



GRAND COUNTY

LEARNING BY DOING

2021 ANNUAL REPORT

A unique East-West Slope partnership

www.grandcountylearningbydoing.org

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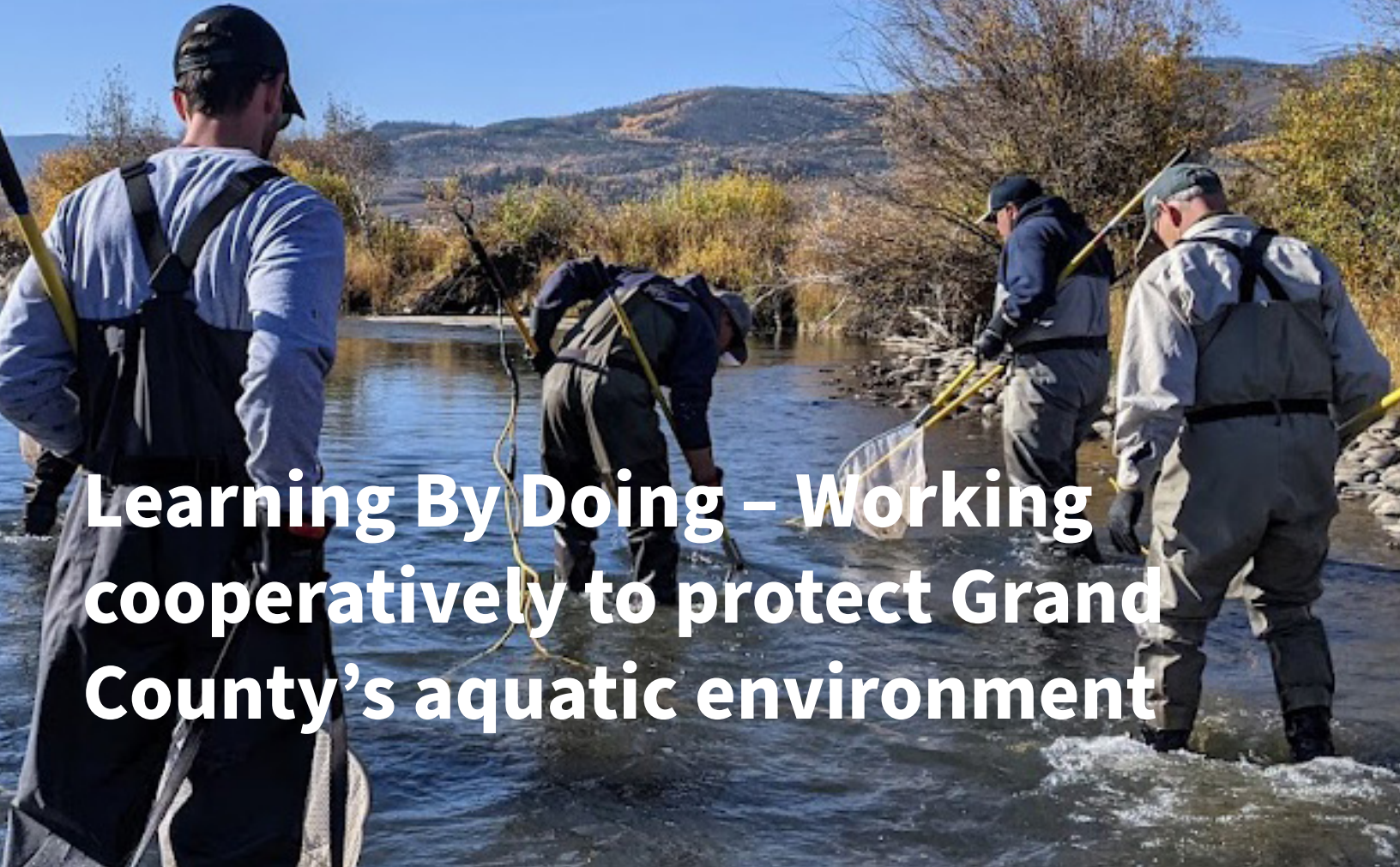
Moving forward through the contributions of dedicated stakeholders



CPW fish monitoring. Photo courtesy of CPW



Volunteers from SWCA Environmental help CPW sample fish. Photo courtesy of SWCA Environmental



Learning By Doing – Working cooperatively to protect Grand County’s aquatic environment

Learning By Doing (LBD) is a cooperative effort of water stakeholders from both sides of the Continental Divide whose goal is to maintain, and, where possible, restore or enhance the aquatic environment of the Upper Colorado, Fraser, and Williams Fork river basins within the Cooperative Effort Area (CEA).

