



# Inside Reintroduction

## How – and why – partners in Central Oregon are working together to restore salmon and steelhead runs to the Deschutes River Basin

The Deschutes River system is an Oregon icon, treasured for its scenic beauty, the life-giving water it brings to the high desert and its world-class salmon, steelhead and trout fisheries. But the river and its tributaries are more than that: they're sacred to the people of the Confederated Tribes of Warm Springs and an integral part of the culture and economy of the region.

As co-owners of the Pelton Round Butte hydroelectric project - an important source of emissions-free energy - the Confederated Tribes of Warm Springs and Portland General Electric pay close attention to what's happening on the river and in the surrounding basin. We're scientists, natural resource managers and Tribal members, so we know that changes to the Deschutes can spark questions for river users.

This pamphlet addresses some of those questions – the ones we've heard, and the ones we're actively asking and studying. The information is based on robust and high-quality scientific data, as well as traditional ecological knowledge from generations of Tribal experience.

You can find more at  
[portlandgeneral.com/deschutes](http://portlandgeneral.com/deschutes)

We also welcome questions at  
[deschutes.passage@pgn.com](mailto:deschutes.passage@pgn.com)  
or **541-325-0960**.





The Creator gave us gifts to take care of: water, fish, wildlife, roots and berries. Since time immemorial, these are what guide our way of life, spiritually, gives our connection to the lands and is what helps guide us in how we manage our lands. With the arrival of colonization, we had to negotiate a treaty with the US government to relinquish our lands, and it upset the balance we had long sustained. But today, we continue to resist the erasure of our voices in matters concerning our sovereign environmental, cultural and economic interests, and we assert the right to determine our destiny.

As a co-owner in the Pelton Round Butte hydroelectric project, we work together with our neighbors to restore our natural resources and secure the prosperity of our Tribes. In all things, we lead with deep understanding of Tribal ecological knowledge and fact-based information of natural resources, whether we are developing economic benefits or fish and wildlife restoration for future Tribal members. These are actions taken to preserve, protect and enhance our Tribal sovereignty that has existed, along with our songs, dances, prayers and longhouses, on the Columbia Plateau from time immemorial.

**– Jonathan W. Smith, Sr.**

*Chairman*

Tribal Council of the Confederated Tribes of the Warm Springs  
Reservation of Oregon

For half a century, dams on the Deschutes River blocked the migration of ocean-going salmon and steelhead. In 2005, when the Pelton Round Butte hydropower project was relicensed, we began an ambitious effort to change that. Together with the Confederated Tribes of Warm Springs and numerous partners in Central Oregon, we're using science-based strategies that benefit Deschutes Basin fish and wildlife, all while generating clean electricity that's critical to Oregon's clean energy transformation.

Achieving our long-term goals for sustainable, harvestable fish runs will require more of what's already working: Tribal leadership built on generations of ecological knowledge, collaboration throughout the basin and ongoing dedication to strategies tested by sound science.

– **Debbie Powell**  
*Vice President of Utility Operations*  
Portland General Electric





“Our Tribes work together to protect Tribal values, sovereignty, and our treaty and other rights. We exercise our sacred national sovereignty in order to preserve our traditional cultural ways that have existed for so many millenia in harmony with our homeland; and to provide for the well-being of our people for time immemorial.”

– **Jonathan W. Smith, Sr.**  
**Chairman**  
Tribal Council of the  
Confederated Tribes of the  
Warm Springs Reservation  
of Oregon



# Natural Resource Management

## 1. What is the Deschutes fish reintroduction program?

From the 1950s to 2010, dams on the Deschutes River blocked the migration of ocean-going salmon and steelhead, also known as anadromous fish. In 2005, when the Pelton Round Butte hydropower project was relicensed, PGE and the Confederated Tribes of Warm Springs began an ambitious effort to change that, alongside many partners in the Deschutes River Basin. The reintroduction program is a long-term project to restore anadromous fish runs to a fully reconnected Deschutes River Basin.

- Restoring these runs includes aiding the downstream migration of juvenile fish as well as the upstream return of adults, which spawn in the tributaries above Lake Billy Chinook. We also invest in habitat restoration to help these populations thrive.
- To capture juvenile fish, we built the Selective Water Withdrawal (SWW) – a fish collection and water-mixing facility located at Round Butte Dam. Young fish are collected at the SWW and released downstream of the project’s ReRegulating Dam to continue their journey to the ocean.
- Returning adult salmon and steelhead are collected at the downstream Pelton Trap and transported back to Lake Billy Chinook to continue traveling above the dams to their spawning habitat.
- Reintroduction strategies are always evolving, guided by the latest science and best practices from peer programs.

## 2. Is the Deschutes River ecosystem healthy?

While there is no single measurement that can provide a complete answer as to whether any river is healthy or not, there are many ways in which the Deschutes is thriving. Record fall Chinook migration, robust fish and bird populations and successful habitat restoration projects are all signs that the river basin continues to support a healthy ecosystem.

