



# Newsletter

## PIT Tag Information Systems

Columbia Basin

### PITTag3 Update (Part II)

In the last PTAGIS Newsletter (Vol. 5, Issue 1), we summarized the new and modified features of the PITTag3 Data Entry and Validation Program (**P3**). In this issue, we'll go into more depth about configuration profiles and highlight some of the more advanced features of **P3**.

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### Small Stream Pass-Through PIT Tag Detection

New PIT-tag based monitoring is being tested on a small stream, Abernathy Creek, Longview, WA (87 km from the mouth of the Columbia River). These systems employ large PIT tags (23 mm long) that allow much larger read ranges (up to 1 m from the antenna loop plane) than 12 mm tags. Large pass-through antennae have been constructed to monitor entire stream-widths for movements of Pacific salmonids and other resident fishes. This is the first application of small-stream pass-through PIT tag technology in the Columbia River Basin (FWP Innovative Project #22033).

Two stationary pass-through PIT tag detection systems have been established by USFWS in cooperation with Pacific States Marine Fisheries Commission and Destron Fearing. The systems incorporate full-duplex PIT tag technology and require tagging fish internally with 23 mm long PIT tags. Stationary detection

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The PTAGIS Newsletter is published periodically by the PIT Tag Operations Center (PTOC). We welcome input from the PTAGIS community, so feel free to call (503.650.5400), fax (503.650.5426), e-mail, or write us with your story ideas. If you have any questions regarding the contents of this publication, or about the PTAGIS program, please contact Carter Stein, PTAGIS Program Manager. Editing and layout by Liza Bauman. Unless otherwise noted, contributors include Carter Stein (carters@psmfc.org), Dave Marvin (dave\_marvin@psmfc.org), and John Tenney (john\_tenney@psmfc.org). The PTAGIS program is administered by the Pacific States Marine Fisheries Commission, 45 SE 82nd Drive, Suite 100, Gladstone, Oregon 97027.

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PIT Tag antenna installation at USFWS research station at Abernathy Creek.



## Adult PIT Tag Update

The Portland and Walla Walla District's Corps of Engineers is concluding design work required for installation of adult PIT tag detectors within the weir orifices of the fish ladders at Bonneville and McNary dams. Installation of the detection systems will begin in December, 2001 and be concluded by March 1, 2002.

NMFS researchers conducted more evaluations at the Washington Shore prototype installation at Bonneville Dam during September 2001. A preliminary report of the efficiency of the weir orifice detection system can be viewed at [www.pittag.org/web/Adult](http://www.pittag.org/web/Adult).

The Adult PIT Tag Oversight Committee (APTOC) will meet by teleconference on October 30 to discuss progress and plans for the adult PIT tag detection system deployment at federal hydroelectric projects.

## PTAGIS Server Upgrades

The PTAGIS database server computer, located in Gladstone, Oregon is undergoing a number of upgrades this fall. The machine is a Sun Enterprise 3000, and is over four years old. Rather than purchase a new machine, we are investing in a number of upgrades.

Between October 15 and 17, 2001, backup batteries for the server's UPS were replaced. During this outage, the four, 64 bit 200MHz RISC processors were replaced with six, 475Mhz processors. Memory was increased from one to three Giga-bytes. A new A5000 RAID-5 storage array was added, which included an additional 360 GB of on-line storage.

Several other outages are planned for the fall and winter. Dates for the down times of the server will be posted at [www.pittag.org](http://www.pittag.org) and as users log in to [telnet.pittag.org](http://telnet.pittag.org). Activities will include disk space reorganization, an operating system upgrade (around Thanksgiving time), and a database management system upgrade (around the New Year's holiday).

## Separation by Code

One of the activities performed by the Columbia Basin PIT Tag Information Systems project (199008000) is to support 'Separation by Code' (SbyC) research.

PIT tag interrogation systems at most Corps of Engineers fish facilities have diversion gates that can be actuated by the presence of a PIT tag. Gates can divert specific PIT-tagged fish to (barge or truck) transportation facilities, to holding tanks for hands-on sampling, or to return fish to the river.

Once SbyC projects have been coordinated throughout the region (see Separation by Code & Points of Contact at [www.pittag.org/Ptbc\\_OM](http://www.pittag.org/Ptbc_OM)), PTAGIS personnel work with researchers to define PIT-tagged fish populations and the proposed disposition of those populations at supported SbyC interrogation sites.

The current in-season status of individual SbyC projects is available on the [www.pittag.org/Ptbc\\_OM](http://www.pittag.org/Ptbc_OM) web page, under the heading, *Current SbyC Action Code Summaries*.

Separation by Code figures from the PTAGIS website.

