



# PIT Tag Information System

Columbia Basin

# Newsletter

**August 2010**  
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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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## PTAGIS Welcomes A New Staff Member

DAVE MARVIN (PTAGIS Portland Office)

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We are pleased to announce that Nicole Tancreto has joined the Portland staff. Before joining the PTAGIS team, Nicole enjoyed a thirteen-year career with the National Park Service, where she held positions in field biology and data management. She has worked at Lassen Volcanic National Park, the Flagstaff Area National Monuments, and the Southern Colorado Plateau Network Inventory & Monitoring (I&M) Program. During her six years with the I&M Program she focused on data management, database development, and field technical support.

During her brief tenure in the Portland office, Nicole has already demonstrated her ability to provide outstanding technical support to users of the PTAGIS client software and the Web Portal, and has revised and substantially expanded the meta-data and documentation available through the PTAGIS Wiki. [🔗](#)

## PTAGIS Job Announcement

DON WARF (PTAGIS Kennewick Field Office)

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### PTAGIS Job Announcement

Pacific States Marine Fisheries Commission is seeking an experienced Electronics Engineering Technician for the PTAGIS program. The position will be located at our field office in Kennewick, Washington.

Interested candidates should visit [http://www.psmfc.org/Current\\_PSMFC\\_Job\\_Opportunities](http://www.psmfc.org/Current_PSMFC_Job_Opportunities) to review the details and requirements for this position.

### APPLY NOW!!

Interested candidates must fill out and complete the online application to be considered for the position. "See Resume" will not be accepted.

Benefits: Med/Den/Vis, Life/LTD/ADD, Medical and Dependent FSA, 125, Pension, PEHP, 457, Optional Aflac, along with paid vacation and sick leave.

PSMFC is an Equal Opportunity Employer  
No relocation assistance provided.

## New Destron Fearing Director of Sales - Fisheries

DAVID SULLIVAN (President, Destron Fearing)

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### **Letter from David Sullivan – President of Destron Fearing**

Destron Fearing is committed to the long-term support and development of PIT tag, reader, and antenna technology being used by the fisheries. The fish business is one of three core market segments that we focus on at Destron Fearing, those being Fish, Livestock, and Companion Animal markets. In an effort to insure that we understood the fisheries identification needs, we visited with some of you in the community last year to hear your views and recommendations for how we could improve our performance. In those meetings, it became clear that Destron Fearing needed to do a better job of both communicating, and meeting the industry requirements. We needed to improve in our approach, delivery, and reliability.

In an effort to respond to those requirements and meet the demands of the Fisheries business, we've hired Eric Waters as our Director of Sales – Fisheries. He is appropriately technical with a background in business development, product and project management. Eric is based from an office located in Seattle, so he is readily available to provide direct support to our core Fisheries customers located in the Pacific Northwest. Eric has already been in the field and introduced himself to many of you in the Fisheries community. In the mean time, Roger Anderson (Applications Engineering) will continue to be available as a key point of contact for the Fisheries customer base from the Destron Fearing headquarters in South St. Paul, MN.

Please contact Eric with any questions, concerns, or requests you may have in the future. ☺

### **Eric Waters**

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## PTAGIS Community Survey for Online Reporting Features

JOHN TENNEY (PTAGIS Portland Office)

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We are in the process of upgrading the PTAGIS database and online reporting infrastructure and we'd like to get feedback from the community to help guide our efforts. We ask anyone that uses PTAGIS data, either directly from the PTAGIS.ORG website or indirectly from other sources, to please go to this link <http://www.surveymonkey.com/s/93XN586> and complete a brief survey. We'd like to get as much input as possible so help us get the word out. The survey will be available until the end of August and a summary of results will be published in a subsequent newsletter. The scope of this survey is for PTAGIS web-enabled reporting features only. Based upon the success of this survey, we may publish similar surveys for other PTAGIS tools and features in the near future.

### Upgrade Overview

The upgrading of the PTAGIS database server and related system infrastructure is underway and the PIT Tag Steering Committee (PTSC) and the PSMFC Executive Director have been given status reports as it progresses. The current PTAGIS database server and related systems have served us well over the years and are being maintained while the new system is developed. One of the objectives of the upgrade is to improve the online reporting tools that allow end users to get data out of the PTAGIS system. The online survey will help us confirm which online reporting features are most important and guide us in making them even better.