- The SWW has allowed river temperatures to follow more natural seasonal patterns.
- Redband trout populations and their insect food sources remain robust.<sup>1</sup>
- Fall Chinook populations in the lower Deschutes have increased. The Oregon Department of Fish and Wildlife (ODFW) estimates that from 1977 to 2009, an average of around 12,000 fall Chinook entered the Deschutes River each year. After the SWW was constructed, this number has grown to an average of nearly 22,000.

- The latest ODFW angler surveys have shown excellent catch rates, and the Deschutes remains a world-class destination for anglers and other outdoor enthusiasts. <sup>ii</sup>
- Anecdotal reports and outside “studies” claiming to prove the river is in trouble typically have not gone through a rigorous, independent review process. Scientifically sound studies are reviewed by independent scientists to ensure their integrity. PGE, the Tribes, ODFW and other partner agencies routinely submit their work for this kind of scrutiny.
- There have been changes on the Deschutes – some driven by river management, others driven by external factors like climate change and agriculture – but we are confident that we’re making progress toward our shared long-term goals for river health and fish recovery.

### **3. Who makes decisions regarding the Deschutes fish reintroduction program?**

The Pelton Round Butte Project is co-owned and jointly operated by the Confederated Tribes of Warm Springs (CTWS) and Portland General Electric (PGE). We operate under the direction of multiple agencies and within the parameters of our hydropower license, which is issued by the Federal Energy Regulatory Commission (FERC). Management decisions are built on collaboration, sound science and comprehensive regulation.

- The Pelton Round Butte Project is regulated by FERC, the Oregon Department of Environmental Quality (DEQ), the Confederated Tribes of Warm Springs Water Control Board (WCB), U.S. Fish and Wildlife Service (USFWS), the Warm Springs Branch of Natural Resources, the National Oceanic and Atmospheric Administration (NOAA Fisheries) and Oregon Department of Fish and Wildlife (ODFW). These agencies review, approve and help inform management decisions.
- Representatives from state, federal and Tribal agencies and conservation organizations come together to form the Pelton Round Butte Fish Committee. PGE and CTWS consult with this committee in all project management decisions that affect fish, and prior to submitting any study plans or reports to our federal regulators.
- Additionally, as a sovereign, federally recognized Native American Tribe, the Confederated Tribes of Warm Springs have the right and responsibility to manage their natural resources to the benefit of wildlife, the environment and Tribal members. The fish reintroduction effort reflects those priorities.

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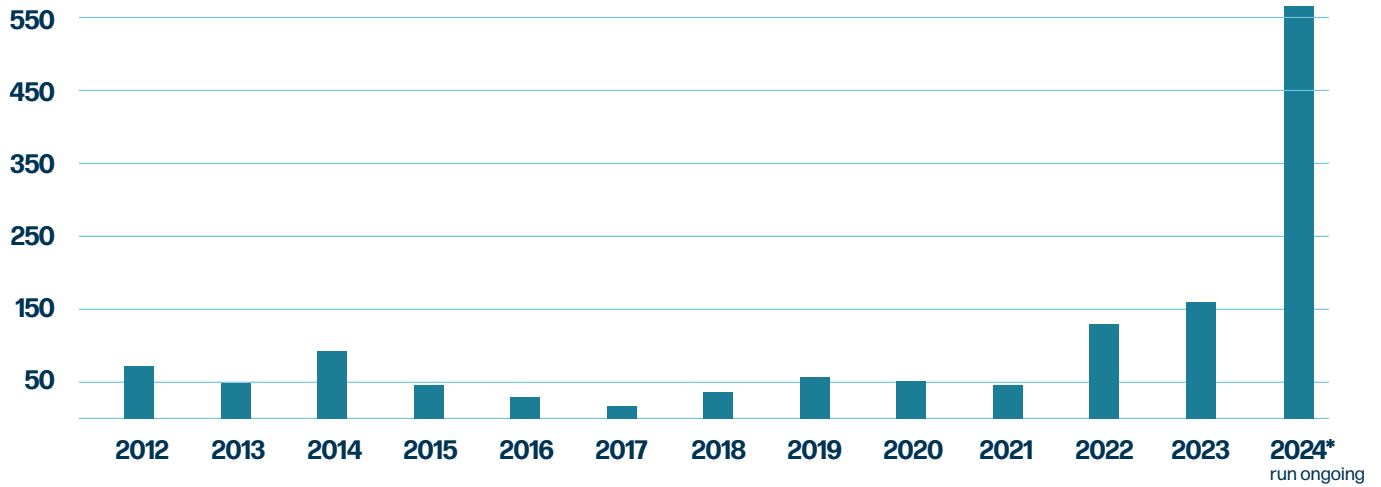
Fish reintroduction programs are often long-term efforts. For example, restoring Okanagan sockeye in British Columbia took several decades of persistent, collaborative work by Tribes, federal agencies, local businesses and nonprofits. The lengthy project was well worth the results, restoring fish populations from near extinction to harvestable numbers.

#### 4. Is the Deschutes reintroduction program a success?

While we have not yet reached our long-term goals for self-sustaining, harvestable runs of salmon and steelhead, we are seeing incremental progress. The science suggests we're on the right track.

