PTAGIS
n e w s l e t t e r

I Found Duplicate Tags
I Found Duplicate Tags

Some of you have noticed that, in certain cases, the supposedly unique tag code (or tag_id) is associated with multiple tagging records in the PTAGIS database. Any users of the PTAGIS database have certainly noticed (in viewing the opening message) that the PIT Tag Operations Center (PTOC) considers this to be a significant issue. In this article, we will attempt to characterize and summarize the extent of the problem. For a more detailed explanation and list of duplicate tag_id values, please see our article on the PTOC web site at www.psmfc.org/pittag/techpage.html.

We located 2,271 distinct tag_id codes in the "Tag_Data" table that appeared in two (or, in 10 instances, three) separate tag records. Every tag_id in this table should be unique. That they are not causes problems for both the database and the users. However, it does not seem to be a catastrophic problem—either in the magnitude of records involved (a total of 4,552 out of just under 3.7 million

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ISO Transition Project Update

Since we last reported to you in our January 1998 *PTAGIS Newsletter,* the ISO Transition Planning Team (TPT) has met twice, and a number of milestones have been achieved.

At the February 26, 1998 meeting, the TPT decided to inform key parties that a "Go/No-Go" decision will be made by Sept. 28, 1998 to proceed with the ISO transition in time for the year 2000 out-migration. The decision will be based upon having the key components for the new system in place, such as a stationary transceiver for the dams, a portable transceiver for tagging, an acceptable tag, and an infrastructure to support these components. The new system must perform as well as or better than the current 400kHz system.

The TPT also requested that Dr. Sandy Downing (of the National Marine Fisheries Service, or NMFS) prepare a proposal for field testing stationary transceivers at McNary and John Day Dams during 1998.

The second meeting was held on June 30, 1998. The status of key program elements and details of the stationary transceiver field test were discussed. The following summarizes the status of the key program elements:

Portable Readers

On May 7, 1998, the Portable Transceiver Evaluation Team (PTET) concluded its evaluation of the prototype portable PIT tag reader, developed by Destron/Fearing, according to Columbia River Basin (CRB) specification. The PTET unanimously voted to accept the prototype and procure enough readers to support CRB research for the year 2000 out-migration.

'ISO Transition' continued on page 8...

1

PITTag2 Software Update

Objective

The PITTag Workstation for Windows95/NT—more commonly known as PITTag2 (PT2)—is drawing closer to Version 1.0 release. The objective of the PT2 project is to replace an existing DOS-based data collection system with a Windows-based data collection system. The new system will be easy to use and flexible enough to handle changing tag data formats and multiple data collection devices in order to support ISO-based PIT tag readers.

Beta Testing

Beta testing has been very successful, with only a few discrepancies reported. A special THANK YOU! is in order to all of the beta testers. Your help in beta testing PT2 not only ensures the success of PT2, but also ensures the success of all who use PT2 as a tool in their own projects. If you have questions or comments about PT2, or would like to join the beta testing team, contact the PTOC for details.

Development Transition

Beta testing is continuing and Version 1.0 release is scheduled for the Fall of 1998. PT2 is in transition from the development phase by IMG, Inc. to the operation and maintenance phase by the PTOC. Currently IMG and PTOC staff are diligently working together to ensure the smoothest possible transition.

New Enhancements

Some of the more recent and notable enhancements to PT2 include the ability to append to the end of a tagging session, batch reader loading capabilities, and the addition of a digitizer map editor. The append function allows users to start a tagging session in the morning, then save and close the file during their lunch break, then open the original session after lunch, resume tagging, and finish out the day—all within the same file. The batch reader loading feature allows users to download the memory from a reader. The digitizer map editor allows users to create and edit digitizer maps and then save them for later use. Another key improvement over the old DOS-based version is the use of a local PT2 database, which contains information regarding the device drivers for the readers, multiports, scales, and digitizers. This local database also contains tagging sessions, hatchery sites, coordinator IDs, release sites, templates, and user-defined digitizer maps. The local database gives PT2 its strength and flexibility, not to mention the graphical user interface (GUI), which provides much greater ease of use over the old DOS version.