The upgrade process is being performed in phases. The first phase was completed with the development of new uploading features within the next-generation M4 interrogation software (we anticipate a production release of M4 early next year). The second phase was completed with importing of all PTAGIS data to the new reporting datamart system which does not impact the existing server. We will work with the PTSC to review and refine the PTAGIS data model in a later phase of development.

Currently we are restructuring and optimizing the schema that houses PTAGIS data in the new datamart system to enhance querying and reporting. We are also evaluating some of the many off-the-shelf reporting tools that can be easily integrated with the new system (Figure 1). The next step of this phase is to identify a focus group representing a wide spectrum of PTAGIS user types to help us identify, integrate and/or develop the online querying and reporting features. We will publish new online reporting features for the focus group to try out and provide feedback. To expedite this iterative process, we plan to use webinars and forum tools to interact with the focus group. Please indicate in the online survey if you'd like to participate in the focus group – this is a great opportunity to help shape the features you would like to see in the new system. Our goal is to demonstrate a fully-functioning beta release of a new reporting system at the *2011 PIT Tag Workshop*.

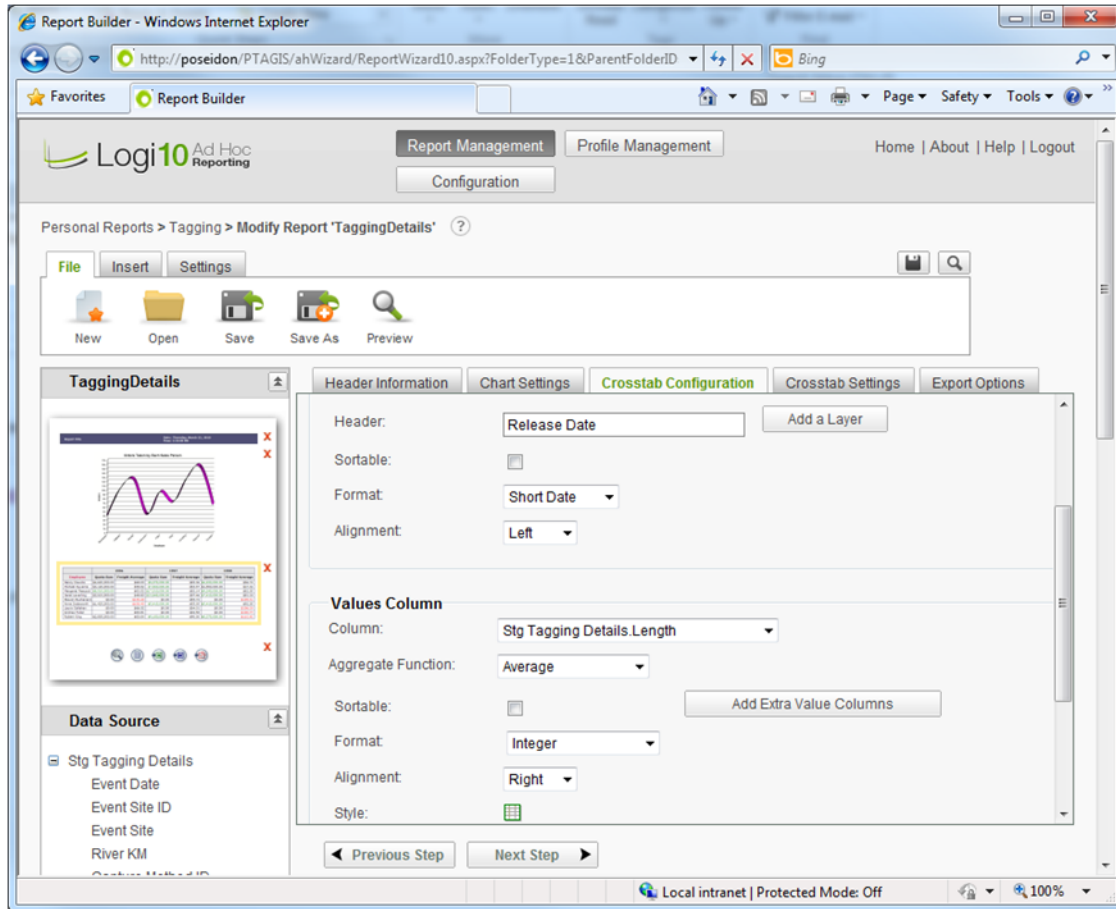


Figure 1. An example of an off-the-shelf, self-service reporting system.

