

Bear River Basin: Central Watershed

Watershed Description

The Central Watershed in the Bear River Basin includes lands draining to the Bear River as it travels from Pixley Dam, between Cokeville and Sage Creek Junction in Wyoming, to Stewart Dam, just northeast of Bear Lake in Idaho. This is the smallest watershed in the Bear River Basin, draining 2,120 km². On its 71-kilometer, northward journey through the open sagebrush valleys of this watershed, the river drops just over 60 meters. The highest point is Mt. Isabel (about 3,300 meters in the northeast part of the watershed. The lowest point is Stewart Dam (about 1,800 meters south of Montpelier, Idaho.



Bear River below confluence with Smith's Fork-USGS

Tributaries and Reservoirs

Smith's Fork and Thomas Fork are the two largest tributaries that enter the Bear River in this watershed. With only six small reservoirs scattered throughout the watershed, the Central Watershed has the least amount of water storage in the entire Bear River Basin. All of these reservoirs supply water for irrigation.

Climate

Annual precipitation ranges from 28 to 120 centimeters per year, most of which falls as snow. Temperatures throughout the watershed vary with changes in elevation. Summer temperatures are between 15 to 21°C in the higher elevations and 21 to 27°C in the valleys. In January, temperatures are between -18 to -1°C.

Land Management and Uses

Two-thirds of this watershed is federal land that is managed by either the Bureau of Land Management (BLM) or the US Forest Service. Land uses include historic phosphate mining, grazing and irrigated agriculture, as well as recreation on National Forest and BLM lands. Urban areas cover less than 1% of this watershed, making it the least urban of all of the Bear River Watersheds.

Water Quantity

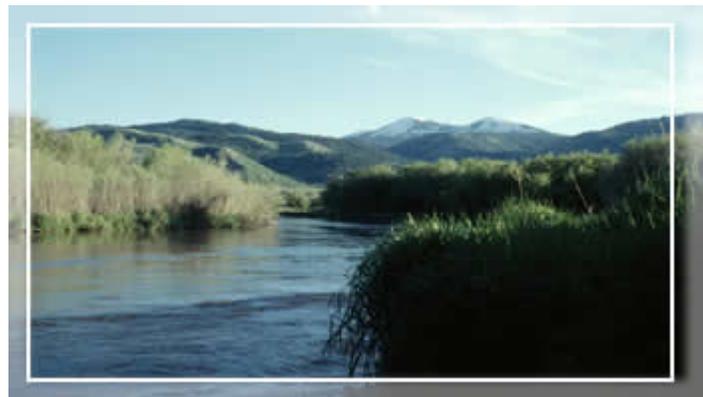
Flows in the Bear River nearly triple as it travels through this watershed, increasing from 4 cubic meters per second to over 15 cubic meters per second. The increasing flow is due to substantial inputs from Smith's Fork and other, smaller tributaries. Average daily flows in the river vary greatly due to seasonal patterns of runoff and annual cycles of low and high water years. At Smith's Fork, the lowest recorded daily flow was 0.8 cubic meters per second in 1977 and the highest was 153 cubic meters per second in 1983.

Major water diversions from the river in this reach are just below Pixley Dam in Wyoming, near Harer, Idaho, on Smith's Fork and on Thomas Fork. This diverted water is used for agriculture, industry and recreation. Most of the water for domestic uses is supplied by groundwater instead of surface water.

Water Quality

The quality of surface water throughout the Bear River Basin varies with different human activities and natural processes. In the Central Watershed, water quality is impacted by:

- Excess suspended sediments
- High levels of nutrients
- High water temperatures along some reaches



Bear River near Cokeville-Jake Gibson, USU

Bear River

Nutrient and sediment concentrations decrease slightly as the Bear River travels through this watershed until it reaches the confluence with Smith's Fork. Inputs from Smith's Fork result in substantial increases of both nutrients and sediments in the Bear River. Inputs from the Thomas Fork increase sediment and phosphorus loads during the summer season. Thomas Fork also contributes excess nitrogen to the Bear River, making it a pollutant of concern from this point to Bear Lake.

Tributaries

The water quality of the upper portion of the Smith's Fork and Salt Creek in Wyoming and Thomas Fork in Idaho is relatively good. However, as these tributaries travel through lower gradient lands, inputs from a variety of sources reduce the quality. By the time Smith's Fork reaches the Bear River, it is impaired by excess sediments. Bank erosion and willow removal are the main causes of sedimentation. Past efforts to straighten the river required widening the stream and resulted in streambank erosion. In 2004, the Wyoming Game and Fish Department formed the Smith's Fork Steering Committee to reduce sediment inputs to the river, increase bank stability and improve wildlife habitat by modifying grazing practices and controlling burns.