Our group of stakeholders emerged from two Inter-Governmental Agreements intended to address impacts from two water diversion projects that affect rivers in Grand County: Denver Water’s Gross Reservoir Expansion Project and Northern Water Municipal Subdistrict’s Windy Gap Firming Project. The LBD partners have an interest in protecting Grand County’s aquatic habitat, while also respecting the interests and legal responsibilities of each partner organization.

While LBD is already operational, we will receive added resources of funding and enhancement water as the two diversion projects move through government approvals and construction.

Management Committee Partners

Colorado Parks and Wildlife (CPW)
Colorado River Water Conservation District (River District)
Denver Water
Grand County
Middle Park Water Conservancy District
Northern Water and its Municipal Subdistrict
Trout Unlimited

Other partners

Colorado Headwaters Land Trust
Grand County Water Information Network (GCWIN)
Grand County Water and Sanitation District
Irrigators of Lands in the Vicinity of Kremmling (ILVK)
Northwest Colorado Council of Governments
Town of Hot Sulphur Springs
U.S. Bureau of Land Management
U.S. Bureau of Reclamation
U.S. Forest Service (USFS)
U.S. Fish and Wildlife Service (USFWS)

Year in Review

Highlights from 2021

Invested \$55,289 in ongoing monitoring

LBD's [2021 Aquatic Resources Monitoring Plan](#) surveyed conditions that affect aquatic resources and habitat in the CEA: monitoring 11 sites for stream temperature, 19 sites for sediment, and 11 sites for macroinvertebrates. Additionally, in cooperation with LBD efforts, CPW surveyed fish populations at 10 sites throughout the CEA. LBD's monitoring efforts supplement extensive ongoing monitoring by individual partners.

Engaged the community

Volunteers assisted with electrofishing events along the Fraser and Colorado rivers coordinated by CPW. LBD volunteers, along with Colorado Headwaters Chapter of Trout Unlimited, harvested willows from Ranch Creek and planted them along the Fraser River in May 2021.

Coordinated water operations

LBD conducted weekly conference calls with 12 agencies from mid-May through early September to coordinate reservoir and system operations in an effort to maintain water temperatures suitable for fisheries. More information can be found in the Water Operations section and in the [2021 Operations Report](#).

Kept stakeholders informed

LBD's e-Newsletter went out in the [Summer](#) and [Fall](#) to nearly 800 Grand County residents, statewide water community members, and other interested parties. [Sign up to receive our quarterly e-newsletter.](#)

Coordinator support

In June, LBD hired Anna Drexler-Dreis to take over the coordinator role from Kiki Sayre, who held the position since its creation in 2015. This position is funded by a Watershed Restoration Grant from the Colorado Water Conservation Board that is matched 50/50 by some LBD partners. The coordinator helps implement the 2010 [Grand County Stream Management Plan](#) (SMP), working to restore and protect the county's water, aquatic life, and natural resources, and efficiently coordinating the LBD partner activities in support of its mission. LBD would like to thank Kiki for all her hard work and dedication over the past 5+ years.



Willow planting along the Fraser River, *Photo courtesy of Jessica Alexander*



Kiki Sayre, who was the LBD Coordinator for 5+ years.



The new LBD Coordinator, Anna Drexler-Dreis.



Cabin Creek culvert replacement was completed in October 2021. After construction, the area was restored with native grasses. Special netting was installed to hold the ground in place until grasses re-establish around the site. *Photo courtesy of Denver Water*

LBD Projects

LBD focuses on plans for the future

A key function of LBD is the implementation of on-the-ground projects designed to restore and improve aquatic habitat and increase stream resiliency in the face of water diversions and climate change. While more than \$3 million is expected to be available for such projects once the Gross Reservoir Expansion Project is fully permitted, LBD is currently undertaking projects using partner contributions and grants.

