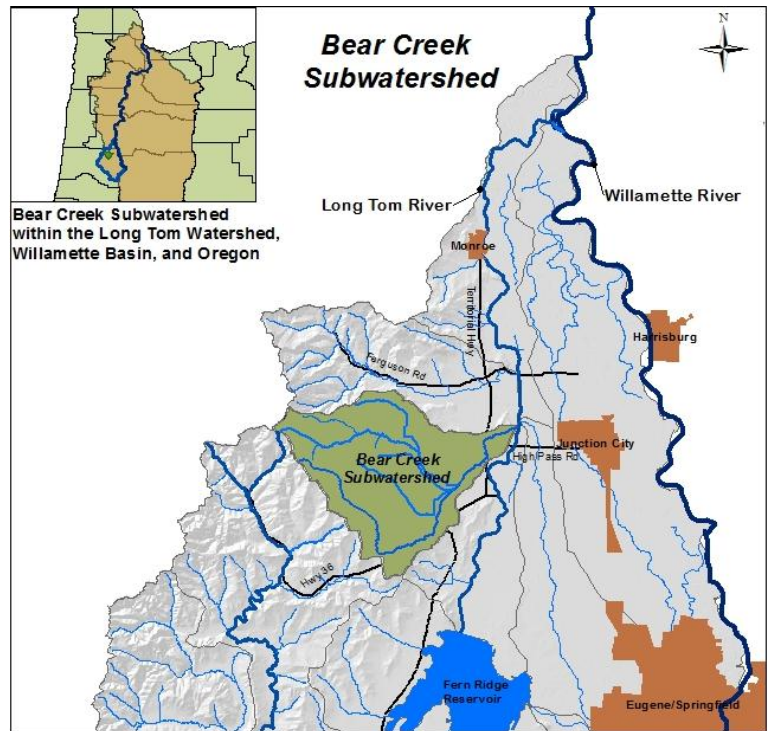
Bear Creek is a major tributary stream in the Long Tom River Watershed. It originates in the foothills of the Coast Range and enters the Long Tom River north of High Pass Road, at the base of Cox Butte. Bear Creek Subwatershed covers 28 square miles, or 17,700 acres, of primarily forest and agricultural land. Owens, Jones, Nails, Turnbow, and numerous unnamed tributary creeks drain into Bear Creek, and total about 140 miles of stream.

Vegetation and Land Use

Government Land Office surveys around 1850 described the western half of the subwatershed as roughly hilly and mountainous, densely forested with hemlock, cedar, fir and maple; and the eastern half as open with grassy hills, numerous, cool water streams, and scattered fir and oak trees. Today, forestland covers nearly 60 percent of the subwatershed, while agriculture and rural residences cover 30 and 10 percent, respectively. Ninety percent of the land within Bear Creek is privately owned and includes a mixture of pastures, small woodlots, industrial timberlands, small farms, and rural residences.

Fish and Wildlife Habitat

Bear Creek Subwatershed offers important habitat for native cutthroat trout (resident and fluvial) and other aquatic species, including Chinook salmon and lamprey, upland birds, migrating waterfowl, and oak savanna and prairie plants. Bear Creek is one of just two subwatersheds in the Long Tom Watershed that cutthroat trout migrating from the Willamette River (fluvial trout) access for spawning and rearing. Once passage barriers are fixed on the Long Tom River, Chinook salmon could also access Bear Creek. It is home to rare oak savanna and prairie habitat, which supports an incredible diversity of plants, birds, animals, and insects. Bear Creek provides vital habitat for declining grassland birds, including Western meadowlarks, Oregon vesper sparrows, and Streaked horned larks.



Oak savanna with encroaching Scotch broom and fir trees, which reduce habitat for birds and other wildlife, and pasture for livestock.