Action Code #	Title	Sites					
		B2J	JDJ	MCJ	GRJ	B2A	GRA
11	DWOR	55,209			55,209		
12	IMNAHA				20,938		
13	CATHEC				20,955		
14	MCCALL	55,183			55,183		
15	RAPH	55,092			55,092		
31	DWOR98						47,704
32	IMNA98						19,169
33	LOOH98						43,939
34	MCCA98						47,400
35	RAPH98						48,348
41	DWOR99						47,883
42	IMNA99						19,943
43	LOOH99						44,710
44	MCCA99						47,984
45	RAPH99						47,830
51	DWOR00						47,745

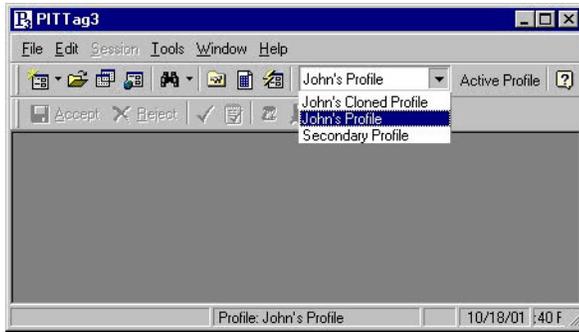
("PITtag3 Update" continued from page 1)

### Configuration Profiles

Profiles are a new concept in **P3**. Each profile contains all of the configuration settings specific to the tagging environment. Multiple profile versions can be created, copied, and modified. You can export your profiles to a disk file and recreate your exact environment by importing the file into another **P3** installation.

If a default profile is defined, **P3** will open that profile automatically when it starts, otherwise it will prompt you to select a profile. Users can change the profile at any time, even while a tag session is open, by setting the *Active Profile* dropdown list in the menu or toolbar as shown below.

Selecting a P3 Profile.



Profile settings are divided into the following categories:

1. **General** settings include global environment attributes, such as the Filename Prefix/Coordinator ID, toggling the auto-accept mode on or off, etc.
2. **Device** settings tell **P3** which peripheral input devices to expect. In addition to serial communication settings, a user can associate an action with a particular tag reader device (for example, assigning a recapture flag to all input from a specific scanner) or assign a digitizer map to a tablet device. Also included is a more advanced terminal window that replaces the 'test current' functionality of PITtag2.
3. **Comment** settings store the default repeating comments that are loaded and applied each time the application starts or the profile is changed.
4. **Action** settings store specific responses to various data input values or sources. Different actions can be enabled or disabled for a given profile. In addition to replacing the clip file validation function in PITTAG2, typical Action uses include allowing users to filtering out test tag entries, and issuing a sound alert when a particular tagged fish is recaptured.

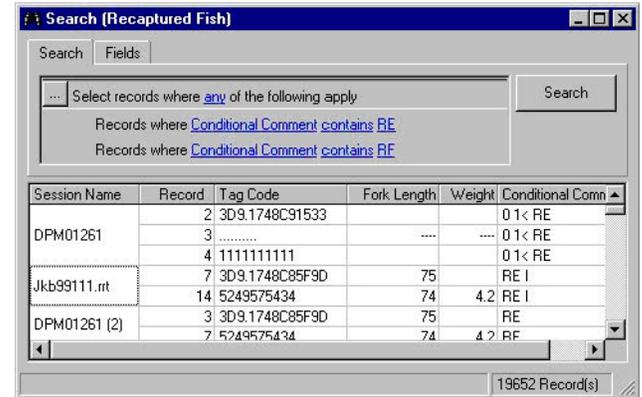
5. **Constraint** settings restrict the domain of species, run, and rearing types and/or the range of lengths and weights during input. The user is alerted if input falls outside the restricted domain. In addition, a constraint can be defined to alert the user when a particular number of fish are marked for a given domain. Profiles allow one or more of these constraints to be used at once.
6. **Statistic** settings allow the customization of the statistics page within an open tag session. Besides subtotaling species, run, and rearing types, users can show a subtotal column for a particular conditional comment code or textual comment value.

**Audible Alert Settings** can be enabled or disabled for a given profile. **P3** contains 13 distinct audible events, each of which can be customized to a particular sound.

### Advanced Features of P3

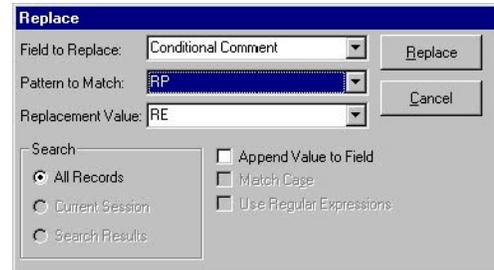
1. **Search** on one or more data fields using a powerful, yet easy to use, *ad hoc* query engine. You can save your searches to run again at a later time, print or save the search results to a file, or replace field values of records contained within the results.

P3's search engine.