A sample [OLAP \(Online analytical processing\) cube](#) was demonstrated to the PTSC as part of an early prototype datamart and it received a good response. There are many ways to model a cube data structure and we developed a second version with more detail to demonstrate to the focus group (Figure 2). The cube is a very flexible and powerful way to visualize PTAGIS data. Millions of records can be sliced and diced and then exported to Excel. We are still evaluating the capabilities of this technology and we are encouraged that useful online browsing of OLAP cubes of PTAGIS data can be delivered to the community.

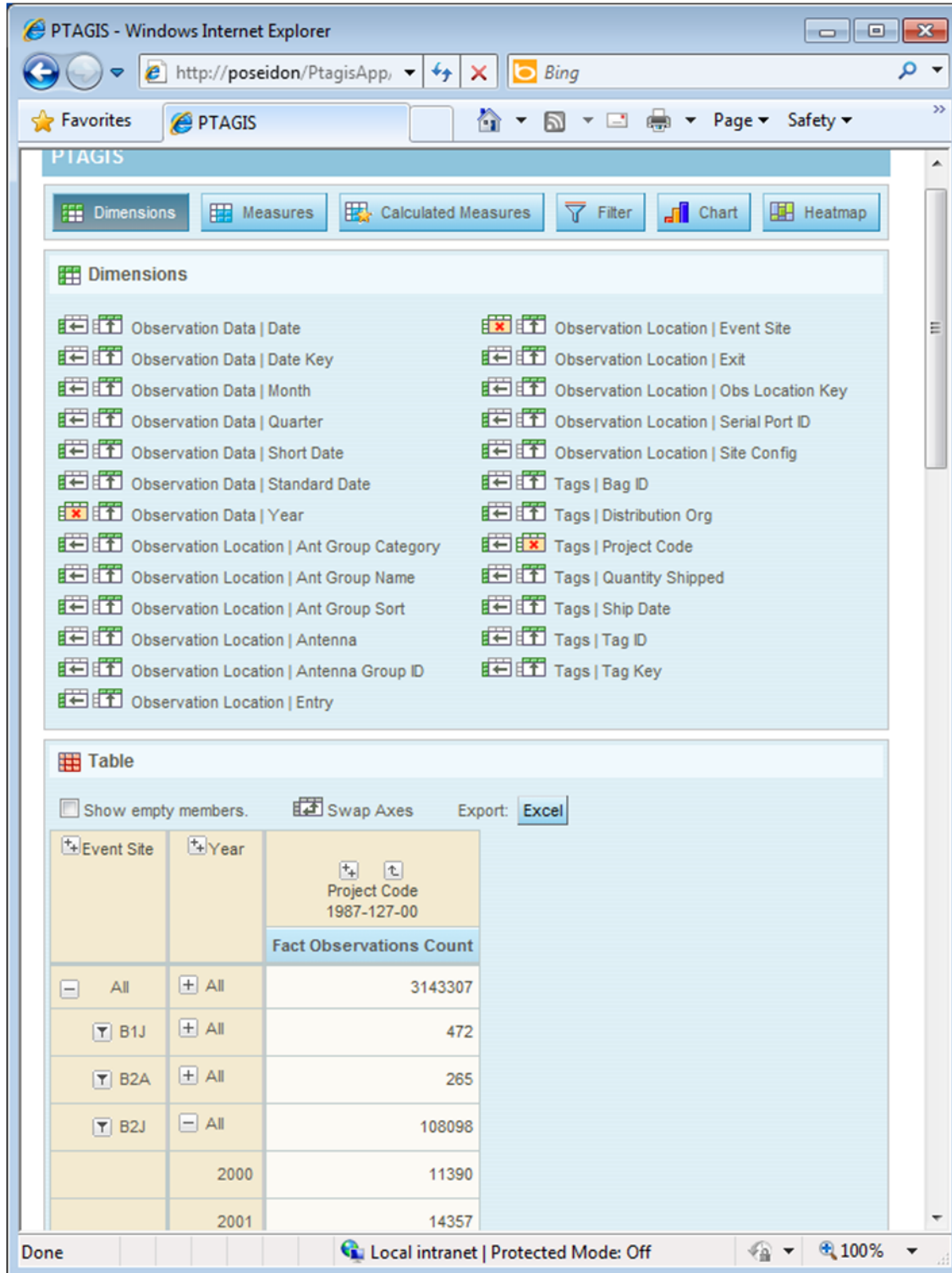


Figure 2. Sample query of an online data cube based upon a project number, observation site and year

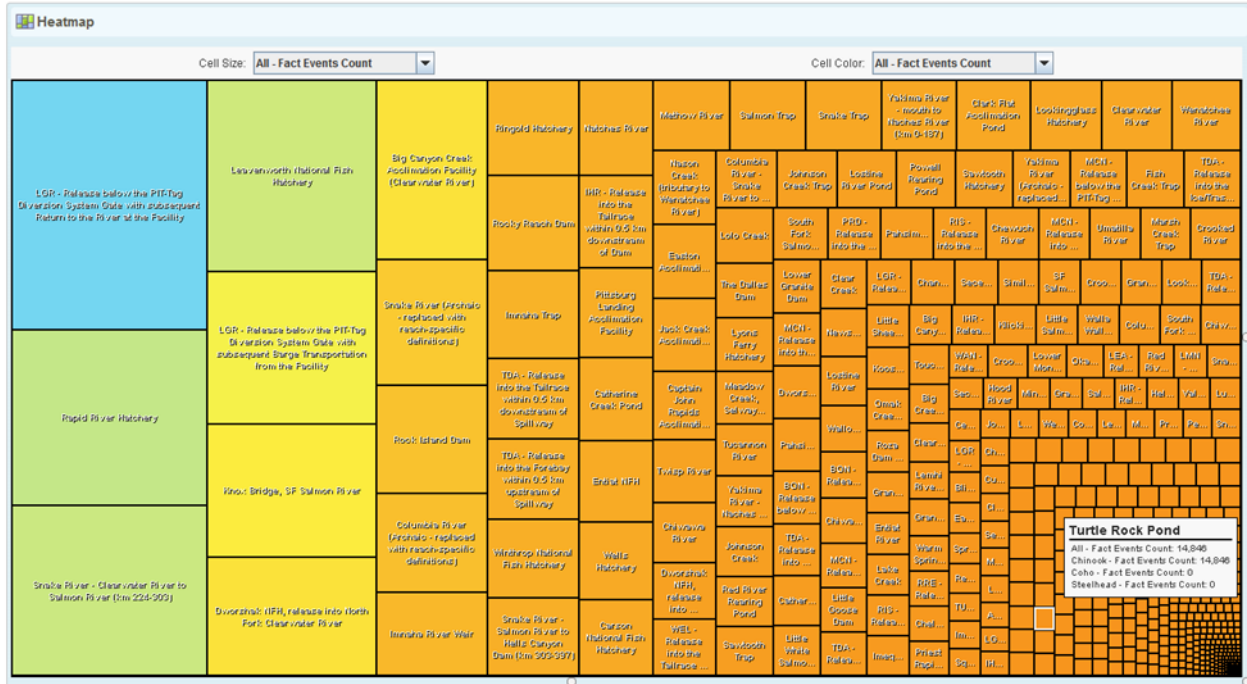


Figure 3. Example of a ‘heatmap’ data visualization of the number of PIT-tagged Chinook, coho, and steelhead per Release Site for the years 1990-2009.