System Requirements

Because PT2 runs on the Windows95/NT system operating platform, you will need to have a PC with a Pentium processor running at a clock speed of 100MHz or better. The program requires at least 16 megabytes of memory (RAM), and 10 megabytes of free hard disk space. For optimal performance, additional memory (32 megabytes or more), a faster CPU (133MHz or higher), and a sound card is recommended. Also, please keep in mind that, over time, as more information is entered into the local database, additional hard disk space will be needed.

Conclusion

There are already plans to develop a suite of management tools for PT2. These management tools would be used to manage the local database. Such tools would allow a user to easily manage the size of the database, and enable the user to import and export information into and out of the database. For more information on PT2, please contact Carter, Dave, or Gary at 503.650.5400. ❖

PIT Tags Recovered Near Triangle Island, BC

The PTOC received an e-mail from Marc Hamer and John F. T. Morris (both with the Canada Department of Fisheries and Oceans' Pacific Biological Station in Nanaimo, British Columbia) concerning two PIT tags recovered on June 4, 1998. The High Seas Salmon program recovered the tags from juvenile chinook near Triangle Island, which is located off the northwest tip of Vancouver Island.

The PTOC discovered that tag code 51104F2D16 was a wild chinook marked at Lower Granite Dam on April 17, 1998 and released on April 19, 1998 to a barge that transported the fish below Bonneville Dam. The fish was 115mm (fork length) when marked.

Tag code 510D294C46 was also a wild chinook marked on April 17, 1998 at Lower Granite Dam, and was released into the river at Lower Granite Dam on April 18, 1998. This fish was subsequently detected at McNary Dam on May 3, 1998 at 05:44 am and was diverted back to the river. This fish was 116 mm (fork length) when marked.

Once PTOC receives biological information about these recoveries, we will create the associated recovery files and make them part of the PTAGIS database. ❖

PTOC Operations Status

Data Center Operations

The PTOC experienced a database management system failure over the Memorial Day weekend that caused delays in the processing of tagging, release and interrogation data. Attempts were made to minimize system down time as we tried to trouble-shoot and find the problems. Two problems, both related to the high number of interrogation data records, were identified and corrected.

Another data loading problem related to processing of tagging, mortality and release information. This problem has been identified and resolved. Users are reminded that release information files must be uploaded to PTAGIS at least twelve hours after tagging or correction files are uploaded. This delay will assure that the release information files are applied to the correct revision of the associated tagging files.

Field Operations

The following are the key operational events that occurred during the Spring of 1998.

Three technical issues have caused various problems at the main interrogation sites. The first issue is related to intermittent telecommunication failures that result in a transmission delay of PIT tag interrogation data from the facilities. The Corps of Engineers is responsible for maintaining the T1 communication links at the main sites.

Another issue is related to a potential power problem involving the high speed communication controllers that send data to the interrogation platform. The last issue relates to software and hardware problems related to the multimon and separation by code interrogation platform. NMFS and PSMFC are working on these last two issues. For additional details of these issues, look at the Event Logs on the our web site at http://www.psmfc.org/pittag/event_log.

Plans

1. Implement bug fixes to A) fix the tag file loading sub-system to reject files that contain a tagging record that duplicates a tagging record that already exists in the "Tag_Data" table of the database; B) fix the tag file loading sub-system so that tagging files uploaded during the operation of the sub-system will be successfully processed.

2. Install a major database management system upgrade. Specifically, we will migrate from OpenIngres 1.2 to Ingres II during the last two weeks of August 1998.

Lower Granite Juvenile Bypass (GRJ)

This facility operated in Separation by Code protocol four throughout the spring migration period, in order to divert one of every four fish in the Comparative Survival Study to the river, with the balance of fish sent to the transportation raceways. All other fish with PIT tags were sent to the river exits.

Lower Granite Adult Trap (GRA)

This facility operated in Separation by Code protocol two throughout the spring migration period. This means that specific PIT tagged fish (as requested by researchers) triggered gates that collected these fish in the trap at the Lower Granite Dam adult fish ladder.