- Our biologists monitor multiple sites and collect data year-round to help us understand river conditions and how several variables affect water quality and fish survival over time.
- Together with the Fish Committee and our regulators, we evaluate our progress and make thoughtful course corrections when the science supports them – an approach known as “adaptive management.”
- For example, we now generate power at night during peak fish migration to attract salmon and steelhead to the SWW when they're most active. In recent years, we've installed a net that guides fish toward the collection area, as well as a stress relief pond to allow fish more time to recover after handling and release them at night when they are less vulnerable to predation. These changes have shown positive results, and we expect to see more over time.
- In recent years, we've begun releasing excess hatchery broodstock upstream of the project – these are adult Chinook and steelhead that returned to the Deschutes and are not needed for hatchery production. These adults are screened for disease, monitored post-release, and are genetically identical to the smolts (young fish) planted in the upper basin. Using adult fish in this way is a common strategy employed by other reintroduction programs, and their success has informed our evolving approach.
- Patience is essential when making and evaluating our decisions because anadromous fish life cycles last four to eight years. This means it may take several years for us to see the results of our most recent changes.
- While the measured pace of high-quality science can be frustrating at times, we are more confident in our decisions because we know they are informed by accurate data and a thorough review process.
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## Adult steelhead returns



Adult steelhead released upstream of Round Butte Dam since the reintroduction program began.

## Chinook and steelhead upstream of Pelton Dam



Construction of the SWW marked the start of an ambitious effort to restore salmon and steelhead runs to the Deschutes River Basin. These runs had been cut off for decades, following dam construction.

## 5. What are the Confederated Tribes of Warm Springs and PGE doing to improve habitat in the Deschutes River Basin?

The Tribes and PGE are deeply invested in the health of the entire Deschutes Basin and contribute significantly to habitat restoration efforts and water quality through the [Pelton Round Butte Fund](#).



- We've supported 58 habitat projects since 2005 and invested over \$16 million to remove fish passage barriers, stabilize stream banks, and restore channels and floodplains.
- This includes over \$3.5 million specifically invested in habitat restoration efforts in the Crooked River Basin, an agricultural area that disproportionately affects water quality throughout the Deschutes.
- Water availability, especially during drought years, is a critical issue for salmon and steelhead in the Deschutes Basin. Through the Pelton Water Fund, the Tribes and PGE have also allocated more than \$10 million to protect instream flow for fish. Among other benefits, this has resulted in the long-term protection of over 50 cubic feet per second (that's over 33 million gallons of water per day) of instream flow for fish.
- Through our [Pacific Lamprey Fund](#), we support science and conservation to better understand and protect a vital, often misunderstood native fish species.

### Confederated Tribes of Warm Springs:

In 1855, the Confederated Tribes of Warm Springs retained full control over our own reservation with extensive off-reservation rights. As a sovereign nation, we work together basin-wide with our neighbors to restore our natural resources and secure the prosperity of our Tribes.



### Portland General Electric:

As a utility company, we don't have jurisdiction beyond the areas described in our operating license. That's why we collaborate with the Tribes and with dozens of non-governmental organizations to advance initiatives throughout the Deschutes River Basin that complement our work at the Pelton Round Butte Project, while always considering potential impacts to customer prices.







Pre-restoration  
July 2016



Post-restoration  
Oct. 2016



Three years  
Post-restoration  
July 2019

*The Whychus Canyon Preserve Restoration Project was supported by the Pelton Fund from 2014 through 2018 and restored abundant and complex habitat along a mile of Whychus Creek. This area is critical for all life stages of newly reintroduced Chinook salmon and steelhead trout.*

*Photo courtesy of Upper Deschutes Watershed Council*



We believe that our efforts throughout the Deschutes basin will increase the availability of fish for communities along the entire river, both upstream and downstream of the project.

## **6. What about the Lower Deschutes River, downstream of the Pelton Round Butte Project?**

Fish need the whole river. Our long-term goals for sustainable, harvestable fish runs in the Deschutes basin can only be achieved by investing in the ecosystem both above and below the dams.

- One example of our work below the project is at Trout Creek Ranch — a historic homestead site on a tributary to the lower river, restored for the benefit of fish and wildlife. To improve spawning habitat, we planted native trees and restored the natural stream channel and floodplain. Summer steelhead were detected spawning in the area the year following construction. We continue to invest in Trout Creek through the Pelton Fund and ongoing management of the Trout Creek Ranch property.
- We also work to move gravel and large woody debris, both of which are blocked by the dams, into the Lower Deschutes. These actions help maintain natural river processes and habitat for wildlife in the lower river.
- We believe that our efforts throughout the Deschutes basin will increase the availability of fish for communities along the entire river, both upstream and downstream of the project.



“The powerful rivers of the Pacific Northwest are one of our region’s greatest strengths. Our responsibility, in managing these rivers for their clean electricity, is to preserve and protect them using science-based strategies.”

