LEARNING BY DOING – MONITORING YEAR 2019 SNAPSHOT

For its seventh consecutive year, Learning By Doing (LBD) continued to monitor the health of aquatic resources within the Colorado, Fraser, and Williams Fork River basins in 2019. A snapshot of the 2019 results is below, followed by individual metric summaries.

Results	Observations	Colorado River Basin, including Williams Fork	Fraser River Basin, including Ranch Creek
Stream Temperature	In 2019 there were 65 sites monitored within LBD's Cooperative Effort Area (CEA). This area includes sites on the Colorado and Fraser rivers and 19 tributaries. Temperature data were compared to Colorado temperature standards at 60 monitoring sites. Of the sites monitored, 14 exceeded the state temperature thresholds: 10 sites in the Colorado River basin and 4 in the Fraser River basin. Exceedances generally occurred in late July or early August during the hottest months of the year, or in October and May when the Cold Stream Tier 1 (CSI) standards change from winter to summer. Click here for temperature assessment.	Of the 28 sites where data were compared to temperature standards, 18 sites were in attainment with state temperature standards. Two sites exceeded the state temperature threshold for acute (1-day) exposure: • Colorado River upstream of Granby Reservoir • Arapaho Creek downstream of Monarch Lake Ten sites exceeded the state temperature threshold for chronic (7-day) exposure: • Arapaho Creek downstream of Monarch Lake • Colorado River downstream of Shadow Mountain Reservoir to Granby Reservoir (3 sites) • Colorado River at Sheriff Ranch • Colorado River upstream of Hot Sulphur Springs • Colorado River downstream of Byers Canyon • Colorado River at Lone Buck • Colorado River upstream of Williams Fork • Williams Fork upstream of Williams Fork Reservoir	Of the 32 sites where data were compared to temperature standards, 28 sites were in attainment with state temperature standards. Three sites exceeded the state temperature threshold for acute (1-day) exposure: • Ranch Creek below CR 8315 • Meadow Creek at CR 84 • St. Louis Creek Three sites exceeded the state temperature threshold for chronic (7-day) exposure: • Ranch Creek below CR 8315 • Ranch Creek below Meadow Creek • St. Louis Creek
Macro-invertebrates	In 2019, bioassessments were conducted at 18 sites in the CEA. All 18 sites received an attainment for aquatic life use designation through their MMI (v4) scores.[2] Click here for full report.	Of the 10 sites monitored in the Colorado River basin, all were in attainment with state standards in 2019 and appear to support healthy macroinvertebrate populations.	Of the 8 sites monitored in the Fraser basin, all were in attainment with state standards in 2019 and appear to support healthy macroinvertebrate populations.
Fish	CPW conducts electrofishing surveys to estimate trout populations in the Colorado and Fraser river basins. There are 7 total sites for fish surveys along the Fraser River. According to CPW, Mottled Sculpin are the Fraser River's greatest biological asset because they are the main prey source for trout and are a good indicator species of water quality and habitat availability. Sculpin are harder to assess with electrofishing methods, yet the number of sculpin caught each year can still be used to assess trends in the population. [4] Click here for full report.	In 2019 CPW completed a fishery assessment in the Upper Colorado River Basin. However, due to the dynamic situation caused by the COVID-19 pandemic, a report is not available at this time. The data will be included in a future report, most likely combined with the 2020 surveys, which will be made available in 2021.	• Robbers Roost was a new site for 2019 and CPW stocked 10,000 native Colorado River Cutthroat Trout in this stretch above the sedimentation pond. The Safeway site sustains a productive fishery, however, Rainbow Trout are showing declines and stocking of Rainbows is planned for 2020. Lower Behler Creek was sampled for the first time this year and showed good numbers of juvenile fish. Kaibab Park has proven to be a stable fishery for Brown Trout. • LBD's Fraser Flats River Habitat Project showed a second year of slight decline in trout biomass estimations, compared to its peak in 2017 (post restoration) and the estimations from 2018. However, trout biomass estimates post-project continue to be greater than pre-project estimates. The instream habitat, thalweg, and riffle- to-pool ratio has been improved; however, the willow plantings remain immature and have yet to increase canopy cover and ecological function. Sculpin numbers also show a decline, but a greater sampling effort in 2020 will help further the analysis of this trend.
Pebble Counts	A total of 14 sites within the CEA were sampled in 2019. Each location received 400 measurements for the pebble count, utilizing the Modified Wolman Pebble Count Method. Percent embeddedness was also performed at each location with 40 to 50 measurements per site. Click here for full report.	Seven sites were assessed along the Colorado River. It was observed that sites further upstream have lower percentages of fine sediment and lower percentage embeddedness. Downstream sites showed higher values of embeddedness as well as a higher percentage of fine sediment. The proportion of sand and gravel shows a noticeable drop downstream of Windy Gap Reservoir due to the retention of sediment less than 128mm in the reservoir.	Six sites on the Fraser River and 1 site on Ranch Creek were assessed in this basin. Percent embeddedness was mostly consistent through the Fraser River. Notable exceptions were the most upstream site on the Fraser (FR-25.1), and Ranch Creek, which showed percent embeddedness above 50%. Site FR-14 is below the Fraser Flats restoration effort and showed a decrease in embeddedness,and an increase in small gravel. This is likely due to the narrowing of the river and the increased velocities through this section.
Flushing Flows[1]	Spring runoff met Grand County's recommended flushing flows at all 13 sites that were evaluated in the CEA for the 2019 runoff season.	All three sites on the Colorado River (CR3, CR4, CR7) met recommended flushing flows. Individual sites on the Williams Fork, Blue River and Willow Creek also met their recommended flushing flows.[1]	Of the seven sites monitored for flushing flows in the Fraser Basin, three sites are on the Fraser River (F3, F6, F10) and four sites on tributaries to the Fraser (F-VC, F-RC1, F-RC2, F-STL). All seven sites either met or exceeded the flushing flows described in the Grand County Stream Management Plan.[1]

Notes and Citations:

[1]Recommended in the Grand County Stream Management Plan (2010)

[2]Colorado's Multi-Metric Index (MMI) version 4.0

[4]Colorado Parks and Wildlife, 2020. Fraser River Fishery Management Report. Link here: https://cpw.state.co.us/thingstodo/Fishery%20Survey%20Summaries/FraserRiver.pdf