Little Goose Juvenile Bypass (GOJ)

The same Separation by Code protocol that was used at Lower Granite Juvenile was used at Little Goose until 4/29/98. Mechanical problems with both slide gates caused noticeable separation performance problems. A temporary fix for these problems was implemented on 4/29/98.

Correction: In the April 1998 issue of the *PTAGIS Newsletter*, we noted an incorrect date and time for GOJ. The correct information follows: The primary bypass was watered up on 3/**23**/98, with fish collection beginning at **8**:00 on 4/1/98.

Lower Monumental Juvenile Bypass (LMJ)

A trunion mount broke on the A-side slide gate around 21:00 PST on 5/8/98. Corps maintenance personnel repaired the problem by 16:00 PST on 5/9/98. PIT tagged fish were not segregated from the general collection and were routed to the A-side raceways during this time and transported.

McNary Juvenile Bypass (MCJ)

All fish collected at the facility were directed to the river between facility start-up (on 3/23/98) and 6/2/98. Since 6/2/98, all PIT tagged fish are being diverted to the river and non-PIT tagged fish are being transported.

McNary experienced several events that affected bypass operations. For example, the facility was in and out of bypass mode for system calibrations early in the migration season (3/29/98 through 4/15/98). Another mechanical failure placed the site in bypass mode (no fish collection) between 6/8/98 and 6/12/98. PIT tag interrogation systems were operational during these events. Contact the Corps of Engineers for details on these operational events.

Diatribes from Dave

Hi. My name is Dave Marvin and, while I am the new kid here at the PTAGIS project, I do have some previous experience with PIT tags. Many of you know me from my previous gig with the Smolt Monitoring Program and its associated PIT tag marking and recovery activities. It was in that capacity that I've had the sincere pleasure of assisting some of you in marking both hatchery and wild fish, and in developing or summarizing database queries. I've done a tour of duty on the PIT Tag Steering Committee and, more recently, with the PIT Tag Transition Team.

For the record, I want to repeat what I've told everyone who's asked since I came on board six weeks ago: I'm proud and happy to be here at PSMFC. I have great respect for the PTAGIS project and its staff, and look forward to working closely with these folks to support and continually improve this project. If you, the PTAGIS user, have any questions, comments, or complaints, I want to hear them. You can e-mail me at dave_marvin@psmfc.org, or call me at 503.650.5400. Some of your previous comments are the basis for the following topics of discussion. ❖

What is a Mortality: The Plight of the Living Dead

I mentioned in the duplicate tag article on page 1 that some of the redundant tag codes in the PTAGIS database are the result of the improper re-use of tags without removing the reference from the original tagging file. This has been a source of confusion for many years; the July 1997 *PTAGIS Newsletter* (Vol. 2, Issue 5) attempted to address this, but a review of data submitted since that article confirms that the issue still exists, and it's now my turn to try to explain what a "Mortality Event" is and isn't.

In the context of PIT tag marks and recaptures, a "Mortality Event" occurs when a tag is detected from a dead fish, **subsequent to the release of that fish**. This last clause is the clincher: if you collect one or more tags from fish between the tagging event and the release of that group of fish, the fish may be dead but this is **NOT** considered by PTAGIS to be a "Mortality Event". A "Mortality Event" for a given tag MUST be preceded by a "Release Event" for that tag.

Loose tags recovered *after* release infer a "Mortality Event"; loose tags recovered *before* release should be re-used (along with tags extracted from pre-release morts), following standard protocol to destroy reference to the prior tagging event.

> *A "Mortality Event" occurs when a tag is detected from a dead fish,* ***subsequent to the release of that fish***.

Please contact me if you have any questions regarding whether or not a dead fish is considered by PTAGIS to be a "mortality". I am fairly zealous about this subject because, by my rough calculations, at least 6,629 of the 18,846 records submitted as "mortality" files (that's 35%!) list collection sites at hatcheries, or at those dams where recoveries of previously-tagged fish are not possible. I fear the actual number of erroneous "mortality" entries is much higher. Including the 863 tags recovered from the avian predator nests on Rice Island in 1997, I'm guessing the number of "true" mortality records submitted as mortality files is far less than 2,000.