– **Megan Hill**  
*PGE Senior Manager of  
Environmental Science*



# Water

## 7. How do the Tribes and PGE manage water temperature in the Deschutes?

The Selective Water Withdrawal (SWW), completed in 2010, is both the centerpiece of the Pelton Round Butte Project’s Fish Passage Plan and allows for water temperature management downstream of the project.

- The SWW works by creating attractant currents in the surface of Lake Billy Chinook, guiding in juvenile fish and enabling their transport downstream.
- By mixing water from both the surface and depths of the reservoir, the SWW also reduces the project’s effect on seasonal temperature patterns in the Lower Deschutes. The water blend released downstream targets what temperatures would be like without the dams’ presence, restoring natural seasonal patterns.
- This restored temperature regime helps juvenile salmon emerge from their spawning gravel earlier. For fall Chinook, this allows the juveniles to grow larger and leave earlier, so they have higher survival rates when they enter the ocean – as reflected in the higher average return rates of adult fall Chinook the Deschutes has enjoyed since the system became operational.



To create more natural and more optimal conditions for fish, we add the available cold water to our blend strategically, to closely match without-project temperatures for as much of the year as possible...

## 8. Why is surface water from Lake Bill Chinook, which is warmer than water from deep in the reservoir, released downstream throughout much of the year? Why not release cold water year-round?

Cooler water from the depths of Lake Billy Chinook is a finite resource that can be depleted if released too early in the year.<sup>iv</sup> If we do that – as we did before the SWW was constructed – we will cause the river to be unnaturally warm in the late summer and early fall, when migrating salmon and steelhead need cool water the most.

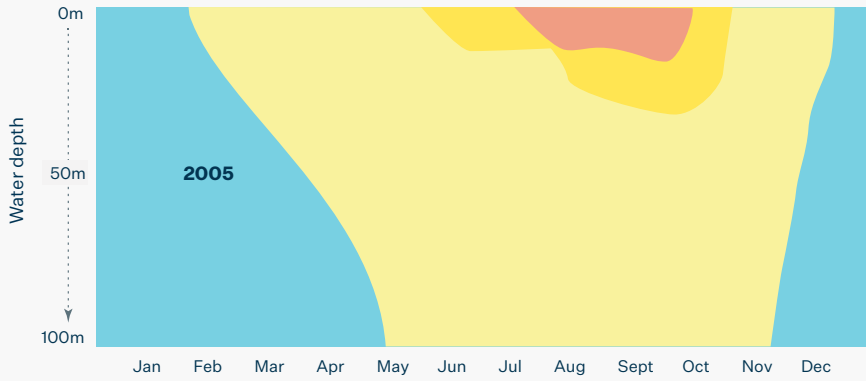
- To create more natural and more optimal conditions for fish, we add the available cold water to our blend strategically, to closely match without-project temperatures for as much of the year as possible – the temperature we would expect the river to be without the dams' presence.
- This approach is supported by guidance from the Environmental Protection Agency (EPA), which identified that cooler temperatures in August and September are needed to maintain the critical cold-water refuge of the Deschutes.<sup>v</sup>
- While the water in the bottom of the reservoir is cooler than the water at the surface during the summer months, it's also low in dissolved oxygen, which fish need to breathe. Improving dissolved oxygen in the Lower Deschutes River is another intended outcome of the SWW.
- Even on the hottest days, water released from the project rarely, if ever, exceeds 62° Fahrenheit. A **USGS gage located approximately 700 ft downstream** of the project provides real time data, and is the most accurate source of information regarding temperature and flows discharged from the Pelton Round Butte project, prior to the influence of other tributaries or developments.

## 9. What are the primary drivers of water quality changes in the Deschutes?

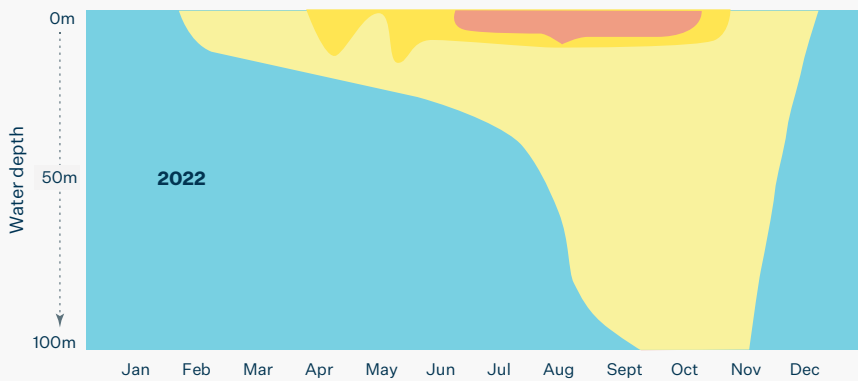
All rivers in the American West, including the Deschutes, are experiencing the effects of climate change.