For more information about the database and reporting infrastructure upgrade, please visit [http://php.ptagis.org/wiki/index.php/Upgraded Database and Related Server Infrastructure](http://php.ptagis.org/wiki/index.php/Upgraded_Database_and_Related_Server_Infrastructure). ©

## Destron Fearing Releases FS1001M Mux Firmware Version 2.1

ROGER ANDERSON (Destron Fearing)

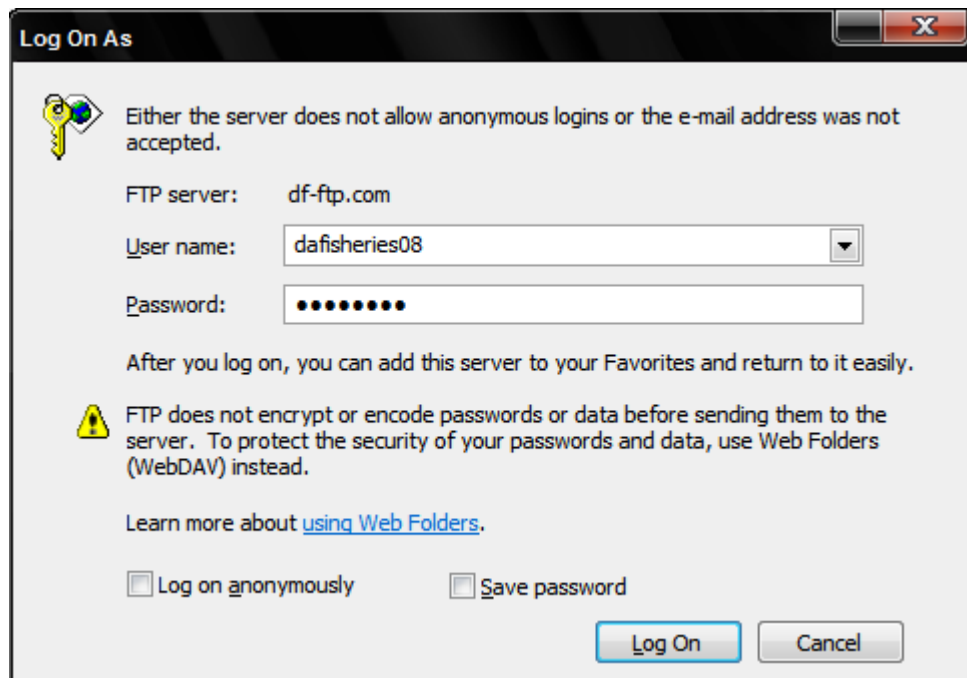
Destron Fearing has formally released firmware version 2.1 for the FS1001M Multiplexer, along with a new and updated manual. All new Multiplexers manufactured after August 1, 2010 will be flashed with version 2.1 instead of version 1.7. Also, new units will be supplied with a hard copy manual and a CD Rom containing the 2.1 firmware, the VB Flash installer, release notes, programming help, and an updated manual. **Important note:** the MiniMon 1.5.3 application supports only versions 1.7 and 2.1 of the FS1001M firmware.

You can download the firmware from Destron Fearing's secure FTP site by following these directions:

1. Open a web browser and navigate to: <ftp://df-ftp.com>

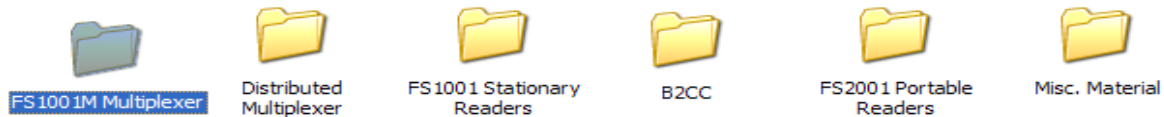
User Name: dafisheries08

Password: PITTag08





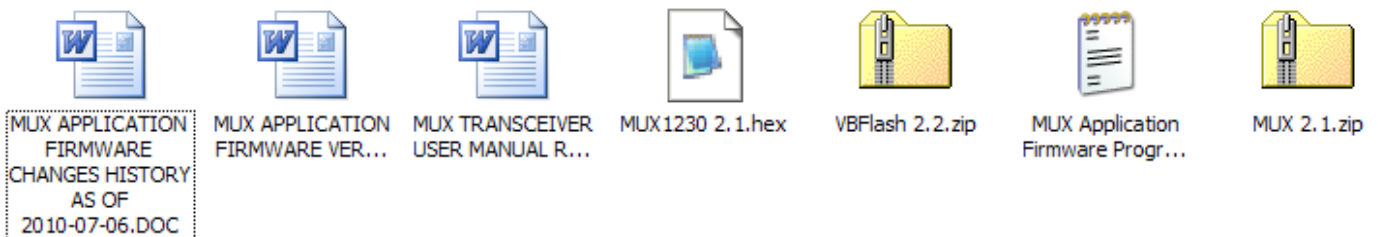
## 2. Navigate to the FS1001M Multiplexer product folder



