Fish Health Center

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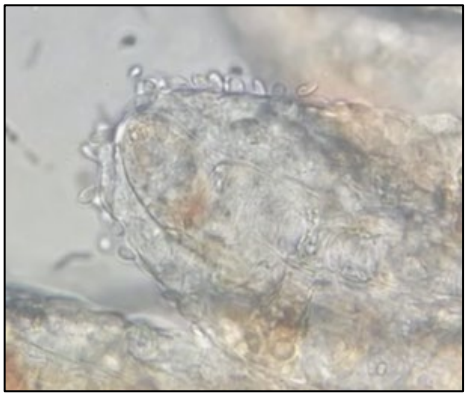
Bozeman Fish Health Center

Summer 2024 Highlights:

Having seen spring come and go with no newsletter, this will serve as both the spring and summer update from the Bozeman Fish Health Center. The lab has kept busy in 2024 with hatchery inspections, wild fish health surveys, multi-agency collaboration, and more. In May, Rick Cordes retired after spending over four decades in the fisheries world. He had been with the BFHC as a fish biologist since 2015.

Services Supporting Federal Recovery, Restoration and Recreation:

- Since the start of 2024, we have completed the following for federal hatcheries and wild waters in federal jurisdiction: ten complete inspections and three virology inspections. There were four sick fish troubleshooting cases that required clinical work-up and sample collection for lab diagnostics.
- We ran one case of triploid testing quality control. Using flow cytometry, the BFHC can determine triploid versus diploid fish by comparing DNA mass.
- The BFHC participated in the Lower Clark Fork River Pathogen Survey. This is a wild fish health survey undertaken with MTFWP, Idaho Fish and Game, Avista Corp., and Northwestern Energy every 5 years.
- Accepted and began processing eight histology cases in collaboration with Bozeman Fish Technology Center partners.



Top left: Wyoming toad now fully recovered from removal of a soft tissue sarcoma (mass) in October 2023. Photo: USFWS/J. Veilleux.
Top right: Nice dorsal fin on a Greenback cutthroat trout. USFWS/J. Veilleux.
Bottom left: *Ichthyobodo* sp. covering the gills of a juvenile cutthroat trout. Photo: USFWS/J. Veilleux.

Cutthroat trout being worked up for a mortality event investigation. Photo: USFWS/J. Veilleux.

Wild white sucker with a cutaneous nematode. Photo: USFWS/T. Weiss.

Westslope cutthroat trout euthanized for a fish health inspection. Photo: USFWS/T. Weiss.

Services to Reduce Hatchery and Wild Fish Losses:

- Progress continues in developing Health Management Plans (HMPs) for each hatchery in the region, as directed by the Aquatic Animal Health Policy (713 FW 2). Ten hatcheries have completed plans, with the remaining three close behind.
- Staff participated in numerous calls, email conversations, and site visits with hatcheries and partners regarding fish health diagnostic cases ranging from parasitic and bacterial infections to environmental and stress-related mortality.
- This year at Saratoga NFH, we trialed a new breeding protocol utilizing ultrasonography and hormone priming. Prior to breeding, the oocyte development of female toads was graded using ultrasound. The results have been promising in improving the egg to tadpole hatch success rate.
- BFHC has been collaborating with the Bozeman Fish Technology Center on two growth and survival studies replicated across four different subspecies of cutthroat trout.

Services Supporting Partner Recovery, Restoration and Recreation:

- Montana Fish, Wildlife and Parks (MTFWP): from tissue samples submitted to the lab, staff conducted thirty-three complete inspections (hatchery and wild fish – many being part of the Lower Clark Fork River Pathogen Survey), seven virology cases, and three troubleshooting cases.
- Collaborated with the Confederated Salish & Kootenai Tribes, USFWS Ecological Services, and USFWS FWCO to investigate a wild bull trout mortality event.
- Completed four flow cytometry cases on wild fish for the New York State Department of Environmental Conservation.
- Conducted one complete inspection and one virology inspection for Kansas Department of Wildlife and Parks hatcheries.

Left: Using a portable ultrasound to assess reproductive state in Wyoming toads. Photo: USFWS/Saratoga NFH.
Right: Male and female Wyoming toads in amplexus. The female is in the process of laying eggs. USFWS/J. Veilleux.

Wild adult bull trout found dead in a headwater creek. Photo: Confederated Salish and Kootenai Tribes

Greenback cutthroat trout just prior to fish health inspection sampling. Photo: USFWS/J. Veilleux.

The BFHC pollinator gardens, organized by Tammy. Photo: USFWS/J. Veilleux.

