

With Your Support

It's been another big year at the Deschutes River Alliance.

With your generous support in 2016, we've continued our important scientific work, gathering extensive data that we are now using to create detailed reports on the sources and extent of the ecological degradation occurring in the lower Deschutes River. This scientific research has also provided a strong foundation for the DRA's advocacy efforts on behalf of all who treasure a healthy Deschutes River-including a lawsuit, filed in August, addressing Clean Water Act violations at the Pelton-Round Butte Hydroelectric Project. This lawsuit is an important step to recovering the Deschutes River we once knew, and has drawn national attention for the important legal issues raised around water quality enforcement at hydroelectric projects across the country. We sincerely thank you for your support in making this critical science and advocacy possible.

The year also brought a new face to the DRA. This spring, we regretfully lost our then-Executive Director Andrew Dutterer, who accepted a position with the Oregon Watershed Enhancement Board. However, we feel extremely fortunate to have hired Jonah Sandford, who has stepped in as an extremely competent Executive Director as well as the manager of our legal team.

Again, none of this would be happening without the support of our many donors: the individuals, corporations, foundations, and fellow environmental organizations that make it possible for the DRA to accomplish our mission. We are excited to share with you our many achievements this year, and to inform you of our plans for 2017. Together, we are going to ensure that cooler, cleaner water returns to the lower Deschutes River.

Message from the Executive Director



When we look back on 2016, at some point in the not-too-distant future, I think we'll describe it as the year things started to change for the lower Deschutes River. This has been the year the pieces were put in place to begin restoring the river we all love.

It's long overdue. Since 2010, shortly after operators at the Pelton-Round Butte Hydroelectric Complex began using a new Selective Water Withdrawal tower at Round Butte dam, the river hasn't been the same. Nuisance algae, decreased aquatic insect populations, changes in hatch timing, higher water temperatures in the spring and summer, and other dramatic ecological changes. You've seen it.

Thankfully, there is an incredible passion out there for this river. So many people that have refused to accept that these river conditions are the new normal. This includes the DRA's Board of Directors, a group that has donated thousands of hours of their time, along with their remarkable expertise, to understanding what is happening on the lower Deschutes. It includes the DRA's many supporters, like you, who will not forget the river that existed before SWW operations began, and have donated time, money, equipment, and property access to help us bring that river back. Your feedback and excitement for the DRA's work has helped us make sure we're on the right track, and we couldn't be more grateful.

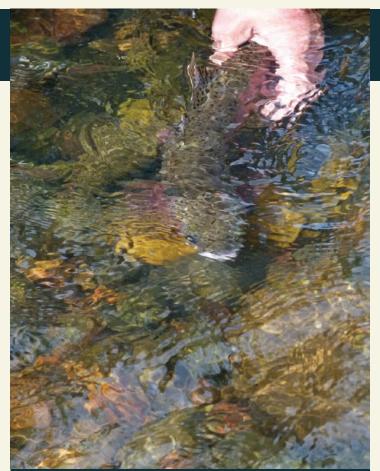
The efforts are paying off. The DRA Science Team is now working on multiple reports, using extensive data collected over the past three years. These reports will paint the most complete picture yet of the sources and extent of the ecological changes occurring in the lower Deschutes River and Lake Billy Chinook. Our hope is that these reports will serve as a roadmap for Basin stakeholders as we attempt to restore the lower river ecosystem.

This extensive scientific work, along with the depth of knowledge on the DRA Board, make us uniquely positioned to advocate for a healthy lower Deschutes River. And that's what we've been doing. In August, the DRA filed suit against Portland General Electric for violations of the Clean Water Act at Pelton-Round Butte. It's a fight we're ready for. We believe it will be a critical first step in restoring the ecology of the lower river.

So lets keep this momentum going. With your help, I truly believe that 2016 will be the year we talk about, when we're out on the river with our kids and grandkids, telling them the story of the lower Deschutes River. The year that the tide shifted back toward the fish, insects, birds, bats, and humans who call the river home.

It's a great story, and I can't wait to tell it.

Jonah Sandford Executive Director Deschutes River Alliance



OUR MISSION

The Deschutes River Alliance is a science-based advocacy organization seeking solutions to basin-wide threats to the health of the Deschutes River and its tributaries. We advocate for water quality, a healthy ecosystem, and for the establishment and protection of robust populations of resident and anadromous fish throughout the river's entire watershed.