- Wildfires in the upper basin can increase nutrient input and sediment loading and can elevate water temperatures by burning streamside vegetation. As the size and frequency of wildfires increase, these effects may become more pronounced.<sup>vi</sup>
- Snowpack and precipitation directly affect the amount of water available throughout the Deschutes, both above and below the project. Drier, warmer winters are resulting in less available cold water, making it increasingly difficult for project managers to conserve and strategically release bottom water from Lake Billy Chinook.

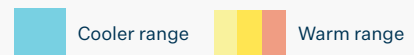
## Lake Billy Chinook reservoir temperatures



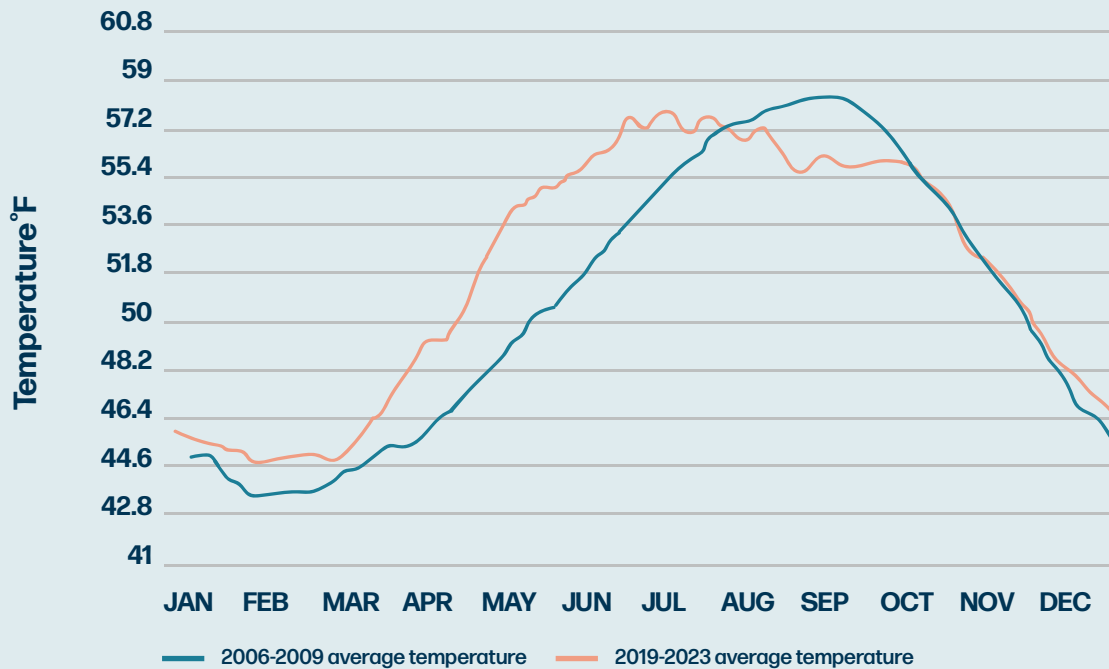
Before the SWW was built, cold water in Lake Billy Chinook was depleted by early summer, resulting in unnaturally warm temperatures in the lower river from August through November.



With the SWW, we can more carefully manage the limited resource of cooler water, allowing us to preserve and release colder water into the Lower Deschutes in the late summer and early fall when it's needed most.



## Deschutes River temperature



Above: SWW operations (2010 onward) have helped shift river temperatures to a more natural pattern, with warmer water in the late spring and cooler, safer conditions for migrating fish in late summer and early fall.



As stewards of this area since time immemorial, the Confederated Tribes of Warm Springs know how important it is to manage the Deschutes as an interconnected system – not as separate pieces we can manipulate however we want.

## **10. Why don't the Tribes and PGE use the SWW and the dams to insulate the lower Deschutes River from the conditions of the upper basin?**

It's all one river. As stewards of this area since time immemorial, the Confederated Tribes of Warm Springs know how important it is to manage the Deschutes as an interconnected system – not as separate pieces we can manipulate however we want. The SWW is a tool to help us restore a more natural, connected ecosystem.

- The condition of the Lower Deschutes River is, in many ways, a direct reflection of water quality in the upper basin tributaries and reservoir, especially with regard to flows, temperature and nutrients.
- Our license requires that we operate our project as “run of the river,” which means that flows entering Lake Billy Chinook are roughly the same as our output at the ReRegulating Dam. The SWW allows us to do the same for water temperature, creating a blend of surface and bottom water that more closely matches what downstream temperatures would be like naturally, without the project's presence.
- Higher temperatures in the tributaries are directly translated into higher temperatures downstream. Nutrient laden waters from the tributaries are discharged downstream as well. This means that improving water quality in the Deschutes will require basin-wide strategies, which will ultimately benefit all communities – both human and wildlife – upstream and down.