A common and persistent myth is that PTAGIS uses mortality files submitted from the field to locate and remove records in the "Tag_Data" table, and that those tags can then be re-used. **Wrong, No, Uh-Uh!** PTAGIS does not alter or interpret any tagging, release, recapture, or mortality data. When a mortality record is received, that event is linked back to the original tagging event. Both events have permanent records in the PTAGIS database. If you try to re-use a tag in this situation, it will end up in the "Tag_Dup_Data" table, and any interrogations will refer to the original (and now wrong) tagging record.

Another common practice during the last few years has been to remove and record "mort" tags prior to release, submit "mortality" files for those tags, and then "retire" those tags to preclude re-use. While this avoids the duplication issue, I see two problems with this approach. First, there are 6,000-10,000 tags out there (costing $2.90 apiece) going to waste. Second, for better or worse, a lot of analyses use the PTAGIS database as the sole source of information, and users may attempt to match numbers of fish interrogated against the number of fish "released" (as inferred from the numbers in the "Tag_Data" table), without making any adjustments for "mortalities". Therefore, as an example, apparent differential survival of groups of fish released at various locations within the Dalles Dam, as computed from

simply comparing "Tag_Data" and "Obs_Data" records, may differ substantially from calculations using the "true" starting population sizes, especially where there is significant pre-release mortality.

There are separate short-term and long-term processes to resolve these "dead/undead" issues.

> *Stop using mortality files. Instead, submit "Mortality Events" as "Recapture Events" within a tagging file.*

The short-term process is quite simple: stop using mortality files. Instead, submit "Mortality Events" as "Recapture Events" within a tagging file. Using the recapture record format within the tagging file should clarify the distinction between a pre-release and post-release mortality. The species domain in the tag record format now includes a code of "0" to designate an "Unknown" species, so even loose tags (such as those recovered from Rice Island) can be

> *Please contact Dave if you have any questions regarding whether or not a dead fish is considered by PTAGIS to be a "mortality".*

referenced in a tagging file. The corollary to this is that references to "dead and shed" tags recovered prior to release must be removed from the original tagging file, so that the tags can (and should) be re-used.

The long-term process is much more messy, and involves a coordinated program to 1) identify existing mortality records that reference pre-release mortality events; 2) correct the original tagging file; 3) resubmit that file, as well as any other tagging files that reference those records; 4) resubmit Release Information files as necessary; and 5) remove all references to pre-release mortalities.

This approach may not be expedient in all cases, and may only make sense in the case of the small number of mortality files containing very large numbers of pre-release morts. Again, I'll be contacting marking coordinators where I believe this approach makes sense. ❖

Protecting PIT Tag Data When Importing Files into Excel

Many of you create comma separated variable (CSV) reports from the PTAGIS database application, and then import these reports into spreadsheet software packages. More of you would probably do so if you could figure out how to get all your data into a Microsoft Excel worksheet without having certain tag codes converted to exponential values. Here's a workaround to preserve those tag codes.

The problem has two parts. The first is that, while Excel appears to recognize ".csv" files as a native file format, it cheerfully ignores any quotes around text strings and tries to determine for itself what is a text field and what is a numeric field. This results in all tag codes comprised of strictly numeric characters between "0" and "9" (such as 5132761234) being converted to a long integer value, while any code containing one or more characters between "A" and "F" is treated as text.

Since Excel recognizes hexadecimal values, these mixed data types can be globally converted to one type or the other, either text or numeric, after which they can be sorted and compared. The nasty part of the problem occurs when Excel tries to load a ".csv" file and encounters tag codes that are comprised solely of numeric characters and a single "E", such as "5128757E12". In this unique case, Excel recognizes this as 5.13E+18; if you force this to text you'll get "5.13E+18"; if you convert this to a numeric value, you'll end up with 51,300,000,000,000,000! Either way, you lose the original tag code.