## 3. Navigate to the Version 2.1 folder



- From there, download the firmware, VB Flash installer, release notes, Programming help, and updated Manual.
- Read the VB Flash instructions for flashing FS1001M transceiver firmware in the updated manual on pages 52-56 and the Mux Application Firmware Programming Help.
- The “Mux Application Firmware Version 2.1 Release Notes” describe the changes made since version 1.7. [🔗](#)



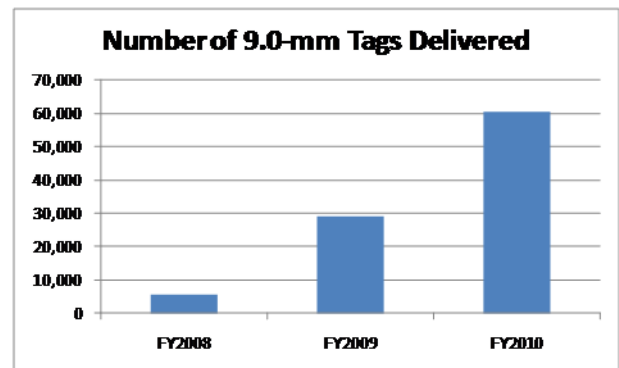
## Information on the New 9.0-mm PIT-Tag Model (TX149011B) Manufactured by Destron Fearing

**SANDRA L. DOWNING** (NOAA FISHERIES SERVICE, NORTHWEST FISHERIES SCIENCE CENTER)

**ALAN BROWER** (PSMFC, Kennewick Field Office)

### Background

After being encouraged by NOAA Fisheries for several years to produce a shorter PIT-tag model to enable researchers to tag salmonids smaller than 60 mm, Destron Fearing produced the first batch of shorter PIT tags in November 2007. These tags measure 9.0-mm in length and 2.04-mm in diameter (same as the standard tags) and weigh ~0.065 grams in air (Figure 1). These shorter tags are considered specialty tags because appreciably fewer of them are used in research and monitoring studies relative to the standard tags. However, the use of tags this size has increased significantly the last 2 years as more instream PIT-tag systems are being deployed (Figure 2).



When new models of specialty tags are delivered to BPA, PSMFC and NOAA Fisheries conduct some laboratory tests analyzing electrical parameters and read-range performance. These tests are done to provide users with information on how the tags will perform in the network of PIT-tag systems located throughout the Columbia River Basin. In February 2009, we also completed some read-range tests with the available tags in the two sizes of vertical slot antennas in the Bradford Island Fish Ladder at Bonneville Dam. In April 2009, NOAA Fisheries released tagged fish into the entrance of the corner-collector flume in order to determine how well the 9.0-mm tags would be detected by that PIT-tag detection system with its huge 17' by 17' antenna. Another NOAA Fisheries project released a known number of tagged fish into the gateway at Bonneville Dam in 2009 and we were able to use their fish to determine reading efficiencies for the full-flow antennas and the smaller bypass antennas.

## Laboratory Tests

The laboratory tests conducted on the original 9.0-mm tags (model TX148511B) tested in January 2008 showed that the tags had significantly higher resonant frequencies and turn-on voltages than the standard SST tags (Table 1). This led to them having shorter read range than what had been expected based on their shorter length. In addition, tags placed on the belt in optimal 0° orientation and then moved by hand into the center of the 4' by 4' test antenna (Figure 3) could not be read at the center point. They typically did not read until they were brought to within 10-11 inches from the middle of an edge (i.e., leaving a donut hole of >60% of the antenna area where tags could not be detected). Similar read-range results were measured with the tags produced in 2009 whose turn-on voltages were lower, but still much higher than the SST tags (Table 1).



