



## PIT Tag Information System Columbia Basin

# Newsletter

**July 2020  
Volume 18  
ISSUE 1**

The PTAGIS Newsletter is published periodically by Pacific States Marine Fisheries Commission.

We welcome input from the PTAGIS community, so email us at [ptagis\\_newsletter@ptagis.org](mailto:ptagis_newsletter@ptagis.org) with your story ideas.

If you have questions regarding the contents of this publication, or about the PTAGIS program, please contact PTAGIS Staff.

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A Fisheries Data Project of the Pacific States Marine Fisheries Commission

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## 2021 PIT Tag Workshop Postponed

JOHN TENNEY (PTAGIS Portland Office)

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Based upon discussions with the PIT Tag Steering Committee, Bonneville Power Administration, and the PSMFC Executive Director, a decision has been made to postpone the *2021 PIT Tag Workshop*. Each day it is increasingly doubtful we can safely host 300 people in January 2021; and because a lot of projects are programming their FY21 budgets, it seems prudent to make the decision now. Hosting a smaller workshop or online webinar instead would not provide the considerable benefits of having members from this community together in one room, sharing results, expertise, and inspirations for the future.

PTAGIS will continue to work with the venue and BPA to reschedule the workshop in January 2022. We will make an announcement when we have a firm date. 🌀

## PTAGIS Operations in Response to COVID-19

NICOLE TANCRETO (PTAGIS Portland Office)

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The PTAGIS Portland and Kennewick offices have been operating in accordance with Oregon and Washington state requirements related to COVID-19 since late March. Staff from both offices have been working remotely and PTAGIS is operating business as usual to the extent possible under these circumstances. Technical coordination and support is ongoing and staff are available via the usual email and phone contacts.

Visits to PTAGIS interrogation sites have been limited to situations requiring critical maintenance to prevent permanent data collection gaps or significant impacts to diversion gates. Kennewick staff are relying on built-in system redundancy, near real-time operational reports, and recently developed remote operation tools to ensure the integrity and continuity of the PTAGIS dataset to the maximum extent possible.

An internet outage occurred at Lower Monumental Dam at the end of May which prevented the data that was still be collected from being uploaded to PTAGIS. Upon learning that adult movement between Little Goose and Lower Monumental was of particular interest at that moment, Kennewick staff worked with Lower Monumental staff to plan several trips to manually retrieve the data and load it into the database during the week-long outage. PTAGIS is investigating alternatives to the DSL line that is currently in use for the Snake River dams. 🌀

## Lower Granite Spillway Interrogation Site Update

SCOTT LIVINGSTON (PTAGIS Kennewick Office)

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The Lower Granite Spillway interrogation site (site code GRS) consists of 11 antennas which are embedded into the OGEE surface in Spillway 1. As fish migrate over the spillway, these antennas are able to detect the PIT-tagged fish that are travelling at a velocities reaching 70 feet per second through 7 inches of concrete.

Installation of the antennas and communication infrastructure was completed in December 2019 and a short duration spill test was planned with the US Army Corps of Engineers (USACE) to evaluate the system during real operating conditions. During and shortly after this test was concluded, it was found that one of lower row antennas had elevated noise and low current which could not be recovered without direct access to the antenna components.

In early March 2020 after an extensive evaluation of the single antenna in question, a work skiff barge was moved into place near the OGEE surface allowing technicians access to the necessary components. Upon further evaluation, it was found that water had breached a critical pass-thru fitting causing the antenna to fail. Technicians were able to isolate the failed components, make necessary repairs, and apply additional sealant to critical areas within the antenna.

USACE and NOAA staff are currently designing a barge and platform apparatus to provide PTAGIS operations and maintenance (O&M) personnel access to the antennas for future repairs and or inspections.

Around the same time random interference was observed on several antennas. Upon further investigation, it was found the antenna conduit connections below the Conex box were loose causing interference in the system. As a temporary solution, all antenna conduit connections were tightened successfully eliminating the interference. PTAGIS technicians continually monitor the system for recurring interference events and re-tighten connections when necessary. Once the spill season has concluded, PTAGIS O&M will make repairs to the conduits to eliminate this problem permanently. 