The workaround is to force Excel to import the data as a text, rather than CSV, file. The easiest way to do this is to rename your file, and replace the ".csv" extension with a ".txt" extension. (If you're using Microsoft Explorer's file managing tool to do this, make sure you set your "view" options to show the file name extensions.) Now, when you start to load this renamed file to Excel, the text import wizard kicks in to assist you in parsing your data.

Please refer to Figure 1 on page 6. Confirm that the "Delimited" radio button is selected, change your starting row (if you want to), and press the "Next" button.

Figure 2 (also on page 6) shows you where to enable the "Comma" delimiter checkbox, and disable the "Tab" delimiter box. Do NOT treat consecutive delimiters as one.

Verify that the Text Qualifier character is set to double quotes, and press the "Next" button.

Highlight the first data column (as shown in Figure 3 below) which contains your tag codes, and change the "Column data format" radio button to "Text". Press the
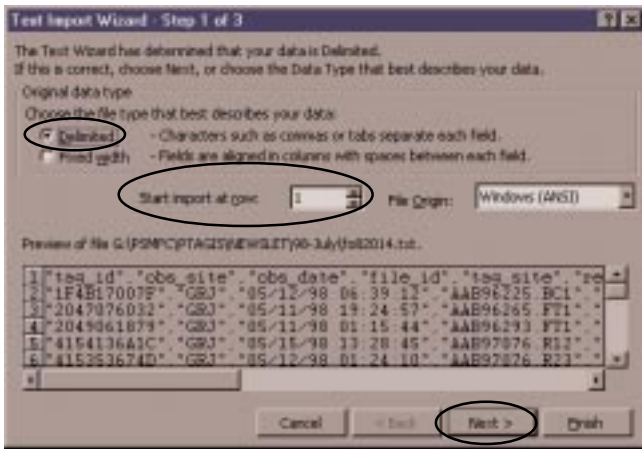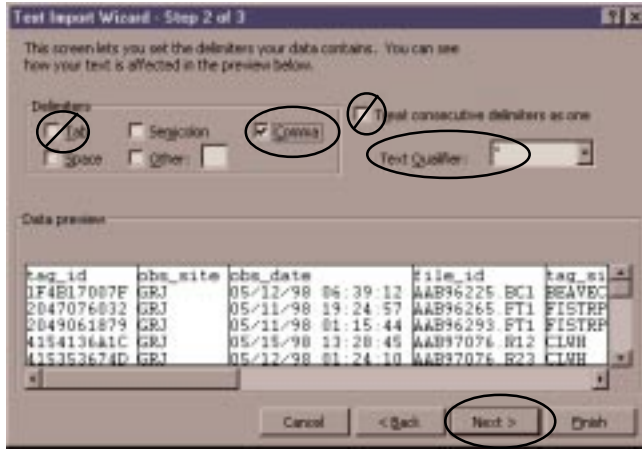
"Finish" button. Refer to Figure 4 below for a sample of the results.

By forcing the tag codes to text as you load them, you avoid the problem with exponential values. Be sure to save the worksheet with a ".xls" extension; do NOT over-write your original CSV/TXT file! ❖
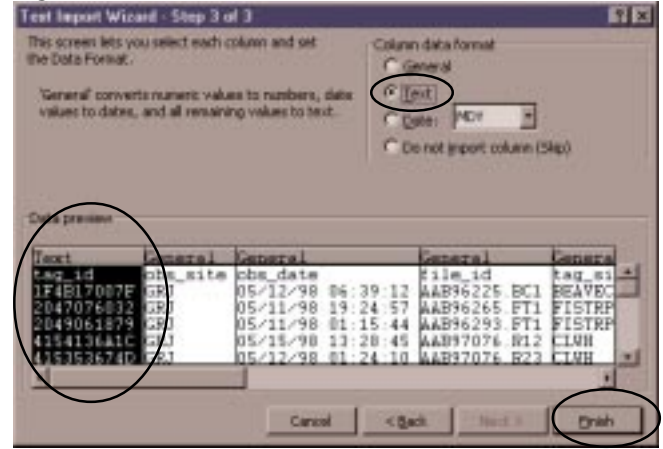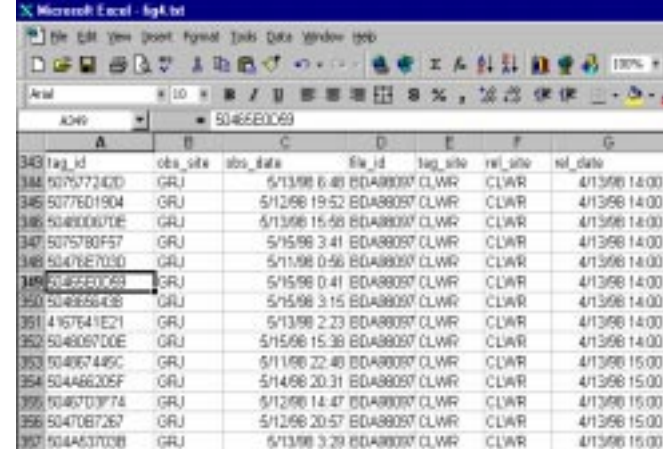
Figure 1