Factors Affecting Habitat

Several factors limit the quality of fish and wildlife habitat in Bear Creek Subwatershed. For cutthroat trout and other native aquatic life such as Pacific lamprey and western pond turtles, limiting factors include aquatic passage barriers, high water temperatures, poor riparian or stream bank conditions, and limited instream habitat complexity like large woody debris and stream channel sinuosity. Long Tom Watershed Council water quality monitoring data (1998-2003) documents that summer water temperatures in Bear Creek streams are well above the state standard (daily max below 64°F) in the lower reaches of the drainage. High water temperatures combined with low flows and nutrient and bacteria imbalances could produce deadly conditions for aquatic species. Water temperature

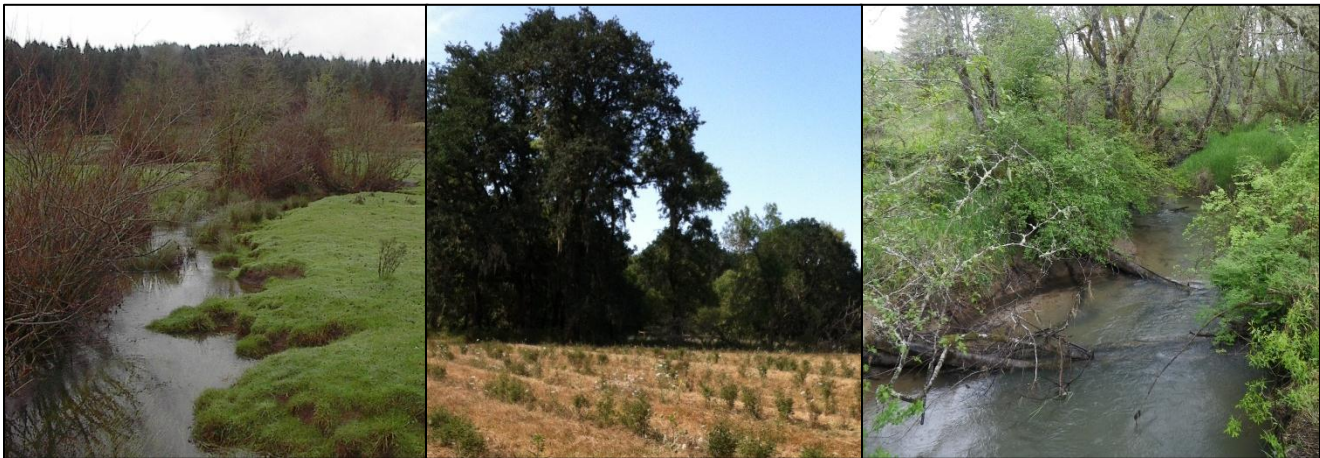


Restored emergent wetlands offer important habitat for native amphibians.

becomes lethal for cutthroat trout at 72°F. The mouth of Bear Creek has the highest *E. coli* levels in the rural portion of the Long Tom Watershed, which suggests stream bank conditions upstream are unable to properly filter runoff and livestock are accessing streams. The Council has documented 77 miles (55 percent of Bear Creek) of riparian area with a moderate or high loss of ecological function. Finally, the Council's fish passage barrier inventory (2009) indicates more than 80 percent of surveyed culverts in the watershed are barriers to fish migration; and of 52 culverts surveyed in Bear Creek, just 11 percent were passable. For plants, birds, and other wildlife, factors limiting habitat quality include land conversion and clearing of riparian forests, oak savanna, and prairie, lack of connectivity and corridors, changes in land management practices including lower fire frequency, and increases in invasive plant populations.

Restoration Priorities

The Long Tom Watershed Council works with interested landowners to enhance fish and wildlife habitat voluntarily. We partner to identify actions that will help eliminate or reduce the factors that are negatively affecting fish and wildlife habitat, and to enhance the resilience of aquatic and terrestrial systems. The table below lists: the types of habitat Bear Creek supports; documented factors limiting habitat quality in Bear Creek; the priority for taking action based on the Council's Conservation Strategy; and actions landowners might take in partnership with the Council to improve habitat conditions. It's important to keep in mind that specific restoration actions are identified collaboratively between the Council and landowner, and not all actions are appropriate for every property.