Cabin Creek Fish Passage Project

Most culverts installed in the 1900s were installed without concern for aquatic habitat. These old culverts are like waterslides for fish, which can go down them but are prevented from returning upstream, impairing their ability to get food and spawn. The old culvert where Forest Service Road 128 crosses Cabin Creek was a barrier to fish movement, and replacement with an Aquatic Organism Passage (AOP) culvert now allows for fish passage for native Colorado River Cutthroat Trout and amphibians.



Photo courtesy of Denver Water

The Cabin Creek AOP project is a great example of LBD at work. LBD's Technical Committee identified this project as one that would fulfill the goals of LBD and in 2020 the Management Committee approved this project. The USFS approved the design and engineering and Trout Unlimited secured funding from the U.S. Fish and Wildlife Service. Denver Water provided all labor and equipment for implementation and Grand County contributed materials. In September 2021, the Cabin Creek AOP project was completed and it is another example of what can be accomplished through LBD's collaborative efforts.

Check out a [video](#) and [article](#) from Denver Water on this collaborative project.

Fraser Flats willow planting

The 2021 willow planting efforts focused on LBD's Fraser Flats restoration site. The willow surveys determined that 1,200 willows failed to survive the original planting due to low water tables brought on by drought conditions, shallow placement, and damage from foot traffic. This time, tape was placed on the willow slips at 24" to help ensure that cut ends reach the water table. In May volunteers harvested 1,300 willow stakes, which were planted throughout the entire reach of Fraser Flats with help from 40 volunteers.

Proposals for future river restoration projects

Members of LBD's Technical Advisory Committee submitted six river restoration proposals for consideration by the LBD Management Committee, with potential implementation of one or more in 2022. These include potential restoration projects on Ranch Creek, Willow Creek, and the Fraser River.

Comprehensive watershed assessment and Stream Management Plan update

The Intergovernmental Agreements that founded LBD state that it is the task and responsibility of LBD to update the Grand County Stream Management Plan (SMP). In 2021, the LBD Monitoring Subcommittee prepared, and LBD Inc. submitted and received a grant application to the Colorado Water Conservation Board (CWCB) to support this effort. This grant award is matched by commitments from LBD partners. These funds will be used to conduct a comprehensive analysis (watershed assessment) of conditions within the CEA and to implement a broad stakeholder outreach and engagement program to support an update to the original SMP.



In May 2021, LBD volunteers with Colorado River Headwaters Chapter of Trout Unlimited planted willows along the Fraser River. *Photo courtesy of Paula Daukas*

Learn more about our projects and resources by visiting our [website](#).

**Learning By Doing
measures success
by its projects.**

Fraser River sediment pond

In 2010, Denver Water, Colorado Department of Transportation, Grand County, and East Grand Water Quality Board, in cooperation with LBD, constructed a sediment pond on the Fraser River below Berthoud Pass to capture traction sand used on the pass that later flows into the Fraser River and can impair its aquatic habitat. Tons of traction sand are captured in the pond every year. In 2021, 180 tons of traction sand were removed from the sediment pond. **A total of 5,466 tons of traction sand have been removed since 2010.** The improvement in the aquatic environment has been evident, with the return of a variety of trout habitats (deep holes, riffles, and runs).

**5,466 tons of
traction sand have
been removed
since 2010!**



Fraser River sediment pond.
Photo courtesy of Denver Water

To learn more about LBD resources for projects like these, head to our website
www.grandcountylearningbydoing.org/resources.html



LBD partners voluntarily released water from streams in Grand County from June 6 to early July in 2021 to improve aquatic habitat downstream. *Photo courtesy of Denver Water*

Water Operations

Notable events of the 2021 water operations season

The LBD Operations Subcommittee held weekly teleconference calls to discuss runoff operations beginning May 4, 2021. Discussion focused on the obvious challenges to both runoff and in-season operations brought about by multiple factors, including a season long outage at the Shoshone power plant beginning in early April, extreme drought, and the potential for debris flows due to the 2020 East Troublesome and Williams Fork fires. The Shoshone Outage Protocol was implemented to assure historic bypasses from upstream reservoirs were released.