2. **Replace** or append values of a selected data field with the click of a button. Regular expression replacements are supported for textual fields.

Replacing values in P3.

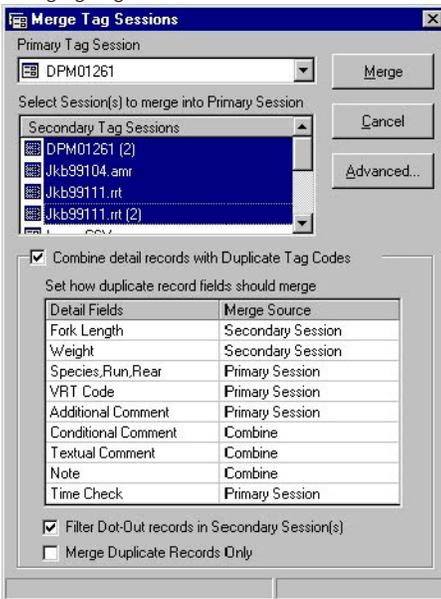


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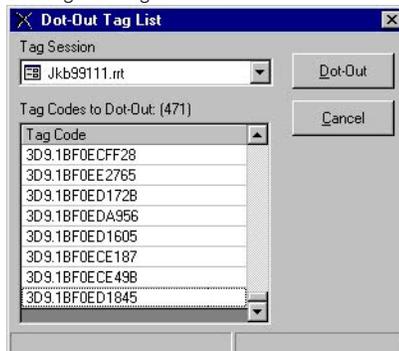
- 3. Merge** multiple tag sessions into a single session without exporting and importing. This powerful feature allows you to update your original tagging data with additional information collected outside the initial marking event.

Merging tag sessions.



- 4. Dot-Out a list of tag codes.** You can automate the process of replacing tag codes with dot-outs by simply importing a file containing a list of tag codes, selecting a tag session to process, and pressing the Dot-Out button.

Dotting-out tag codes.



We have started beta-testing **P3** in-house, and will soon assemble a team to put the beta release through rigorous testing. The production version of **P3** is scheduled for release early in 2002.

## Avian Predation Update

Since 1996, PIT tags have assisted researchers in studying the effects of avian predation of Columbia River salmon and steelhead. The Northwest Power Planning Council's Fish and Wildlife Program project 1997-024-00 initiated efforts to recover PIT tags from nesting colonies in the Columbia River Estuary in 1997/98. Up to date information on avian predation in the Columbia River Basin is available [www.columbiabirdresearch.org](http://www.columbiabirdresearch.org).

A tern with prey. Photo courtesy of Michael Wilhelm.



## 2001 Cumulative Efficiency Reports

The Cumulative Efficiency Reports provide an operational analysis of the PIT tag detectors deployed in the Columbia Basin. The report lists the number of distinct PIT tagged fish seen on each coil of each monitor at each interrogation site. Since two or more coils are combined into a single monitor, statistics are generated that list the number of fish missed at one coil within the monitor based upon a detection at another coil within the monitor.

To read about this analysis, see the "Statistical Method of Determining PIT Tag Coil Reading Efficiency" link at [www.pittag.org/Data\\_and\\_Reports](http://www.pittag.org/Data_and_Reports). To see the 2001 analysis of PIT tag reading efficiency at interrogation sites supported by the PIT Tag Operations Center, see the "Cumulative Monitor and Coil Efficiency History" link at [www.pittag.org/Data\\_and\\_Reports](http://www.pittag.org/Data_and_Reports).

## PIT Tag Forecast Letters and Distribution Requests

The Northwest Power Planning Council's Fish and Wildlife Program (FWP) provides for the centralized procurement and distribution of PIT tags used in Bonneville Power Administration-funded projects in the Columbia Basin.

This centralized procurement and distribution system offers several advantages. First, it provides economies of scale—we are able to negotiate lower tag prices when we buy in large quantities. Second, it provides a more consistent and higher level of quality control. Third, it provides a centralized mechanism to track individual PIT tags detected at locations in the Columbia Basin back to the project that applied the tag.

In order to receive tags, follow these steps:

1. Budget tags in your FWP project budget for the performance period you will use the tags.
2. Identify your tag usage requirements for FY2002 by sending in your PIT Tag Forecast form to Renee Barrett at PSMFC (Voice: 503.650.5400, Fax: 503.650.5426).
3. Submit a PIT Tag Distribution Request Form to PSMFC (PDRF) two weeks prior to the date you want to have tags shipped.

If you have not yet submitted your PIT tag forecast letter for 2002 to PTAGIS, please do so immediately. Failure to forecast your tag requirements will jeopardize your project schedule, as tags may not be available to fulfill your requirements.