Figure 3

Figure 2

Figure 4

tagging records, or 0.06%)—or in its impacts to users. The records are divided between a multitude of tagging projects and coordinators, and almost a third of the records are at least ten years old.

Genuine duplicate tag_id codes do accumulate in the datasets generated in the Columbia Basin. Usually, they occur when a tag is "re-used" without properly deleting the previous tagging record, or when a tagged fish is re-captured, but is not properly designated as such in the PTAGIS database. There was one instance a number of years back where a small batch of duplicate PIT tags were

manufactured and inadvertently distributed in the Columbia Basin (see Appendix F of the *1998 PIT Tag Specification Document* for a listing of these tag codes).

Regardless of origin, when these duplicates are encountered by the database, the code that loads the data "shunts" any record with a pre-existing tag_id in the "Tag_Data" table into a separate "Tag_Dup_Data" table. (This table currently contains nearly 8,000 unique tag_id codes.) The fact that the "Tag_Data" table contains duplicate tag_id val-

ues indicates that the shunting process has failed repeatedly (but not regularly). It's also possible that some of these duplicates were loaded into the database before the current processing code was written.

Regardless of the age or reason for the processing failure, PTOC staff intends to: 1) Remove these duplicate tag_id records; and 2) Prevent additional duplicate records from accruing in the "Tag_Data" table.

There are three classes of duplicate tag_id records in the "Tag_Data" table. The first involves 475 records that should have, but did not, overwrite the pre-existing "ORPHAN" records. (Orphans were previously described in the December 1996 *PTAGIS Newsletter,* Vol. 1, Issue 8).

The second involves 62 completely duplicated records; these are all from 1992, and we are fairly sure they're a legacy of the transition from the prototype to production database. We here at the PTOC will remove the redundant data from these two classes of duplicate records, possibly before you read this.

> *Every tag_id in the "Tag_Data" table should be unique. That they are not causes problems for both the database and the users. However, it does not seem to be a catastrophic problem.*

That leaves 1,420 instances of duplicate tag_id records in the "Tag_Data" table. If the PTOC re-processes these remaining records, the "first" instance of each tag_id will remain in the "Tag_Data" table and any subsequent instances will be appended to the "Tag_Dup_Data" table. However, we would prefer that the individual data contributors review these records and take action to remove the redundancy from their original tagging files. This can be achieved by "dotting out" mortalities and shed tags in the tagging file, or appending missing "Recapture" flags to records where required.

Dave Marvin will be contacting individual tagging coordinators with "system" or "file" duplicates in the "Tag_Data" table, and ask them to try to resolve the redundant records. He will also alert them to their redundant records in the "Tag_Dup_Data" table, and encourage them to try to resolve those issues. ❖

John Day Juvenile Bypass (JDJ)
After several delays, the new John Day facility watered up on 4/9/98. The PIT tag interrogation system at this site was operational for the startup event. Several mechanical problems (related to the three-way gate) are being addressed by NMFS.