## **11. How are the Tribes and PGE studying water quality, and what changes are being implemented?**

- To learn more about river conditions and how things are changing, we conducted a comprehensive multiyear water quality study, which was completed in 2019. The findings are helping the Tribes and PGE, together with our partners and regulators, continue to make informed decisions and refine our strategies.
- Some of what we learned is summarized in the next few pages. The complete study, results and an FAQ can be found at [portlandgeneral.com/waterquality](https://portlandgeneral.com/waterquality).
- Soon after the study's release, the Fish Committee formed a water quality subgroup made up of representatives from federal, state and Tribal agencies as well as nonprofit environmental organizations. This group reviewed scenarios in the study and tested additional options.
- When deciding how to address water quality in the Deschutes Basin, there are many factors to consider. Both water quality and fish passage are important, and addressing one cannot come at the expense of the other. Additionally, some approaches that may benefit the Lower Deschutes River would have adverse effects on the project reservoirs, or vice versa. Other scenarios would improve temperatures in the river during one part of the year, only to deplete cold water from the reservoir and cause harmful temperatures during a later season. Managing these tradeoffs in an effective way is a balancing act, and it takes time.
- Ultimately, the study showed that current operations – with a commitment to ongoing adjustments supported by data – offer the best balance available.
- More information about some of the water quality strategies taking place in the Deschutes Basin can be found on the Fish Committee website: [prbfishcommittee.com/deschutes-basin-water-quality](https://prbfishcommittee.com/deschutes-basin-water-quality)

## 12. What water quality standards apply to the Pelton Round Butte project?

The Pelton Round Butte Project complies with the current standards applied by the State of Oregon and the Confederated Tribes of Warm Springs Water Control Board. When there are differences between the state water quality standards and the Tribal water quality standards, we comply with the most stringent of the two.

- The Oregon Department of Environmental Quality (DEQ) develops water quality standards to support recreation, drinking water, agriculture, industry, the needs of fish and other aquatic species, and other uses. Because there are salmonids (salmon and steelhead species) downstream of the Pelton Round Butte project year-round, we are held to some of the strictest year-round standards for temperature and dissolved oxygen.
- For example, when dissolved oxygen levels begin to decrease in the late-summer, we spill water at the ReRegulating Dam. This diverts water from the turbines so that no power is produced at this facility, and instead, water flows through a spillway into the river below, oxygenating as it drops. This process helps protect fish and provides oxygen for eggs downstream.
- The Environmental Protection Agency (EPA) requires states to review and revise water quality standards on a regular basis. The state standards applicable to a particular water body change from time to time based on advances in water quality science and technology, which may include updated scientific information like the most **recent fish-use data from ODFW**. Changes to state standards are made through a routine, state-wide rulemaking process conducted by DEQ that includes opportunity for public comment and requires EPA approval.
- In 2023, DEQ evaluated and updated water quality standards related to fish uses for temperature and dissolved oxygen using new data from ODFW, submitted to the EPA for approval. There were no changes made to the designated uses applicable immediately downstream of the Pelton Round Butte project, because the data continue to show similar fish-use patterns downstream of the project.
- The Confederated Tribes of Warm Springs' Water Control Board was formed in 1975 by the Tribes' Water Code – one of the oldest of its kind in the nation. Composed of Tribal members, the Board oversees the allocation and control of the Tribes' water resources and administers the Tribes' water quality standards program. This includes exercising delegated authority under the federal Clean Water Act and issuing Section 401 Water Quality Certifications for applications for federal licenses or permits. In any updates to the Tribes' water quality standards, the Board will follow a public engagement process consistent with the requirements of the Environmental Protection Agency.

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“As far back as 1905, the United States Supreme Court affirmed what we have known for millennia: The Tribe and its members are a ‘salmon people’ for whom fishing is ‘not much less necessary to [our] existence ... than the atmosphere [we] breathe.’”

– **Austin Smith, Jr.**  
*Natural Resources Manager* for the Confederated Tribes of the Warm Springs Reservation of Oregon



# Fish and Wildlife

## 13. How does the Selective Water Withdrawal benefit fish?

The Selective Water Withdrawal facility was put in place to solve two serious problems in the Deschutes basin: historic fish runs had been cut off for decades and seasonal river temperatures were being artificially disrupted. This was harmful to the river’s natural ecosystem as well as the Tribes’ heritage and culture.

- Before the SWW was built, juvenile fish development in the Deschutes River was stunted by artificially extended periods of cold temperature in the spring and early summer. These fish were smaller in size when migrating to the ocean, lowering their odds of survival.
- Some Deschutes users have expressed nostalgia for the river’s condition from 1964 to 2009, but these unnatural seasonal temperatures damaged native fish populations accustomed to the river’s natural rhythms. Instead of replicating these harmful temperatures, we use the SWW to create a water blend that more closely matches seasonal patterns we’d expect to see without the dams’ presence.
- The SWW also enables downstream fish migration. Prior to its installation, juvenile fish were unable to find the outlet to the lower river and couldn’t continue their ocean-going migration. Since construction, over 1.7 million juvenile fish have been passed through the system on their way downstream to the ocean, and collection rates have improved as we refine our strategies.
- The state, federal and Tribal regulatory authorities who govern how we operate, including the USFWS, NOAA Fisheries, DEQ and the CTWS Water Control Board, all mandate SWW operations in their requirements.



#### 14. Has there been progress in reintroducing salmon and steelhead runs to the Deschutes?

While there is still a long way to go, Deschutes basin fish runs are showing promising signs of recovery.

