LEFT HAND
watershed center

SCIENCE BULLETIN

LEFT HAND CREEK FISH PASSAGE REPORT

FULL REPORT HERE

Features and Highlights

- Past, Present, and Future Fish Populations in Left Hand Creek
- History of Ditches and Diversions
- Climate Change Impacts

Background

Ditches and diversions, as well as fish, are celebrated in Left Hand Creek, but are also challenged by climate change impacts. Ditches and diversions are the lifeblood of our land and have sustained our community for generations. Fish are critical to healthy aquatic systems and facilitate nutrient cycling that support clean water. The good news is that there are opportunities to develop solutions that are mutually beneficial for ditches, diversions, and fish alike.

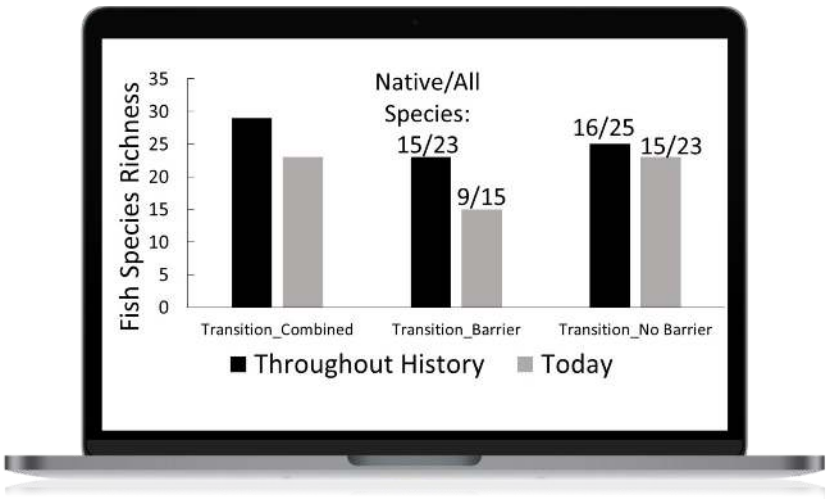

Fig. 1 • Fish species richness (all species present, including native and non-native) and general distribution (where species are found in a geographic area) relative to presence or absence of barriers within the transition zone throughout sampling history (1950 to 2019) versus today (Nov 2013 to 2019). The labels above each bar show how many species are native out of the total number of species found during each time period. Transition_Barrier generally represents the upper part of the transition zone and Transition_No Barrier generally represents the lower part of the transition zone. For comparison, the canyons are home to 3 non-native trout.

Past, Present, and Future Fish Populations

We reviewed more than 60 years of Colorado Parks and Wildlife's data and conducted our own monitoring to identify fish species that are present today vs. throughout history. We learned the greatest number of native fish species are present in the transition zone of the watershed, though the upper portion of this zone has also experienced the greatest loss in number of species over time. Based on these findings, we plan to prioritize restoration and habitat connectivity projects in these areas.

History of Ditches and Diversions

Dating back to the 1800s, ditches and diversions have allowed Left Hand Creek to carry more water than it would in its natural state. This is primarily due to the South St. Vrain Diversion (in the headwaters) and return flows (from agricultural lands). Without ditches, Left Hand Creek would be a seasonal creek that dries out in late summer. These additional in-stream flows provide water and habitat for fish.

Climate Change Challenges Faced by Diversion Owners and Managers

Efficient water delivery is a challenge that requires significant maintenance costs every year to remove sediment. Looking to the future, drier conditions will increase challenges. Future restoration projects should include goals and objectives that improve efficiency and reduce maintenance needs, while also restoring sediment catchment zones above water infrastructure.

Restoring the Future for Fish in the Face of Climate Change

Warmer and drier conditions are causing an upstream shift in thermally suitable temperature gradients to reaches that may not be physically suitable. We can restore to the future by creating habitat at higher elevations for regionally isolated transition zone fish species. Extending the distribution of native species upstream by improving habitat connectivity will also help species adapt to new conditions.

Acknowledgements

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