Table 1. Median resonant frequency and turn-on voltage results from laboratory tests conducted with the Automated PIT Tag Test System (APTTS) over the years for different production batches of 9.0-mm, SST, and SST-1 PIT tags.

Tag model and date tested	Resonant frequency (kHz)	Turn-on voltage (mV)
12.3-mm SST tag; March 2008	134.2	560
9.0-mm tag January 2008	136.2	2,150
12.3-mm SST tag; March 2009	134.2	560
9.0-mm tag March 2009	135.9	1,359
12.3-mm SST-1 tag; March 2010	134.1	310
9.0-mm tag March 2010	134.1	900

Destron Fearing made some design changes and produced a new 9.0-mm tag model (TX149011B) in 2010 that resulted in tags with lower resonant frequency and lower turn-on voltages (Table 1). The new design made a significant difference in how well the tags performed. The tags not only read in the center of the 4' by 4' test antenna, but 6.5" out from the center (Z-axis). In comparison, the SST-1 tags read >20" out from the center.

## Results from Field Tests

In February 2009, read-range tests were conducted in the short (28" wide x 120" high) and tall (28" wide x 138" high) vertical-slot antennas in the Bradford Island Fish Ladder. Stationary 9.0-mm tags (model TX148511B) tested in the optimal 0° orientation were detected throughout the antennas although the hit rates were typically <75% compared to 100% for the 12.3-mm SST tags. When stationary 9.0-mm tags were tested in the 45° orientation, they could not be detected in the center (for some tags, the donut hole was 50-75% of the area). This was also true for the original BE tag models manufactured in 2001 that were ~12-mm in length and explained why previous studies had shown BE-tagged adults were missed more frequently than ST- or SST-tagged adults in these larger antennas.

From late March to early May of 2009, NOAA Fisheries conducted a study at Bonneville Dam to evaluate condition and retention time for subyearling Chinook using the modified units at the Second Powerhouse (Lyle Gilbreath, NOAA Fisheries, pers. comm.). The study released fish tagged with both 9.0-mm and SST tags. The released fish went through the B2J PTAGIS site that has both large full-flow antennas that surround a 48" pipe and smaller antennas that surround 12" pipes. For our analysis, we only used the PIT tags that were detected at B2J as some of the fish may have shed their tags between the powerhouse and the full-flow detectors. The detection efficiencies for the larger full-flow individual antennas showed the largest difference between the two tag types (82.3% compared to 98.1%; Table 2).

Table 2. The table presents the overall reading efficiencies for the full-flow and the smaller bypass monitors and the average reading efficiencies for the individual antennas. Results are from a NOAA Fisheries study conducted at Bonneville Dam.

	<b>Full-flow monitor</b>	<b>Separator-gate monitor</b>	<b>Average for individual full-flow antenna</b>	<b>Average for individual separator-gate antenna</b>
<b>9.0-mm tags</b>	97.8	96.3	82.3	93.7
<b>12.3-mm SST tags</b>	99.9	99.3	98.1	99.0

During April 2009, NOAA Fisheries released fish tagged with both 9.0-mm and SST tags into the entrance of the corner-collector flume. Only 1 fish tagged with the 9.0-mm tag was detected out of 973 fish (~0.01%) compared to 72.7% of the SST-tagged fish.

We look forward to testing the new 9.0-mm tag model in a field test when Destron Fearing delivers a large order to BPA.

## Discussion

Generally, the 9.0-mm tags that were produced before 2010 performed similarly to the original BE tag model for most fisheries applications (Table 3). The 9.0-mm tags manufactured in 2010 represent a significant improvement in performance; we believe they will perform similarly to the ST tag model. Table 3 also demonstrates that Destron Fearing has improved their PIT tags significantly over the past decade. It is also important to emphasize that knowing the tag type for the data collected can be important given that the quality of the results can be impacted by the tag type. Based on the positive results from the tests conducted so far, we may well see an increase in use of these new 9.0-mm tags in research projects.

Table 3. The table presents the physical characteristics of the different tag types manufactured by Destron Fearing over the past decade. It also provides generalized ratings for comparing how well the individual PIT-tag models are detected by the different types of PIT-tag systems used for fisheries applications.