- Each year we collect between 38,000 and 480,000 smolts (juvenile fish) at the SWW. Changes to hatchery practices and operations have improved our ability to capture these smolts. From 2010 – 2016, our average capture was 24,865 spring Chinook smolts and 5,537 summer steelhead smolts. From 2017 – 2023, this grew to 24,985 Chinook smolts and 13,374 steelhead smolts.
- As we adapt our strategies to the latest data, we expect these numbers to continue rising over time. External factors like snowpack will cause natural variability from year to year.
- Chinook, sockeye and steelhead now have access to 250 miles of their historic habitat that were blocked for nearly 50 years. We are excited to see adult fish returning from the ocean and completing their natural life cycles upstream of the dams. We have located spawning fish near Bowman Dam on the Crooked River, in Whychus Creek at Camp Polk and upstream of Camp Sherman on the Metolius River.
- In 2022, more than 700 adult spring Chinook salmon were released above Round Butte Dam – the highest number since the reintroduction effort began in 2010. These fish were observed spawning in nature, and their offspring passed through the SWW in 2024 on the way to the ocean, starting the cycle over again.
- In the first six months of the 2024-2025 steelhead run, more than 800 have been passed upstream. Of these, 585 spent time in the upper basin as juveniles. The improved returns are likely a result of better ocean conditions, as well as changes we've implemented over time in response to the science. This includes acclimating smolts in-stream prior to release and releasing fish at night when predators are less active.
- While we are proud of our achievements and optimistic about the future, we also recognize that Deschutes fish are affected by external factors beyond our control. Weather, climate change and conditions in the Columbia River and Pacific Ocean all contribute to the success or decline of Deschutes fish runs in any given year and over time.
- As we perform studies and learn more, we're constantly adjusting to improve our methods over time. An overview of the Fish Committee's evolving strategies can be found at [prbfishcommittee.com](http://prbfishcommittee.com).

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*Lake Billy Chinook is one of the only locations where anglers can catch and keep bull trout. These fish require clean, cold water and are listed as threatened under the Endangered Species Act.*

### **15. Are conditions in Lake Billy Chinook safe for fish?**

Lake Billy Chinook supports thriving populations of juvenile and adult fish from several species, including a healthy number of resident kokanee and one of the strongest populations of bull trout in the nation.

- The reservoir is one of the only locations where anglers can legally catch and keep bull trout (over 24 inches in length), which are listed as threatened under the Endangered Species Act. These fish require clean, cold water, and are thriving in Lake Billy Chinook, where they spend a large portion of their lifecycle.
- Bull trout typically start their lives in the Metolius River, then migrate into Lake Billy Chinook as 1-2 year olds. In the reservoir, these fish forage and grow large on their diet, consisting primarily of kokanee. Bull trout can live up to 12 years.
- In 2023, anglers caught an estimated 728 bull trout in Lake Billy Chinook.<sup>vii</sup>
- Some bull trout leave the reservoir and swim to the lower Deschutes River. A total of 1,791 bull trout were captured at the SWW in 2023, compared to the average annual catch of 660 bull trout from 2010-2022.<sup>viii</sup>
- Both juvenile and adult bull trout successfully navigate the reservoir as they travel to and from the upper basin tributaries.



## 16. What is “black spot” disease, and how is it affecting fish?

Black spot is a parasitic infestation found in freshwater fish throughout the US. It appears to be on the rise throughout Oregon, including in the Deschutes. The parasite has not been found to affect the survival of fish.

- Black spot has been documented in many Oregon rivers for years, including the Metolius, the John Day and the Deschutes (upstream and downstream of the dams).
- Black spot is caused by trematodes that involve three host species: snails, fish and birds.
- An ODFW study in the Deschutes found no significant difference between the wellbeing of fish with and without the parasite, indicating that black spot does not have a negative affect on fish growth in the Deschutes.<sup>ix</sup>
- Fish with this condition are safe for human consumption



## 17. Are insect populations in the Deschutes River basin at risk?

The timing of the salmon fly hatch in the Lower Deschutes River has shifted — this was an expected outcome of the change in temperature patterns achieved by the SWW — but evidence shows that the size of the hatch is still strong.

- This hatch occurs approximately two weeks earlier now in response to warmer spring water temperatures. The hatch continues to support an impressive trout fishery, with catch rates similar to those experienced prior to the SWW.<sup>x</sup>

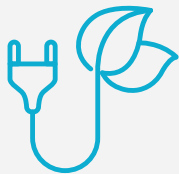
## 18. What is Ceratanova shasta, what causes it, and is it on the rise?

Ceratanova shasta, or *C. shasta*, is a parasite that can infect and, in some cases, kill fish. While it is a serious threat to fish health — one that we are studying closely alongside fish managers like ODFW — it is neither a new issue nor a simple one.