Bonneville (BVJ, BVX, B2J)
The PIT tag detector used by the Smolt Monitoring Program sub-sample (BVJ) at the downstream migrant (DSM) channel at Bonneville Powerhouse 1, has been operational since 3/9/98. Operation and Maintenance (O&M) of this monitor is performed by PTOC staff.

The flat-plate PIT tag detector (BVX), which monitors PIT tag passage through DSM-1, operated 8 hours per day between 3/20/98 and 4/1/98. Twenty-four hour monitoring of DSM-1 at BVX began at 08:00 PST on 4/1/98 and is continuing. Data transmission from this facility has been problematic, with resulting delays in data processing from this facility. O&M of BVX is performed by NMFS.

Twenty-four hour monitoring of the PIT tag detector (B2J) in DSM-2 (Bonneville Powerhouse 2) began on 4/2/98. O&M of B2J is performed by NMFS.

Bonneville Adult Fish Research Lab (B2A)
The first ever adult PIT tag interrogation system at Bonneville Dam began operation at 17:00 on 4/23/98. Fish passage through this detection unit occurs when the Adult Fish Research Lab, located on the Washington shore of Powerhouse 2, is operated by fisheries research agencies. Operations at this facility have been averaging nearly 40 hours per week.

Chandler Canal at Prosser (PRJ)
A controller failure halted data collection at this facility between 02:39 on 7/8/98 and 12:00 on 7/9/98. It was reported that air conditioning was turned off in the equipment room which lead to heat build-up, causing the problem.

Other (Non-PTOC) Supported Sites
Rocky Reach (RRJ)
This site operated and maintained by Chelan PUD. No information was reported.
Towed Array Experiment (TWX)
This site operated and maintained by NMFS. No information was reported. ❖

In addition, twenty Datamars ISOMAX 1 hand-held readers were procured in order to facilitate summer steelhead marking, which is now taking place. These readers do NOT conform to CRB standards or requirements (e.g., the code format is incorrect, the readers are not water- or shockproof, and they have limited diagnostic capabilities). We hope that users of these devices will report their experiences to the rest of us.

The first shipment of Destron/Fearing production portable readers is scheduled for January of 1999. Photographs of the Deston/Fearing readers can be seen in Figures 5-7 at right.

Stationary Readers

After last year's field testing, Destron/Fearing (in collaboration with the Stationary Transceiver Evaluation Team, or STET) redesigned the packaging for the stationary transceiver. Although extensive field testing has not yet been performed, the new design appears to be more modular and easier to maintain. Preliminary indications are that the new design out-performs last year's design.

Field testing of these new units (using live fish) will be conducted this Summer at McNary and John Day Dams during the first two weeks of August. This field test will provide an "apples to apples" comparison of the ISO system with the existing 400kHz system.

Tags

8,500 ISO tags and 1,000 400kHz tags have been procured for the live fish tests to be performed at McNary and John Day Dams in August.

The Tag Evaluation Team has agreed to establish a tag testing protocol, which uses a 'reference transceiver' to test the performance of tags relative to the reference transceiver. A description of the reference transceiver will be developed. This approach is in lieu of publication of specific electrical parameters of a specific tag. The reason for this is that publication of an electrical specification may disclose proprietary technical information.

In addition to the testing protocol for tag performance, procurement and quality specifications are being defined. These specifications will define the acceptable

Figure 5. Close-up view of reader and standard benchtop antenna.

Figure 6. Portable reader and standard benchtop antenna, with optional racquet style reader (at right).

defect rates, and quality assurance protocols, as well as forecast, shipping, and delivery protocols.

Infrastructure

As we reported in the October 1997 *PTAGIS Newsletter*, the TPT decided to deploy a limited number of ISO monitors at McNary and John Day Dams for field studies during the 1998 out-migration season. Twelve transceivers (in three monitor locations) were installed at McNary and six transceivers (in two monitoring locations) were installed at John Day by June 26, 1998.

These monitors will be the focus of the field testing to be conducted using live fish during August 1998.