Accomplishments and Next Steps

Since 2010, the lower Deschutes River has experienced alarming, negative ecological changes that appear to be increasing in severity each year. Observations from a wide range of river users have proven so compelling that a thoughtful and comprehensive scientific investigation was clearly needed to explain what was driving these changes. The Deschutes River Alliance formed in 2013 to do just that.

In 2016, the DRA has continued to work tirelessly in pursuit of a Science Work Plan that was developed in early 2014. The DRA has also undertaken numerous advocacy actions in parallel with this scientific research to influence management solutions to the issues facing the Deschutes River basin. Science and advocacy efforts will continue and expand in 2017.

• Completed another year of water quality and biological data collection (see 2016 Science Summary for details)

- Filed suit in federal court against Portland General Electric for Clean Water Act violations at the Pelton-Round Butte Hydroelectric Complex.
- Responded to PGE's motion to dismiss our Clean Water Act lawsuit. PGE claimed in the motion that state agencies and the U.S. Environmental Protection Agency, along with citizens and citizen groups, have no authority to enforce Clean Water Act provisions at hydroelectric dams.
- Filed comments on the new water quality certification for the Opal Springs Hydroelectric Project.
- Raised awareness of the large number of smallmouth bass present in the lower Deschutes River this summer.
- Convened a group of aquatic entomologists and stream ecologists to evaluate Portland General Electric's two-year
 aquatic macroinvertebrate and periphyton study report. The report, by PGE and its contractor (R2 Resource
 Consultants), was later revoked on the demand of the Oregon Department of Environmental Quality, due to poorly
 conducted analysis of data.
- Continue legal action to ensure Pelton-Round Butte complex complies with all water quality requirements.
- Complete reports on water quality conditions and biological changes in Lake Billy Chinook and the lower Deschutes River, based on findings from extensive data collected through 2016.
- Expand scientific research to gain a more complete understanding of the sources of ecological changes occurring throughout the basin.
- Begin to explore alternative anadromous fish reintroduction options. The DRA supports the goal of reintroduction
 of anadromous fish above the dam complex, but the current approach has proven to be flawed. The lack of
 success of fish reintroduction, coupled with the water quality and biological impacts in the lower Deschutes River,
 requires that a different approach to reintroduction be identified and implemented.
- Initiate an investigation into the impact of fish reintroduction on wild, native redband trout in Whychus Creek.
- Evaluate the loss of native redband trout in the Crooked River.
- Showcase new documentary film on the ecological changes occurring in the lower Deschutes River.



The Deschutes River - Today and Tomorrow

The River Today

Since 2010, shortly after the Selective Water Withdrawal (SWW) tower began operating in Lake Billy Chinook, fishing guides and long-time anglers have noticed a number of disturbing changes on the lower Deschutes River. These include shifts in the timing of insect hatches and a decline in their abundance, a drop in water clarity due to higher turbidity, and more difficult wading as a result of very slick algal growth across the stream bottom (on a river that readily tests ones wading skills without the addition of slicker rocks). The Deschutes River Alliance (DRA) has been documenting these changes through a variety of studies and reports.

The data we've gathered confirms what anglers have been seeing. This year, pH, one of the keystone water quality parameters and an effective indicator of high nutrient levels and excessive algal growth, consistently exceeded the basin standard of 8.5 from late April until well into October. Other pH data, from the Oregon Department of Environmental Quality's (ODEQ) own sample site at the bridge in Warm Springs, shows a clear increase in pH immediately following the startup of the SWW tower. And PGE's own water quality monitoring shows over 1,000 water quality violations related to pH, temperature, and dissolved oxygen since the tower began operation. These violations have led to the lawsuit filed by the DRA against PGE for non-compliance with Pelton-Round Butte's water quality certification.

The data collected by DRA, as well as by ODEQ and PGE's own water quality monitoring, leaves little doubt that the SWW tower's operation has caused unintended degradation of water quality and aquatic life in the lower Deschutes River. If the DRA's lawsuit and other advocacy efforts succeed, changes in operation at the SWW tower will hopefully result in a return to water quality that existed prior to SWW operations. The question then arises: how will the river respond? Will we again see the vibrant ecosystem in the lower river that we remember, that made the lower Deschutes River such a special place?