Left: Loss of riparian trees, shrubs, and sedges limits stream shading, water filtering, and leads to higher water temps, bacteria, nutrient, and sediment loading. **Middle:** Young trees and shrubs planted to re-establish riparian area. **Right:** Mature trees border stream, shade and cool water temperatures, provide food and habitat for insects that fish need to survive.

Table 1. Bear Creek Subwatershed – Restoration Priorities

Habitat	Factors Limiting Habitat Quality	Priority*	Restoration Actions
Riparian and Stream Habitats			
Streams	Warm stream temperatures, low dissolved oxygen, and high <i>E. coli</i> bacteria concentrations threaten trout, other native fish, and aquatic creatures	High	Plant riparian trees, shrubs, and herbs for shade and runoff filtration; exclude livestock from riparian areas; install off-channel watering stations for livestock; install irrigation efficiency measures.
Streams	Sediment entering the stream from human activities decreases water and instream habitat quality	High	Terrace stream banks; install sediment catch basins; alter practices in ditch maintenance, fallow fields, tree farms; install grassed waterways, filter strips; plant riparian trees, shrubs, and herbs.
Streams	Culverts and dams create barriers for fish and amphibian migration	High	Survey culverts and road crossings; remove, replace, or modify barriers; screen irrigation diversions.
Streams	Straightened channels lead to increased erosion and bank sloughing, reduced fish and wildlife habitat diversity, limited floodplain deposition and nutrient recharge	High	Expand and restore floodplain, connection to floodplain; restore flow to historic stream channel; develop meanders and side channels; place large woody debris in stream; reconnect streams to off-channel wetlands; restore turtle, amphibian, and beaver habitat.
Riparian / Stream banks	Loss of bottomland forest, scrub-shrub wetland and resulting lack of shade, bank erosion, and loss of wildlife habitat	High	Remove invasive plants; Plant riparian trees, shrubs, and herbs; exclude livestock from stream banks; install off-channel watering stations.
Oak and Prairie Habitats			
Oak savanna / upland prairie	Habitat loss from land conversion limits plant and animal migration, population sizes, and diversity. Invasive plants and encroaching woody vegetation degrade habitat function.	High – in lowlands, east half of sub-watershed	Improve existing, remnant habitats; identify and restore corridors for species migration; remove conifers around oak trees; control and manage invasives and woody plants; enhance existing native prairie plant populations; seed restored areas with native grasses and wildflowers; support pollinator, raptor and grassland bird habitat needs.
Wet prairie and marsh	Habitat loss from land conversion limits plant and animal migration, population sizes, and diversity. Invasive plants and encroaching woody vegetation degrade habitat function and displace native plants and animals.	High – in 100-yr floodplain, hydric soils	Improve existing, remnant habitats; identify and restore corridors for species migration; control and manage invasives and woody plants; restore hydrology; improve habitat for western pond turtles, red-legged frogs, western toads, and waterfowl.
Oak woodland, mixed pine/oak forest	Encroaching conifers, brush, invasive plants limits habitat health and function. Habitat loss from land conversion limits connectivity.	High – 500-1000 foot zone of Coast Range Mts	Improve existing, remnant habitats; identify and restore corridors for species migration; control and manage invasives and woody plants; remove conifers; restore historic species diversity; improve habitat for southern alligator lizard.

* Priority for action identified in *Long Tom Watershed Council Conservation Strategy, 2005* (<http://www.longtom.org/>).



Left: Opening up oak habitat through thinning and brush clearing, improves conditions for prairie-oak dependent species and reduces fire danger.

For more information: Long Tom Watershed Council | Katie MacKendrick, Restoration Ecologist | 541-338-7033, restoration@longtom.org

Long Tom Watershed Council is a local nonprofit with a diverse group of landowners dedicated to improving water quality and watershed condition in the Long Tom River basin through education, coordination, consultation, and cooperation among all interests, using the collective wisdom and voluntary action of our community members.

