IPTDS Subcommittee May 2023 Meeting

May 25, 2023 – online

Attendees: Brian Davis, Derrek Faber, Brian Knoth, Kory Kuhn, Kyle Meier, Randy Johnson, Ryan Kinzer, Zack Mays, Marika Dobos, Brady Allen, Jeff Fryer, Alan Brower, Daniel Wilson, Don Warf, John Tenney, Sebastian Dudek, Nicole Tancreto

Action Items:

- Kyle will send information on how to secure cell modems
- Subcommittee members will send training ideas for PIT Tag Workshop to Derrek/Nicole
- Once Workshop contract signed and Subcommittee has identified some training ides, PTAGIS will send a survey to PTAGIS users to narrow down the topics
- Derrek and Brian to complete SOP for installing M5 on Raspberry Pi

Reviewing Last Meeting Action Items

- Raspberry Pi SOP
    - Kyle Meier update regarding modem security, a Biomark document is in progress, but basically all ports are locked down except the web server and reader itself. Biomark has shifted to putting all modems behind VPN. Biomark has its own Access Point Name (APN), which locks down all modems from outside the Biomark network.
    - Brian Davis has set up M5 on several USFWS sites and has some updates to make to the SOP
- Power Supply Testing Raspberry Pi - Gabriel will send information to group when completed
- Nicole adjusted timer tag report to better display multiple sites
- Don sent timer tag SOP to Gabriel

Round Robin

Kyle Meier: Accepted new role in January, Biomark global support. Boise team still exists and main focus is on supporting customers in Columbia Basin. Nick Porter will be replacing Kyle on the Subcommittee.

Kory Kuhn: operating screw trap, weekly maintenance of arrays, kept floating PIT tag array deployed all year and it held up through the spring flows

Don Warf: installed new site at Easton Dam, working on a few new sites

Ryan Kinzer: hired replacement for Rick Orme - Mick Ackerman and he'll start getting involved with Subcommittee next meeting.

Brady Allen: no significant updates

Marika Dobos: working on goals for the PNAMP PIT tag array task for FMWG, also working on gathering tools for data summary/analysis that can be made available to other users, e.g. easy button tools to pull out adult detection data for spawning estimates

Abundance modeling using in-stream PIT-tag detection systems – Ryan Kinzer

[Presentation](#)

Packages available at Gitub.com/ryankinzer (packages forked from Kevin See, WDFW)

Relies on data collection at Lower Granite Dam

- Window Counts
- Adult Trap representative sampling allows for extrapolation

Problem – too many sites and too much data

- ~150 instream sites used in model so need to automate data prep
- ~2300 unique tags, 143 sites, 80k observations in 2022 spawn year
- Trying to understand how individual tag codes are moving across the landscape

Answer

- Developed R packages with Rick Orme and Mick Ackerman
- To efficiently summarize observations using desired sites
- Prepare data for the DABOM model

PITcleanR

- Build Config
  - pull in Interrogation and MRR site metadata from PTAGIS web API
  - Adds a node configuration using antenna group to identify upstream, middle, downstream nodes at individual sits
- Compress
  - Aggregates observation records to min/max date per node and tag code
- Direction
  - Using parent_child config file that designates a pathway a fish would take upstream with Bonneville being the first parent and travelling up to last instream array in last tributary in Snake basin
  - Allows system to determine directionality
- Steelhead lifestage (in progress)
  - Working to label each fish as spawner, kelt, repeat spawner
- Spawner Obs
  - DABOM model requires that fish spawn only in one stream
  - Helps to sort through data to distinguish between fish nosing into a system vs spawning in a system
  - Focuses only on fish identified as spawners in previous stage
  - Flags fish that are detected in two different spawning locations so biologist can review and decide

Model Overview

- STADEM = escapement from LGR
- DABOM = branch occupancy model, where they go once they pass LGR
    - Abundance at each array
    - Life history (e.g. number of females at each location)
    - Detection probability at each array
- Outputs
    - steelhead abundance at LGR across time and by origin
    - weekly total abundance at LGR
    - detection probabilities
    - transition probabilities across time
    - population abundance
    - run timing (natural origin steelhead arrival timing at LGR, travel time from LGR to spawn location)
    - female proportion per population group
    - age composition
    - productivity
    - stock recruit curves
    - hatchery origin abundance (in progress), works well for natural origin because of representative sampling
    - kelting rates (in progress) survival of post-spawn population
    - kelt survival

Questions:

- how best to collaborate and contribute to these packages? Can download from Github, also contact Ryan or Kevin to collaborate
- How would this work outside of the Snake Basin, since it relies so much on LGR obs? PITcleanr can be used for PIT tag data anywhere
    - Kyle – international users have forked it and used it on PIT tag data in Europe
- Have you looked at how GSI assignments match with spawners as assigned by the program? A lot of locations match up pretty well, but some do not match up at all.
- Does PITcleanr allow fish to spawn in multiple locations? PITcleanr limit spawning locations, but can be used to identify fish that may have been in different spawning streams, the DABOM model doesn't allow multiple spawning locations as one of its assumptions

PTAGIS Update

- Released I5 1.7.0, can import MiniMon files
- Released M5 2.1.5
    - supports GPS for trawl
    - custom file sequence to support multiple computers at one site so that unique file names can be generated
    - update to file submission to prevent duplicate file submissions
    - changes for PTAGIS SbyC sites

- o 2.1.6 release soon to fix time synchronization with MC
- Updated website to implement web form to request new interrogation sites
- Managing interrogation site metadata via website is complete
- 2024 PIT Tag Workshop
  - o Starting Tuesday January 30 – Thursday morning
  - o PTAGIS training and IPTDS session Thursday afternoon
  - o Still in contracting phase with venue, contract almost signed
  - o Announcements will go out once signed
  - o IPTDS contribution to workshop
    - ▪ Booth in vendor area: Derrek agrees it would be good idea
    - ▪ Training?
    - ▪ Survey
  - o Training Ideas
    - ▪ Installing M5 on Raspberry Pi (Derrek)
    - ▪ Shielding/grounding to reduce noise at sites

Biomark Update

- 2-4 weeks out for IS1001 reader and MC orders
- All backorders should have been shipped
- IS1001-mux to be released Q3 2023
- New PIT tags In development
  - o Redesigning 8mm tag with smaller diameter for 2025
  - o Retiring 9mm tag, replaced with 10mm skinny tag in 2026
  - o APT12 being improved, expected Q2 2024
- Measuring board now supported in P4/P5
- HPR Plus replacement scheduled for 2024
- Redesigned BP antenna for portable readers available
- Working on next version of Biologic
  - o Trying to implement way to estimate real time read range
  - o Send ideas for new features to Kyle