[A full LBD 2021 Operations Report can be found on our website.](#) This report summarizes 2021 LBD-related operations, including:

- Denver Water’s Moffat Collection System spill bypasses¹ totaling approximately 18,900 acre-feet (af) during runoff season including unplanned bypasses² in June to mitigate high water temperatures, 348 af from Williams Fork Reservoir to mitigate high water temperatures, and maintenance bypasses totaling 7,104 af for projects at the East Portal and in the Moffat Tunnel.
- Northern Water’s Municipal Subdistrict Windy Gap voluntary bypasses of approximately 6,200 af to mitigate high water temperatures.
- River District’s Wolford bypass and release from storage of approximately 1,150 af to mitigate high water temperatures.
- Release of 5,412 af from the Endangered Fish Pool in Granby Reservoir for the Upper Colorado River Endangered Fish Recovery Program timed to alleviate stream temperature issues in the headwaters of the Colorado River.

¹“Voluntary/environmental bypasses” are releases pursuant to the Colorado River Cooperative Agreement; “required bypasses” are releases pursuant to a permit or Record of Decision; “maintenance bypasses” are releases to allow for maintenance; “spill bypasses” are releases as a result of a full reservoir or system constraint (full East Slope reservoirs).

²Bypasses that at the time were considered “voluntary” but were recolorized as “spill bypasses” later due to availability of native South Boulder Creek water filling Gross and Ralston Reservoirs.



Colorado Parks and Wildlife Aquatic Researchers tag fish for the Connectivity Channel fish movement study. *Photo courtesy of CPW*

Media and Outreach

Informing the public

Sign up for the Learning By Doing eNews on our [website](#).

In July, several LBD partners presented on LBD efforts, monitoring, and projects at a virtual [River Speaker Series](#) at the Headwaters Ecology Center in Winter Park, CO. Grand County Manager, Ed Moyer, gave an update on how LBD is responsive to river conditions and gave examples of this collaboration and coordination. Earlier in the summer, Jessica Alexander, Denver Water Environmental Scientist and LBD's Monitoring Subcommittee co-chair, spoke about LBD on the podcast [Grand County Matters](#). The Kremmling Grand Gazette published an article on [July 23, 2021](#), about coordinated efforts to voluntarily reduce diversions to help increase water levels and alleviate temperature concerns.

[Publications from other LBD partners can be accessed by clicking here.](#)

LBD facilitated a Post-Fire Science, Research, and Monitoring Network to discuss research projects, recovery efforts and data collection surrounding the East Troublesome and Williams Fork fires. This group met three times to share results, build partnerships for future projects, and track various initiatives.

Along with GCWIN, LBD helped fund an intern to compile and upload sediment, macroinvertebrate, and stream temperature data to GCWIN's AWQMS database. All historical data will be compiled and updated to the database by August 2022. These data will be used for the comprehensive watershed assessment. This data is currently available for public access. [Access data currently housed in the GCWIN database.](#)



Macroinvertebrate monitoring location at Williams Fork downstream from the reservoir and Kemp Breeze State Wildlife Area. *Photo courtesy of Timberline Aquatics*

Aquatic Resource Monitoring

Evaluating Grand County's aquatic habitat

Significant efforts to monitor the aquatic habitat in LBD's CEA are ongoing. These help to supplement extensive monitoring by other entities, including monitoring for Denver Water's Gross Reservoir Expansion Project, and Northern Water Municipal Subdistrict's Windy Gap FIRMing Project.

For its eighth consecutive year, LBD continued to monitor the health of aquatic resources within the Colorado, Fraser, and Williams Fork river basins. [Prior years monitoring results are available on the LBD website.](#)

This year, LBD invested \$55,289 to monitor stream temperature, sediment transport, and macroinvertebrate (aquatic organism) populations. Monitoring was done in accordance with the [2021 Aquatic Resource Monitoring Plan](#), which is prepared by the LBD Monitoring Subcommittee. In addition, LBD considers data from fish population surveys conducted by CPW in the Fraser and Colorado rivers. [All monitoring reports can be accessed on LBD's website.](#)

Macroinvertebrate communities are a good indicator of overall stream health. To assess the existing state of macroinvertebrate communities, LBD monitored macroinvertebrates at 11 sites in the Fraser, Colorado, and Williams Fork river basins in 2021. In addition, emergency funds were allocated for macroinvertebrate sampling in the event of an

**\$55,289 invested
for monitoring
efforts.**

unauthorized discharge event from Union Pacific Railroad's Moffat Tunnel. These monitoring efforts will help to assess compliance with Colorado's aquatic life standards and help assess the impacts of restoration efforts performed by LBD.