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## New Packaging for PIT Tag Distribution

In order to reduce handling costs and to improve the tag distribution process performed by PSMFC, a new system is being implemented to package tags. The tags will be packaged in vials of 100 tags. The vials will be padded with foam on the ends, so that tags do not rattle or bounce against each other. Expect to see the new packaging in time for Spring 2002 tag deliveries.

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## Super Tags

At the 2000 PIT Tag Workshop, Digital Angel (formerly Destron/Fearing), announced the development of a new 12mm tag. The performance of the new tag is much better than the existing tag. Applications that are not possible with the existing 12mm tags may be possible with the "super tag", which provides greater read distances. To learn more about the super tag, talk to your PIT Tag Steering Committee Representative.

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## Tagging Video

In 2000, the Columbia Basin PIT Tag Steering Committee produced a PIT tagging "Best Practices" videotape. The purpose of the training video is to improve the consistency and quality of Columbia Basin tagging operations. Please take the time to review the videotape, and see what aspects of it you may be able to include in your next marking operation. If you are a person that trains others to PIT tag fish, we ask that you develop a curriculum that includes the use of the training video. If you would like a copy of the *PIT Tagging Best Practices* videotape, please send e-mail to [carters@psmfc.org](mailto:carters@psmfc.org) with your shipping address.

## Data Entry Device Dilemma: Take Two Tablets and Call Me in the AM

As the number of PIT tag projects has increased in the last couple of years, we've had quite a few inquiries about the availability and suitability of various new digitizer tablets and electronic balances. Many of you old timers have been looking to replace existing equipment that is often five or ten years old.

There are a couple of complications to both of these searches. The first is that all three manufacturers of the *de facto* standard data entry peripherals (CalComp digitizers and Ohaus and A&D balances) have totally revamped their product lines in the last couple of years, making it somewhere between difficult and impossible to replace or match existing equipment.

New balance models generally have different RS-232 output formats than previous models, and these format changes require changes to our drivers in the PITTag2 and the upcoming P3 data entry programs.

The other big complication is the recent "standardization" on the WinTab digitizer interface. The old CalComp Drawing Boards supported the "ASCII 2000" communication stan-

dard, and that's the interface used in PITTag2 and all previous DOS-based PIT tag data entry programs. Then CalComp introduced the "Design Station Pro" model, which used a WinTab interface. A very recent memo from the fine folks at CalComp support says that the Design Station Pro has been retired, and that the NEW DrawingBoard III (which apparently has BOTH the WinTab and ASCII-2000 modes) is the sole product available.

We haven't yet acquired one of these new CalComp DrawingBoards, and so we don't know yet how compatible they are with either the WinTab mode of the Design Station Pro or the ASCII-2000 mode of the previous DrawingBoard models. We do know that all of the various models of digitizers and balances currently being used with the PITTag2 program are fully supported in the new P3 program. Furthermore, P3 will support additional devices that PITTag2 doesn't (and probably won't) support. To be on the safe side, we suggest that you contact us ([dave.marvin@ptagis.org](mailto:dave.marvin@ptagis.org) or [john.tenney@ptagis.org](mailto:john.tenney@ptagis.org)) before you purchase any balance or digitizing board for use with any of the PIT tag data entry programs.

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systems are at two bridges, one at the USFWS, Abernathy Fish Technology Center (AFTC) and one approximately 1 km downstream of AFTC. Each site has an array of antennae powered by FS1001A Destron Fearing transceivers. Both sites have been designed to automatically upload data to the PTAGIS database. The AFTC site is monitored from an office computer that is fiber-optically linked to the transceivers. The downstream site has a satellite modem allowing automated transfer of data from the remote site to PTAGIS.

Passive monitoring methods are being used to establish the following for steelhead trout, cutthroat trout, and coho salmon: juvenile size and age in the fall (from initial tagging event), winter survival, migration timing, age at migration, and stream use. Quantification of freshwater life history characteristics, especially migration timing, is currently limited by high water situations. High water conditions present in winter, make it difficult to assess winter mortality, and in spring, make it difficult to monitor downstream migration timing. However, pass-through stationary monitoring systems are rarely restricted by climatic conditions that limit or preclude the use of, traps, weirs, snorkeling surveys, and electrofishing.

A portable detection system, used much like an electrofisher but without disturbing the fish, has been developed to monitor individual movements within a stream. This allows exact location information for fish that do not move with high water events or at the end of a predicted migration. The combination of pass-through stationary and portable systems reduces the reliance on smolt traps for smolt recruitment information, provides a more reliable technique for monitoring stream movements of PIT tagged fish, and eliminates the need for using radio telemetry in small streams.

To date approximately 1200 juvenile (>100 mm fork length) steelhead trout and 450 (>100 mm fork length) cutthroat trout from Abernathy Creek have been tagged with 23 mm PIT tags. Several fish have already been detected at both stationary sites.