- An Oregon State University and Oregon Department of Fish & Wildlife study found that rates of *C. shasta* spike seasonally with warm weather. Rates of *C. shasta* peaked in 2015 — an especially hot year in the Deschutes — but have since declined.<sup>xi</sup>
- *C. shasta* is native to the Deschutes Basin and has been around for a long time. For example, 77% of hatchery Chinook tested at the Pelton trap in 1973 tested positive for *C. shasta*. 90% of wild fall Chinook collected from the Lower Deschutes near Maupin in 1979 tested positive. While high rates of the parasite are concerning, they are not unusual.
- Infection and mortality rates are complicated, built on a number of factors including the number of spores released, water temperature and water flow. There is still much we don't know about how the parasite gets transmitted or when it becomes fatal.
- As is the case with many threats facing migratory fish, ocean conditions play a huge role in parasite transmission.
- Oregon State University's Department of Microbiology, in coordination with the Confederated Tribes of Warm Springs Branch of Natural Resources and ODFW, is conducting the most comprehensive studies on *C. shasta* and maintains a [website with their most recent results](#).

“More than a century ago, hydropower played a critical role in helping electrify the Pacific Northwest. Today, hydroelectric projects like Pelton Round Butte continue to provide consistent and reliable clean power to Oregon customers – an essential role as we decarbonize our power portfolio.”

– **Dan Wilson**  
*Director of Renewables,*  
Portland General Electric



# Energy, Economy and Culture

## 19. Why is the Confederated Tribes of Warm Springs involved in hydropower operations?

One third of the Pelton Round Butte project is on the Warm Springs reservation. The project serves as a major source of revenue for CTWS and formalizes the Tribes' seat at the table to co-manage natural resources in the basin, alongside the State of Oregon.

- Co-ownership of the project also opens opportunity for the Tribes to expand its Power and Water Enterprise to bring more benefits to the reservation.
- All decisions made around Pelton Round Butte, since CTWS assumed co-ownership in 2004, are rooted in both the Tribes' historical knowledge of the Basin and the most up-to-date peer-reviewed ecological research available.





## 20. Does the SWW affect energy production or revenue?

The SWW's only function is to correct issues with water temperature and fish passage. Whether water is pulled from the surface or depths of Lake Billy Chinook has no effect on our energy output or revenue.

- Construction of the facility in 2009 was required as part of our relicensing – a rigorous, required process with the Federal Energy Regulatory Commission (FERC) to ensure ongoing compliance with environmental and operational standards for hydropower projects.
- Operations at the SWW (including temperature blends, spill regimes, river and reservoir levels) are dictated by our license. Flow adjustments, in particular, are subject to strict limits under our license from FERC. When required, adjustments are determined based on weather, river flows and overall environmental benefit.
- The SWW's sole purpose is to optimize environmental benefits. If the science were to suggest a better way to operate the facility, we would work with our regulators to adopt those new procedures.

## 21. Are dams good or bad for the environment?

While all methods of generating electricity have some impact on the environment, hydropower is one of Oregon's cleanest options because it produces no greenhouse gas emissions. Additionally, the Pelton Round Butte project is nationally recognized by the Low Impact Hydropower Institute for its exceptional environmental practices.

- Hydropower is the “original renewable resource” – offering a consistent and reliable source of electricity with no greenhouse gas emissions. As Oregon works to achieve its climate targets – some of the most ambitious in the nation – projects like Pelton Round Butte play a key role.
- Pelton Round Butte generates nearly 500 MW of clean electricity. That's more than enough energy to power a city the size of Bend! It is the largest, most productive hydropower system located entirely within the state of Oregon.
- As we add more weather-dependent resources like wind and solar to our portfolio, high-performing hydropower helps us serve customers without falling back on fossil fuels.
- Climate change is one of the biggest threats facing fish today. Scientists have documented rising river temperatures, altered ocean conditions and a reduction in habitat – not to mention impacts to the economy and community. While there's no doubt that dams can create challenges for fish, they continue to be one of our best tools in the larger fight against climate change.
- Of the 2,500 hydropower projects in the U.S., only 200 are certified by the Low Impact Hydropower Institute (LIHI) for their environmental excellence. Pelton Round Butte was first LIHI certified in 2007 and was recertified in 2023.
- This certification affirms that we're generating power in a way that respects Oregon's aquatic, terrestrial, cultural and recreation resources.

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## 22. Where can I learn more?

The Tribes and PGE are committed to transparency. Our studies, reports, fish counts and more are available to the public.

- Every summer, we host a fisheries workshop that is free and open to the public. Visit our website for the latest announcements about this event, and for more information about our reintroduction efforts: [portlandgeneral.com/deschutes](http://portlandgeneral.com/deschutes).
- Our e-newsletter features the latest fish counts, news and updates. Fill out our [online form](#) or email [deschutespassage@pgn.com](mailto:deschutespassage@pgn.com) to subscribe.
- All our studies are reviewed by the Fish Committee and then submitted to the Federal Energy Regulatory Commission (FERC). These reports can be found online in the [FERC e-library](#).
- For additional questions, contact [deschutes.passage@pgn.com](mailto:deschutes.passage@pgn.com) or **541-325-0960**.

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