Stream Recovery

If there is one thing that can be said about aquatic ecosystems, especially streams and rivers, it's that the animals that live there are resilient. This is a critical trait given the dynamic nature of rivers. Droughts and floods come and go, riffles one year become pools the next, and gravel bars disappear in one place and emerge in another. Major impacts like extreme floods and drought definitely impact aquatic life, but recovery can be surprisingly quick. For example, one study

showed that after a large flash flood in Utah, aquatic insect numbers went from near zero immediately after the flood to over 1,000 per square foot two months later (Hynes 1972).

Streams have also shown amazing powers of recovery following large human-related impacts. Take the catastrophic spill of almost 20,000 gallons of herbicide into the Upper Sacramento River in 1991.

The spill wiped out all aquatic life—plants, animals, and fish—for miles downstream. Studies ten years later showed nearly no sign of the spill, with aquatic insect and trout populations thriving. It is also worth noting that recovery occurred at different rates for different organisms: within one year for algae, followed by aquatic insects



after two to three years, and then trout, which returned to pre-spill numbers six to seven years after the spill (Koch et.al. 2007). There are also hundreds, if not thousands, of examples of sewage plants and industrial outfalls that have been cleaned up over the last few decades, with the aquatic life in these rivers quickly improving.

The River Tomorrow

The resilient nature of aquatic life bodes well for the lower Deschutes River. If we can successfully reverse the water quality impacts to the lower river, then the rapid changes we saw in insect hatches and excessive algal growth following the startup of the SWW tower can be followed by an equally quick return to conditions prior to the SWW. And without a return to cooler, cleaner water in the lower Deschutes River? With your help and support we can make sure we won't have to find out.

Hynes, H.B.N. 1972. The Ecology of Running Waters. University of Toronto Press.

Koch, D.B., A. Arteaga, J. Pedri, E. Pert, D. Welsh. 2007. Final Report on the Recovery of the Upper Sacramento River Subsequent to the 1991 Cantara Spill. Cantara Trustee Council.

Rick Hafele, a member of the DRA Board of Directors, has worked as an aquatic biologist for over 30 years, specializing in using aquatic communities as water quality indicators. While working for the Oregon Department of Environmental Quality, Rick was instrumental in developing the state's bioassessment program and writing Oregon's water quality standards for aquatic life.



More About the DRA's Clean Water Act Lawsuit

The DRA's efforts to restore cooler, cleaner water to the lower Deschutes River took a major step forward in August, when the DRA filed a Clean Water Act lawsuit against Portland General Electric. The lawsuit alleges over 1,000 violations of the Oregon Department of Environmental Quality's water quality certification for the Pelton-Round Butte Hydroelectric Project.

Since 2010, shortly after the Selective Water Withdrawal tower commenced operations at Round Butte Dam, the dam complex operators have consistently failed to meet clear water quality requirements for temperature, dissolved oxygen, and hydrogen ion concentration (pH). These unlawful operations have led to many of the ecological problems we're now seeing in the lower Deschutes River: increased levels of nuisance algae, changes in aquatic insect populations and hatch timing, higher spring and summer water temperatures, and changes to insectivorous populations like trout, bats, and songbirds.

PGE has yet to respond to the substance of these allegations. Instead, PGE has filed a motion to dismiss the case, arguing that citizens (including groups like the DRA), states, and the EPA have no authority under the Clean Water Act to enforce hydroelectric facilities' water quality certifications. We believe this interpretation of the Clean Water Act finds no support in the law. It would essentially leave hydroelectric facilities with no water quality-related oversight. This argument truly has national implications for water quality, and the DRA will continue to aggressively counter PGE's motion to dismiss.

We believe this lawsuit is a critical first step to restoring the vibrant aquatic ecosystem that existed in the lower Deschutes before SWW operations began. With your help, we feel confident we will prevail. A legal victory will ensure PGE complies with all state water quality standards, as well as all of its license requirements. Keep an eye on the DRA blog for updates on this important action on behalf of the river we all love.