## Lamprey Detection on Full Flow Bypass Systems

ROGER CLARK (PTAGIS Kennewick Office)

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Recently, fish biologists and researchers have expressed interest in lamprey detection capability in full flow juvenile bypass pipes. Currently, the juvenile bypass detection RFID transceivers at Lower Granite, Little Goose, Lower Monumental, Ice Harbor, McNary, and John Day dams are configured to detect full duplex (FDXB) tags only. In order to detect lamprey tagged with half duplex (HDX) tags, dual detection mode would need to be enabled on these transceivers so they can detect both FDXB and HDX tags.

There was some concern that enabling dual detection might negatively impact juvenile salmonid detection. This is due to the operation mode of HDX detection having an on/off cycle time of 70 milliseconds.

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## Lamprey Detection on Full Flow Bypass Systems

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FDXB tags have a detection time of 30.5 milliseconds and therefore would only read once for every HDX cycle, or less than half as often when HDX is not enabled. Using known historical data of reads per tag, we determined that salmonid detections should not be negatively impacted.

Due to an abundance of caution, it was decided to pick one site to test turning on dual detection mode. We chose the full flow detection system at the Bonneville juvenile facility (site code B2J) for the test due to the redundancy of the separator monitors being able to provide data to compare detection efficiencies.

Dual detection was enabled at B2J on full flow transceivers 01 through 04 at 0800 on 4/24/2020. Full flow detection counts were compared to the counts on the separator monitors to ensure detection efficiencies were not negatively impacted. To date, no loss of detection has been observed on the full flow bypass pipe. So far, no lamprey detections have occurred at this site. A full analysis of system performance will be completed in the fall of 2020. 🌀

## NOAA R&D PIT Barge Update

MATTHEW NESBIT & GABRIEL BROOKS (NOAA Fisheries)



**Figure 1. PIT barge as deployed in 2020.**

As part of NOAA Fisheries continuing Passive Integrated Transponder (PIT) tag Research and Development program, funded by Bonneville Power Administration and in collaboration with West Fork Environmental, a finned PIT tag antenna barge was deployed (Fig. 1) in the tailrace of Bonneville Dam 28 April 2020, approximately 3.5 km below the dam. The barge features six vertical PIT tag antenna fins 19' in length, with a detection range of 12' below the water's surface. The time frame and location for deployment were chosen based on prior active tag studies which showed fish distribution across the river after passing Bonneville Dam volitionally.

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## NOAA R&D PIT Barge Update

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Deployment dates in 2019 were less than ideal for fish detection as we missed the majority of PIT-tagged juvenile salmonid outmigration due to a government shutdown. However, tests were completed to demonstrate how debris loads and higher flow conditions effected the barge performance and maintenance requirements. One of the novel features of the PIT antenna barge is the ability of the antenna fins to autonomously raise up and allow debris to be shed under the barge ([seen here](#)).



**Figure 2. PIT barge deployment locations in 2019 and 2020.**

With debris-shedding technology successfully tested in 2019, NMFS felt it safe to deploy the barge earlier in the season and closer to the Bonneville project in 2020 (Fig. 2) where flow and debris loads are much higher. The importance of this year's deployment and testing grew significantly due to the forced cancellation of the lower Columbia trawl project to meet state and federal social distancing requirements. This season the barge successfully autonomously shed debris in flows that averaged roughly 314 kcfs over the deployment period in comparison to the average 2019 flows of 151 kcfs. During the course of deployment, the river level increased by up to 10 feet, with water velocity measured between fins at 11.0 fps. Earlier deployment and closer proximity to the dam led to more fish detections in 2020, even with fewer PIT-tagged fish released due to COVID-19 restrictions.

To date, a total of 614 PIT tags have been detected. Detected species include spring, summer and fall Chinook *Oncorhynchus Tshawytscha*, Coho *O. Kisutch*, Sockeye *O. nerka* and summer and winter Steelhead *O. mykiss*.

## 2020 NOAA R&D PIT Barge Update

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Because the barge is still experimental, it has not been registered as an interrogation site in PTAGIS. The data were uploaded to PTAGIS as [MRR data](#) with an Event Type of Passive Recapture and Event Site of COLR3. The data can be viewed in Advanced Reporting using the query builder Recapture Details or Complete Tag History reports, as well as, in the Complete Tag History quick report.

We are hopeful that this technology can bolster PIT tag detections in the lower Columbia River by operating autonomously on a 24-hour basis and thus providing enough data to provide detection efficiency estimates of the Bonneville project. Other opportunities exist to deploy the PIT barge in areas where river width, depth or debris constraints have proven to be a challenge in the past. 🌀

## 2020 Annual PIT Tag Steering Committee Meeting

NICOLE TANCRETO (PTAGIS Portland Office)

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The annual PIT Tag Steering Committee (PTSC) Meeting took place February 6, 2020, in Portland, OR. You can view or download the [meeting notes](#) from the [PTAGIS document library](#).