Monitoring of river substrate helps to evaluate the efficiency of flushing flows in key river reaches. To do this, LBD assesses physical conditions in riffles, sediment size and embeddedness were assessed in trout spawning habitat, changes in particle distribution, and evaluates algal conditions. At 15 sites, 400 count pebble counts and algae and embeddedness were assessed. Historic core sampling at spawning beds occurred at 5 sampling sites, and a Riffle Stability Index was measured at 9 sites.

LBD's stream temperature monitoring program supplements the existing stream temperature monitoring network within the CEA. The data collected helps the Operations Subcommittee make informed decisions about releases of flows that were determined to best maintain the ecological needs of the stream in relation to its fisheries.

Additionally, the Monitoring Subcommittee tracks:

- Data collected by LBD partners and others under contracts with entities like GCWIN and the U. S. Geological Survey, which helps to inform the state's 303(d) list of impaired waters: water bodies that are not meeting water quality standards or designated uses.
- Colorado River Connectivity Channel pre-project monitoring, and
- River restoration efforts by ILVK.



The East Troublesome fire as seen from Red Dirt Hill above Granby.
Photo courtesy of Jon Ewert

Mulching the East Troublesome Fire burn scar. *Photo courtesy of Paul Klees, Assistant General Manager at C Lazy U Ranch*





Volunteers assist Colorado Parks and Wildlife with measuring fish population on the Fraser River. Photo courtesy of Denver Water

What's next for Learning By Doing

Moving forward through the contributions of dedicated stakeholders

In 2022, LBD will begin the process of revising and updating the SMP. The three main objectives will be to (1) continue to update and improve the SMP to understand desired stream conditions and management goals, (2) perform a comprehensive watershed assessment to better understand conditions of the aquatic habitat within the CEA, and (3) expand stakeholder engagement.

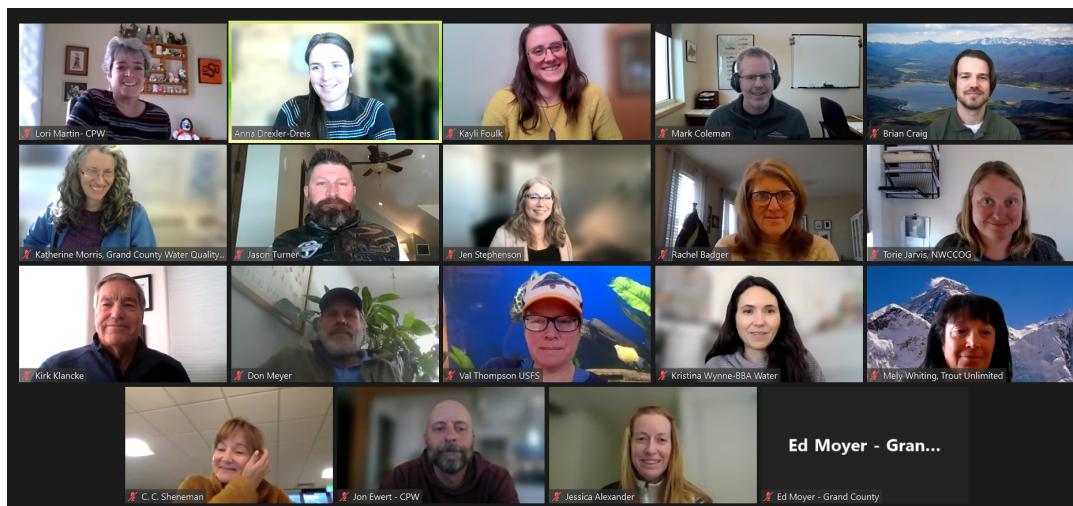
LBD will also focus on prioritizing restoration projects in 2022. The Management Committee will pick from one or two of the proposed stream restoration projects in the Fraser River, Ranch Creek, and/or Willow Creek.

Partner Support

Each LBD partner organization dedicates numerous hours of staff and/or consultant time, funding, and valuable expertise to LBD efforts. In addition, what we have accomplished so far would not be possible without the funding assistance of the CWCB, USFS, USFWS — and the generosity of Devil Thumb's Ranch.

To all our partners, thank you.

For more information, visit grandcountylearningbydoing.org.



LBD continued to meet on Zoom throughout 2021 to stay safe during the pandemic. Photo courtesy of Anna Drexler-Dreis