The Salt Creek/Thomas Fork drainage contributes excess phosphorus, nitrogen, and sediments at its confluence with the Bear River in Idaho. Highway construction in the stream valley, grazing,

unstable banks and natural in-stream erosion cause streambank erosion, which contributes to water pollution. In addition, fertilizers and animal waste enter the stream in this drainage, making it a major contributor of nitrogen to the Bear River. To address these issues, the Bear Lake Regional Commission (BLRC) initiated a project in 2000 to implement streambank stabilization practices.

Vegetation and Wildlife

About half of the landcover in this watershed is shrubland. Grasslands and evergreen forests each account for about one-third of the remaining landcover. The diverse land types provide different habitats for aquatic, riparian and terrestrial wildlife.

In Wyoming, wetlands cover less than five percent of the land area, so wetland communities along the Bear River are particularly important to wildlife. The Cokeville Meadows National Wildlife Refuge supports one of the highest densities of nesting waterfowl in Wyoming and provides nesting habitat for 32 water bird



Sagebrush habitat near the Bear River, Wyoming-Source Unknown

species including Sandhill Cranes, White-faced Ibis, Black Terns, Black-necked Stilts, American bitterns and a variety of other waterfowl, marsh and shorebirds. It is located on a 32-kilometer reach of the Bear River, south of Cokeville, Wyoming. It was established in 1993 and is not yet open for public use. This refuge and other high sagebrush habitat in this watershed support numerous resident game species, including Greater Sage Grouse, Mule Deer, elk and pronghorn. Forested habitat in the high mountain areas supports moose, deer and elk among other species.

The Thomas Fork and Smith's Fork and the stretch of Bear River between these rivers, provide ideal habitat for the migratory Bonneville Cutthroat Trout (BCT). The tributaries support some of the most genetically pure species of the BCT in its native range. The Bear River links these tributary populations, resulting in, what is likely, the last connected large river habitat available to BCT. Habitat loss, migration barriers and potential reservoir development on Smith's Fork threaten the native Bonneville Cutthroat populations in this part of the watershed. Trout Unlimited is involved in maintaining and restoring migration corridors for the fish in Thomas Fork and Smith's Fork. As part of the Bonneville Cutthroat Trout Conservation Strategy, the Wyoming Department of Game and Fish has improved habitat in the headwaters tributaries of the Thomas Fork.

People

This watershed has the smallest population in the Bear River Basin. The largest municipality in the Central Watershed is Cokeville, Wyoming (population 500). Although the population in the entire Bear River Basin is expected to increase significantly by 2050, very little growth is expected to occur in the Central Watershed.

The largest employment sectors are service, retail, trade, government and agriculture. Future economic growth in the Central Watershed of the Bear River Basin may occur in the agriculture, energy, tourism and manufacturing sectors.

Recreation

Boating, fishing, waterfowl hunting, water skiing, and swimming are popular water activities at Lake Alice and Cottonwood Lake. Camping, fishing, hiking, horseback riding, picnicking, off-road vehicle use, hunting and snowmobiling are popular in the northern, mountainous parts of the Central Watershed. Pine Creek Ski Area, at the southern end of the Tump Range, offers skiers a 370-meter vertical rise from the Star Valley floor.

Other Points of Interest

Cokeville Meadows National Wildlife Refuge: Audubon Wyoming nominated this area as an “Important Bird Area” because it provides nesting habitat for 32 water bird species including Sandhill Cranes, White-faced Ibis, Black Terns, Black-necked Stilts, American Bitterns and a variety of waterfowl, marsh and shorebirds. It is located outside Cokeville, Wyoming, but is not yet open for public use.

Lake Alice: This beautiful, remote sub-alpine lake is located in the upper part of the Smith’s Fork drainage in the Bridger-Teton National Forest. This quiet place offers excellent trout fishing, hiking, primitive camping and hunting. A small, privately owned ranch near Lake Alice provides lodging and food for visitors.

Additional Information on this watershed:

Community Profiles (<http://www.hometownlocator.com>)

Public Lands Information Center Utah Public Land Sites
(<http://www.publiclands.org/explore/index.php?plicstate=UT>)

Public Lands Information Center Wyoming Public Land Sites
(<http://www.publiclands.org/explore/index.php?plicstate=WY>)

United States Census 2000 Demographic Profiles <http://censtats.census.gov/usa/usa.shtml>)

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Trout Unlimited et al. 2005. *Grant Application for Esche Diversion Fish Passage and Thomas Fork Habitat Restoration for Bonneville Cutthroat Trout Conservation*. Prepared by Trout Unlimited, in partnership with the Bear Lake Regional Commission, Faucet Irrigation Co. (private landowners and water users along Thomas Fork River, ID), and Idaho Department of Fish and Game.