<b>Tag Type Matrix</b>					
<b>PIT-Tag Models Manufactured by Destron Fearing Corporation</b>					
	<b>Older ISO tags</b> (For Comparison Only)		<b>Current Standard Tag</b>	<b>Currently Available Specialty tags</b>	
<b>Tag Type:</b>	<b>12-mm tag TX1400BE</b>	<b>12-mm tag TX1400ST</b>	<b>12-mm tag TX1400SST-1</b>	<b>Old 9-mm tag TX148511B</b>	<b>2010 9-mm tag TX149011B</b>
<b>Characteristics</b>					
Length (mm)	11.78	12.45	12.34	8.9	8.9
Diameter (mm)	1.97	2.02	2.04	2.04	2.04
Weight in air (g)	0.0843	0.1067	0.104	--	0.065
Order as Single Use Injector?	--	--	Yes	--	No
BPA's Fish and Wildlife Program Project Cost Per	--	\$2.06	\$1.73	\$2.25	\$2.25
<b>Applications</b>					
FCRPS juvenile fish facilities flumes	Excellent	Excellent	Excellent	Excellent	Excellent
FCRPS full-flow sites	Very good	Excellent	Excellent	Good	Excellent
Adult ladders: orifice antennas	Excellent	Excellent	Excellent	Good	Excellent
Estuary pair trawl <sup>a</sup>	Good	Excellent	Excellent	OK	Excellent
In-stream sites	NA	Good	Excellent	OK	Good
Adult ladders: vertical-slot antennas	OK	Very good	Excellent	OK	Very good
Corner collector at Bonneville Dam	Poor	OK	Very good	Poor	? -Maybe OK

<sup>a</sup> Performance rating based on antenna configuration that was operating when tag was used. 

## PIT TAG WORKSHOP 2011

January 25 - 27, 2011 Skamania Lodge, Stevenson, WA

DAVE MARVIN (PTAGIS Portland Office)

### FIRST CALL FOR PRESENTATIONS AND POSTERS

The Columbia Basin PIT Tag Information System (PTAGIS) and the PIT Tag Steering Committee are pleased to announce a PIT Tag Workshop to be held January 25-27, 2011, at Skamania Lodge near Stevenson, Washington. The goal of the Workshop is to bring together researchers, resource managers, and other parties interested in the current or potential use of PIT tags in the Columbia Basin in order to share information and gain further knowledge through technical presentations, discussions, and demonstrations.

The Workshop will feature presentations on a diverse range of topics; a poster session; technical demonstrations; and training sessions for the PTAGIS data collection software applications and database retrieval systems.

We are soliciting abstracts for presentations and a poster session during the Workshop. We hope you will share your experience and expertise with the collection, management, and analysis of PIT tag data obtained from fisheries research studies in the Columbia Basin.

Suggested topics include, but are not limited to:

- ⌘ Innovative PIT tag marking techniques and detection technologies;
- ⌘ Tagging effects and their implications to research and monitoring studies;
- ⌘ Coordinating and standardizing monitoring and evaluation programs;
- ⌘ Methodologies and techniques for PIT tag data reduction and analysis;
- ⌘ Expansion of, and improvements to, PIT tag detection capabilities;
- ⌘ Future development and direction of PIT tag-related research in the CRB;
- ⌘ The integration of PIT tags with other mark/recapture techniques.

#### PRESENTATIONS:

Abstracts of Presentations should be no more than 500 words in length. Each proposal should include the title of the presentation and the list of authors. Each speaker will be allocated 20 minutes for his or her presentation, including questions and answers.

#### POSTER SESSION:

Abstracts for the Poster Session should be no more than 500 words in length. Each proposal should include the poster title and the list of authors. The posters will be set up on Tuesday morning, January 25, and available for public viewing during a social event that evening and thereafter throughout the workshop.

Please submit your presentation or poster abstract (as a **MS Word doc** file) to Sharon Perkins ([sharon\\_perkins@psmfc.org](mailto:sharon_perkins@psmfc.org), 503-595-3100) at Pacific States Marine Fisheries Commission by September 1, 2010. Please contact Sharon Perkins or Dave Marvin ([Dave.Marvin@ptagis.org](mailto:Dave.Marvin@ptagis.org), 503-595-3100) if you have any Workshop-related questions. ☺