

AMERICAN BEAVER (*Castor canadensis*)

History of the American beaver in the Rocky Mountains

American beaver are native to most regions of the United States. The European fur-trade peaked in the Rocky Mountains between 1820 and 1840 with the Rocky Mountain Trapping System being the primary beaver pelt trading network for the region. The beavers were heavily trapped, and populations dramatically declined. New Mexico's beaver population was decimated by the early 1900s. Later, beaver were considered a nuisance species and often removed by landowners.

Riparian ecosystems have been historically impacted by overgrazing. The overgrazing causes increased erosion and incising or downcutting resulting in a streambed that is much lower forming a deep gully or trench-like channel. Researchers believe that the rapid removal of beaver from riparian systems may have started the degradation of the regions streams. As beavers were removed quickly from riparian systems, the dams were no longer maintained and failed, channelizing the water flow from full ponds which would have begun downcutting through the system. A lower and deeper channel disconnects the water flow from floodplains and drastically reduces riparian buffer areas, again increasing the potential for erosion and more incising while also reducing biodiversity and wetland buffers.

Beavers and Riparian Restoration

In the western United States, riparian habitat comprises less than 2% of the landscape while more than 80% of animal species utilize riparian habitat. American beaver are keystone species of riparian ecosystems (a species that has a disproportionately large effect on an ecosystem compared to the number of individuals). Beavers are often referred to as habitat engineers. Beavers construct dams and ponds slowing stream flow which captures sediment, reduces erosion, creating more consistent flow – mitigating flood flow and providing more flow during drought. Dams raise water levels reconnecting streams to their floodplains and reestablishing natural stream function to the reaches.

Even a smaller leaky dam can hold water for at least 10 days which is enough time for excess nitrogen (from animal waste) to be filtered from the water. Excess nitrogen can cause algae and bacterial growth downstream which can be harmful to aquatic species. Depending on the geology of a system, beaver ponds can increase groundwater recharge from a stream that in turn, may provide more downstream baseflow (flow back into a stream from shallow alluvial aquifers).

Beaver dam complexes increase the wetland buffer around a stream, providing greater biodiversity and habitat for many species dependent on riparian systems including migratory birds, waterfowl, amphibians, small mammals, and aquatic macroinvertebrates (water insects).

Riparian Restoration in the Vermejo Watershed

Vermejo worked with US Fish and Wildlife-Partners for Wildlife to build twelve large riparian exclosures from 2014 to 2020 to reduce the impact of grazing on the riparian vegetation. The exclosure project worked in tandem with a carrying capacity study and subsequent grazing and wildlife population management that has gradually reduced the number of ungulates (hoofed animals) on the property, ultimately reducing grazing pressure on the riparian systems to allow for regrowth.

A decision was made to NOT reintroduce relocated beavers into the exclosures with concerns of transmitting possible disease (an example: whirling disease) into the system. Vermejo's scientists hoped beavers would move back on their own once riparian plants responded to the lack of grazing and browsing pressure.

With good regrowth of riparian vegetation both inside and outside of the exclosures, beavers migrated back into the watershed sooner than anticipated. As of 2023, at least five of the ten exclosures in the Upper Vermejo River watershed have established beaver complexes plus additional ponds outside of exclosures near the Red Bridge and below Vermejo HQ. Some of the beavers that have recently moved back to the Vermejo River are believed to have traveled from the existing Upper Leandro Creek population. Beaver are known to consistently travel three miles but occasionally have been documented traveling up to ten miles including over land.

Beaver Biology

Beavers can grow up to four feet long (including tail) and weigh between thirty-five and seventy pounds. They are the largest rodent in North America, and the second largest in the world. They typically eat leaves and woody plants, shrubs, trees, but also eat riparian forbs, grasses and sedges. A beaver's orange teeth will continue growing throughout their life and are gradually worn off as they chew on woody materials. Beavers typically mate in late winter and kits are born in late spring with an average of two to four kits in a litter. The kits can swim about four days after their birth, and at the age of two months, they can dive and stay submerged in their pond. The kits will normally stay with their beaver family for two years.

Beavers build lodges but may also burrow along banks for shelter. Lodges are made from woody plants and lined with grasses for insulation. The lodges are just above waterline to keep them dry and have an unsealed roof for ventilation. Lodges in winter, especially in the southern Rocky Mountains, typically will stay above freezing and offer refuge to other small mammals and even amphibians.

Beaver Ponds

Beaver ponds slow and temporarily hold water. Slow water reaches help fish by requiring the fish to expend less energy, allowing any excess energy to be used for growth. The larger surface area of water caused by a pond may increase temperatures at or near the surface, but trout can use the deeper cooler water for better shelter during hotter times of the day in summer. The vegetation 'litter' or pieces of plants that fall to the bottom provide food for macroinvertebrates. The increase in aquatic insects creates more food for small trout potentially aiding in increasing native trout populations.

Over time, a beaver pond may fill with sediment and be abandoned. The partial drying of the pond will allow wetland plant seeds stored in the sediment to germinate. This is a natural cycle of transition to a wet meadow ecosystem, providing another high biodiversity patch amongst the forest in the landscape mosaic.

Frequently Asked Questions:

1. Do beavers reduce the flow downstream? No, beaver dams moderate the flow, slowing flow during floods or peak runoff but provide more flow during drier times, providing more consistent flow overall. The beaver ponds in Leandro Creek during the extended drought in the early 2000's kept flow in the creek which would have otherwise dried up.

2. Do you want beavers in the exclosures eating all the plants that have regrown? Yes, beavers are a natural part of Vermejo's riparian systems and will build more wetlands habitat quickly. Beavers in the exclosure above Gold Creek have already partially reengaged a natural stream channel. Early settlers had diverted flow from the channel to create farm fields.