Outreach and Education:

- Renee, Molly, and Tammy participated in the Gallatin Valley Earth Day Festival. An estimated 850 people attended the event and the BFHC was there all day!
- Jake gave a guest lecture for NC State University's College of Veterinary Medicine Fish Health Selective.
- Renee and Jake ran a booth on fish health for Meadowlark Elementary School's Pond Studies Outdoor Day. About 90 kids got to learn about fish biology and health!
- Tammy represented the BFHC at the PBS Neighbor Day event. Over 800 people were at the event! See the pictures below for the cool activities at her booth.
- Tammy, Renee, and Molly hosted pollinator outreach activities at the lab during pollinator week. Our pollinator garden is beautiful yet again this year.
- Staff gave numerous tours of the Bozeman Fish Health Center to USFWS, other governmental agency employees, and public visitors.

Partnerships, Employee Development & Other News:

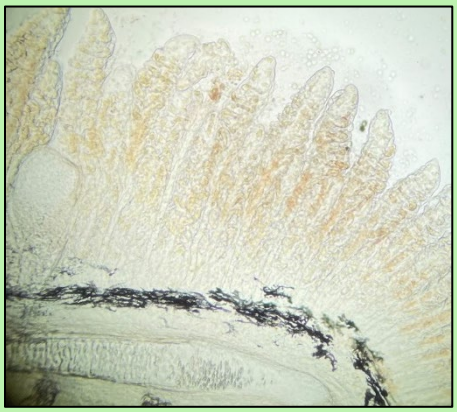
- The BFHC partnered with the Washington Animal Disease Diagnostic Laboratory on a research project focused on the use of antimicrobial sensitivity discs. The results of this study will be important for fish health laboratories everywhere.
- After several years of hard work by the team, we had our AFS-FHS Quality Assurance Tier 2 audit in June. We await the final decision by the AFS-FHS committee on our Tier 2 status but are very proud of the improvements we've made and continue to make at our lab.
- Rick's retirement party was a blast with friends and coworkers from the Health Center, Technology Center, and hatcheries showing up to celebrate!
- Renee and Jake attended the 30th Annual AADAP Workshop. As always, AADAP put together a great event.

Top left: Fish identification game at the BFHC booth during the PBS Neighbor Day Event. Photo: USFWS/T. Weiss.
Top right: Tammy, Renee, and Molly at the Gallatin Valley Earth Day Event. Photo: USFWS/ T. Weiss.
Bottom left: Rick's retirement party cake, "Riding off into retirement. Congratulations Rick!!" USFWS/ T. Weiss.

What's this?

Each newsletter will have an installment of **Fish Health 101**. It will briefly cover a topic of fish health you may find of interest.

In this edition, we'll talk about telehealth and telemedicine. Region 6 is BIG, and rapid, in-person care isn't always practical. But that doesn't mean fish health care can't be immediate! If you have further questions or would like to request a topic, email Jacob_Veilleux@fws.gov.



Gill clips can provide detailed insight into overall health. They can also be collected non-lethally. Photo: USFWS/J. Veilleux.

Microscopes are an important tool in increasing the effectiveness of telemedicine. Photo: USFWS/J. Veilleux.

Using Telehealth and Telemedicine in Region 6

Telehealth and telemedicine

- Telehealth: Use of electronic communications to provide health-related services and information (Oxford Academic)
- Telemedicine: Remote diagnosis and treatment of patients by means of telecommunications technology (Oxford Languages)
    - For a veterinarian to diagnose or prescribe, this requires a veterinarian-client-patient relationship (VCPR). This is fulfilled through a recent in-person visit or animal examination, and knowledge of program.
- Given the huge size of our region, this can be an extremely powerful tool! It can sometimes act in lieu of an in-person visit or shipping fish overnight and allows for even small issues to be further investigated.

How to use telemedicine

- Provide a history: this will be anything pertinent to the case.
    - What's going on? How many fish have died? What are the symptoms?
    - How are fish behaving? Are they still eating? How many lots are affected?
    - Has anything changed recently (environmental, culture, infrastructure)?
- Take relevant photos and videos: lesions, fish swimming (location in tank, swimming pattern), environmental/system conditions, and anything else you think relevant.
- Using light microscopy to capture and send images/videos of skin scrapes and gill clips can be immensely helpful. The BFHC can then interpret any findings.
    - Reach out if you want to be sent the light microscopy PowerPoint again or want in-person training next time the BFHC visits.
    - Many of our facilities have Leica microscopes with Wi-Fi capabilities. The Leica AirLab mobile app lets you screen record microscope in real time!

Next Steps

- We still might need fish sent or to visit in-person BUT a ton of information can be provided over phone/text/email.
- We'll work with you to find the best treatment option for the underlying problem and hatchery logistics.
    - Short-term fix → keep maximum number of fish alive right now.
    - Long-term solution → prevent this from happening in the future.
- Not all, but many disease events occur due to stress. If we can identify and reduce potential stressors and exposure points, then disease events can be mitigated. Prevention not treatment should be the goal!