2016 Science Summary

2016 has been an important year for the DRA Science Team. We've completed two major field-sampling efforts, and have added another year's worth of data to our adult aquatic insect observation database. And we are now nearly a year into a continuous water quality monitoring project in the lower Deschutes River. Here's a summary of our efforts in 2016:

- In August we completed a fifteen-month monitoring effort in and around Lake Billy Chinook. This included sampling the forebay at Round Butte Dam at the surface and at depth, sampling the reservoir tributaries at their mouths, and sampling the Deschutes River below the Pelton Reregulation Dam. The data collected in this study will provide insights into the behavior of the reservoir throughout the year, and the impact of surface water withdrawal as opposed to bottom water draw at Round Butte Dam.
- In September we finished a yearlong sampling of benthic (river bottom) aquatic insect populations at two locations in the lower Deschutes River. Samples have been analyzed by Aquatic Biology Associates, a consultant specializing in aquatic insect identification and assessment with over 30 years of experience in Oregon. We have contracted with university staff to complete a detailed statistical analysis of these data to assess changes in aquatic insect populations.
- We are completing our fourth year of the adult aquatic insect hatch observation study. This will give us a look into the seasonal and annual trends in aquatic insect hatches on a relatively long-term basis.
- At the end of 2016 we will have had a recording device implanted for eleven continuous months in the lower Deschutes River a mile below the Pelton Reregulation Dam. We will continue to leave this device in place for all of 2017. It measures a number of water quality parameters on an hourly basis, day in and day out. The data gathered by this device makes it possible to document the water quality violations occurring in the lower river. We are extremely grateful for the generosity of one of our supporters in making this monitoring possible.

These projects have generated a huge volume of data, which we will be open sourcing and posting on our website by the end of the year. Over the next few months we will complete our own analysis, and by the end of winter 2017 we will have completed reports that will make a major contribution to understanding the hydrology and stream ecology of the lower Deschutes River.

In 2017, we will be modifying our focus on water quality to include data acquisition in the tributaries to Lake Billy Chinook, in an effort to better understand the algae problem there and in the lower Deschutes River. We will continue to do water quality and aquatic insect monitoring in the lower river, but with more reliance on automated data acquisition.

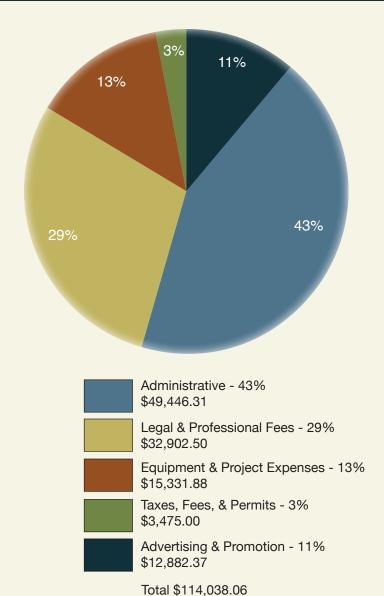
We greatly appreciate the support we've been given in doing this important work on behalf of the lower Deschutes River.





Photos courtesy of Brian O'Keefe, Greg McMillan, and Andrew Dutterer

Financial Summary



Deschutes River Alliance Program & Operating Expenses – 2016

As in previous years, the vast majority of the Deschutes River Alliance's expenses for 2016 have fallen into two categories. The first is for scientific research in the lower Deschutes River and Lake Billy Chinook, designed to help us gain a more complete understanding of the causes and extent of the ecological changes occurring in the Deschutes basin. The second main category is for staffing resources, to take the information gathered and advocate for the management changes we believe are necessary to protect the river we all love.

Legal and professional expenses represented a larger share of total expenditures during 2016. This is attributable to initiation of our legal action to enforce the Clean Water Act. We anticipate that these expenditures will increase during 2017.

The DRA will always take pride in getting the most possible out of every dollar spent. We continue to be a very lean operation, supported by one paid staff member and an incredible number of volunteer hours by our Board of Directors and other unpaid volunteers. The DRA's many accomplishments over the first half of this year would truly not be possible without your support. We are grateful for our supporters' investment in the Deschutes River Alliance and the future health of the lower Deschutes River.

*The Deschutes River Alliance is a 501(c)(3) nonprofit organization

*Program & Operating Expenses represent data from January 1 – November 1, 2016

Consider Donating Stock to the DRA

The market is near all-time highs, and federal income tax rules offer extremely favorable treatment to persons donating appreciated stock or other property to tax-exempt entities. You should consult your tax adviser for specifics, but as a general rule you may donate appreciated stocks or other securities at their market value without regard to your cost in the security. A sale of the security to generate cash will result in a capital gains tax liability, while a gift of the shares will result in no capital gains tax. Contact Jonah at jonah@ deschutesriveralliance.org for more information about this donation alternative.



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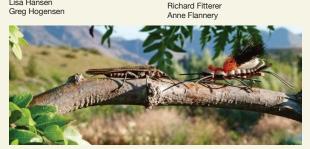
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