The Walla Walla District Corps of Engineers (COE) is responsible for developing design drawings, specifications and cost estimates for electrical and fiber optic upgrades required for the ISO installation at the juvenile fish facilities located at Lower Granite, Little Goose, Lower Monumental and McNary Dams. These plans are expected to be completed during Fall 1998. The COE is also developing designs and specifications for the access structures required to maintain PIT tag interrogation equipment. Because of the costs involved, some access structure work may be delayed.

The next meeting of the TPT is scheduled for September 10, 1998.❖

Figure 7. Standard benchtop antenna and portable reader, shown with the 400kHz blue-loop reader and antenna.
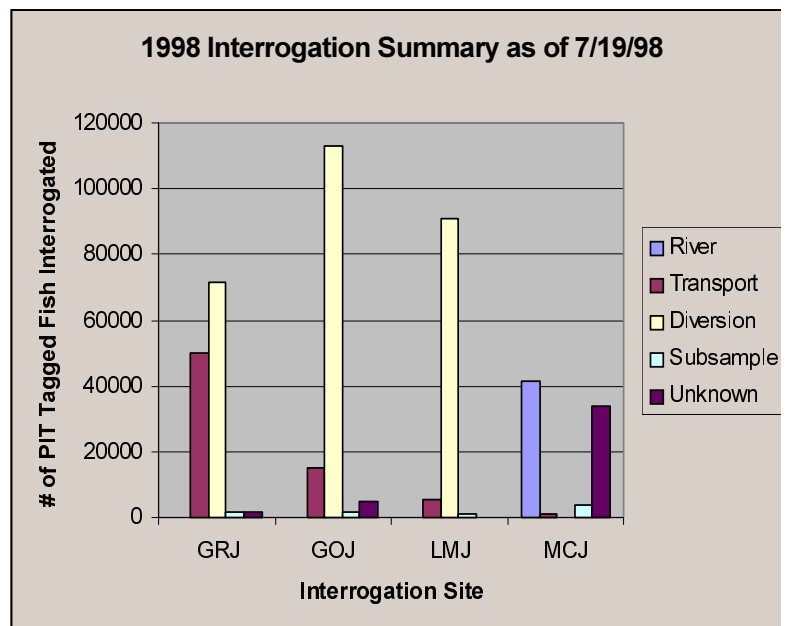

1998 Interrogation Summary

The graph at the right shows the final disposition of PIT-tagged fish at the four mainstem juvenile fish facilities during the 1998 outmigration (as of July 19, 1998). Notice that the Transport group for Lower Granite Dam (GRJ) is significantly higher than the Transport groups for the remaining three dams. This illustrates the effectiveness of the Separation by Code system, which supports the multi-state comparative hatchery transport study.

Explanation of Chart:
Both the River and Diversion groups mean PIT-tagged fish were last detected heading for the river. The Subsample and Transport groups mean the fish were transported from the facility by truck or barge. The Unknown grouping means there is no "exit" information available.

9

Announcements

- The PTAGIS program is pleased to announce the hiring of Dave Marvin as PTAGIS Systems Analyst. Many PTAGIS users are already familiar with Dave, as he has been associated with PTAGIS as a PIT Tag Steering Committee member, and was formerly employed by the Fish Passage Center. Dave brings with him over ten years worth of experience as a PIT tag system user. Dave's initial focus is to identify outstanding data integrity problems and propose solutions to fix those problems. Dave will also be the primary coordinator for all Separation by Code research that requires PTOC support. In addition, Dave will be available to answer your PTAGIS related questions. Dave's e-mail address is dave_marvin@psmfc.org. Welcome aboard, Dave! ❖

- At this time, all project PIT tag requests should have been sent to the Columbia Basin Fish and Wildlife Authority (CBFWA) by way of project proposal submissions. If you have any questions about your project and tag allocations, please contact your COTR at BPA.

  When submitting Distribution Request Forms (DRFs) to the PTOC, **please be sure to note your seven-digit BPA project number** (for example, 96-333-00). Be sure to **include your project's performance period on each DRF you submit.** We would also appreciate it if you would allow us two weeks (between the time you submit a DRF and expect delivery of PIT tags) to verify and process your requests. ❖

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