John Tenney [presented](#) a review of the Portland office accomplishments in 2019 and plans for 2020. Plans for 2020 include upgrades for interrogation data collection, submission, processing and reporting. Several new software tools are in development along with server upgrades to support new features in them. M5, currently undergoing testing, is the new interrogation data collection software and will replace both Minimon and M4 for in situ data collection. I5, currently in development, will replace PIFF and allow users to connect to remote sites to manually download, QA, and submit interrogation data to PTAGIS. These new software tools will use a new file format that is intended to transmit raw transceiver messages to the server, which will then parse those messages and load the data into the database. A new PTAGIS website is also planned to be released in 2020.

Don Warf [presented](#) a review of the Kennewick office accomplishments in 2019 and plans for 2020. One of the major accomplishments of 2019 was the completed installation of the first interrogation site to monitor a spillway. With a site code of GRS, the Lower Granite Spillway interrogation site was a multi-agency project on which the Kennewick provided expertise and plans, including CAD drawings for specific components of the installation. See this [article](#) for an update on GRS operations since the installation. Other plans for 2020 include tuning and optimizing GRS components; relocating the PIT tag room and installing new antennas at the Bonneville Cascades Island fish ladder (site code BO2); and replacing slot antennas at the Bradford Island and Washington Shore fish ladders (site codes BO1 and BO4). The Kennewick field office will also be working with USACE to take over maintenance of the entrance and exit antennas that were installed in the Lower Granite fish ladder (site code GRA) for a short-term USACE project. These antennas have been part of the GRA data, but have not been maintained along with the other components of the site.

Gabriel Brooks [reported](#) back to the PTSC about the first Instream PIT Tag Detection System (IPTDS) Subcommittee meeting held in January. See this [article](#) for more information.

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## 2020 Annual PIT Tag Steering Committee Meeting

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Gabriel also [presented](#) (large PPSX file download) an update on the NOAA Research and Development project. Some of the topics he discussed include results of GRS read range tests conducted after the antennas were covered with concrete, planned live fish detection efficiency tests, the Columbia Class PIT Barge development and testing, work on the flexible antenna cable array used in the trawl, work on resolving noise in the CAN bus cable for instream sites. Plans for improving deployment and operations on the trawl in 2020 have been postponed, but improvements to the PIT barge and working with the IPTDS Subcommittee and PTAGIS on improving instream operations and data management are ongoing.

The PTSC also discussed plans for the 2021 PIT Tag Workshop, including general schedule for registration, calls for presentations, and for the meeting itself. Please see this [article](#) for more information on the current status of the workshop.

Other topics discussed during the meeting include adding tag distribution information from other agency's large PIT tag purchases (primarily USACE and USFWS), addition of event logs for MRR sites, and precision of length measurements in tagging data. 🌀

## Inaugural Instream PIT Tag Detection System Subcommittee Meeting

NICOLE TANCRETO (PTAGIS Portland Office)

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The inaugural in-person meeting of the Instream PIT Tag Detection System (IPTDS) Subcommittee was held in Portland, OR, on January 9, 2020. You can view or download the [meeting notes](#) from the [PTAGIS document library](#).

The group reviewed the charter and discussed committee membership and roles. Committee members are expected to coordinate with their respective organizations when providing input and feedback on committee discussions. The [IPTDS Subcommittee webpage](#) shows a list of current members along with contact information.

Members introduced themselves and discussed some of the ways they see the Subcommittee working to improve instream interrogation site coordination and data management in the Columbia Basin. They also discussed ideas for instream-specific content that can be presented at the 2021 PIT Tag Workshop and settled on an afternoon session dedicated to instream site topics to be determined by a survey to PTAGIS users. John Tenney presented an update on improvements and features PTAGIS has been working on with regard to interrogation data in general and instream sites in particular. The Subcommittee discussed how to provide input and feedback on these tools so that PTAGIS can better support instream site managers and data users. Other topics of discussion included ghost tags, site configuration diagram standards, site metadata enhancements, inclusion of transceiver diagnostic data, and how to determine/record/display operational period. The meeting closed with election of Gabriel Brooks and Ben Truscott as co-chairs of the Subcommittee. 🌀