

2009 PTSC Meeting

2009 PIT Tag Steering Committee Meeting

The Columbia Basin PIT Tag Steering Committee (PTSC) Annual Meeting was held at PSMFC in Sellwood on February 24, 2009.

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Participants

PTSC members: Doug Marsh (NOAA), Charles Morrill (WDFW), Ed Buettner (IDFG), Steve Pastor (USFWS), Pat Keniry (ODFW), Jeff Fryer (CRITFC), Jack Tuomikoski (FPC)

Others: Tom Iverson (CBFWA), Rod Bina (TechHeads, Inc.), Ivan Jones (TechHeads, Inc.), Zeke Mejia (Destron Fearing), Randy Fisher (PSMFC), John Tenney (PSMFC), Brian Beckley (Biomark, Inc.), Scott McCutcheon (Biomark, Inc.), Dean Park (Biomark, Inc.), Sarah Branum (BPA), Ian Jezorak (USGS), Ryan Day (PSMFC), Scott Livingston (PSMFC), Dave Marvin (PSMFC), Alan Brower (PSMFC), Warren Leach (Oregon RFID), Jamie Swan (BPA), Sandy Downing (NOAA, called in), Don Warf (PSMFC, called in)

Meeting Agenda

| Time | Item | Person |
|----------------|---|-------------------------|
| 8:15 - 8:45 am | Demonstration of a new pre-loaded needle system | Dean Park |
| 8:45 - 9:15 am | Follow-up on meeting with Randy | Rod Bina / Randy Fisher |
| 9:15 - 10:30 | Presentation on M4 | John Tenney |
| 10:30 - 10:45 | Break | |
| 10:45 - 12:30 | Update on PTOC software and web application | Ryan Day / Dave Marvin |

| | | |
|---------------|---|----------------------------|
| 12:30 - 13:00 | Working Lunch | |
| 13:00 - 13:15 | What to do with Canadian data? | Dave |
| 13:30 - 13:45 | Continued update on PTOC software and web application | Ryan |
| 13:45 - 14:30 | Discussion of in-stream monitoring and that activity's relationship with PTAGIS | Doug Marsh / Sandy Downing |
| 14:30 - 15:00 | Update on spillway interrogation | Sandy / Zeke Mejia |
| 15:00 - 15:40 | O&M update | Don Warf |
| 15:40 - 15:45 | Break | |
| 15:45 - 16:30 | Continued Tag QA equipment and best use | Alan Brower |
| 16:30 - 17:15 | Update on the next generation of transceivers | Zeke / Sandy |
| 17:15 - 17:20 | Elect new chairman: Steve Pastor | |

PIT Tag Steering Committee Annual Meeting

8:00-5:00, 24 February 2009

PSMFC Offices, Portland, Oregon

Minutes

Attendees:

Doug Marsh (PTSC-NOAA), Charles Morrill (PTSC-WDFW), Ed Buettner (PTSC-IDFG), Steve Pastor (PTSC-USFWS), Pat Keniry (PTSC-ODFW), Jeff Fryer (PTSC-CRITFC), Jack Tuomikoski (PTSC-FPC), Tom Iverson (CBFWA), Rod Bina (TechHeads, Inc.), Ivan Jones(TechHeads, Inc.), Zeke Mejia (Destron Fearing), Randy Fisher (PSMFC), John Tenney (PSMFC), Brian Beckley (Biomark, Inc.), Scott McCutcheon (Biomark, Inc.), Dean Park (Biomark, Inc.), Sarah Branum (BPA), Ian Jezorak (USGS), Ryan Day (PSMFC), Scott Livingston (PSMFC), Dave Marvin (PSMFC), Alan Brower (PSMFC), Warren Leach (Oregon RFID), Jamie Swan (BPA), Sandy Downing (NOAA, called in), Don Warf (PSMFC, called in)

1. Demonstration of a new pre-loaded needle system (Biomark)

Scott and Dean presented their new single-use injector system. The basic elements are a needle/hub that contains a push-rod, tag, and a spot of silicone to keep the tag in place, a plastic sleeve to protect the needle, a re-usable box for holding the needle/sleeve assemblies, and a tagging gun. There is an indicator on the hub that shows which way the bevel is pointing. The needles comes in bags of 100 or 200. It takes 5 minutes to load 200 needles into the box. A perforated cover is placed over the filled box that allows the tagging gun to access the needles but prevents the sleeves from coming out with the needles. The tagging gun has a long tag injection trigger molded into the hand grip and a smaller

needle ejection trigger near the top. Lead time is critical as the tags have to be sent to Biomark and then to the manufacturer for loading. Details and costs are still being discussed.

Scott invited anyone who is interested in seeing the system in use to contact them about visiting Biomark's fall Chinook tagging operations in April (Lyons Ferry and Umatilla Hatcheries) and at Dworshak Hatchery in May/June and June/July.

2. Follow-up on our meeting with Randy Fisher

On 4 February, the steering committee met with Randy and Rod and Ivan from TechHeads, Inc. The purpose of the meeting was to discuss both the changes in the PIT Tag Operation Center (PTOC) and an audit Randy had asked TechHead staff to conduct on the PTAGIS database. (notes attached) TechHead staff was asked to do the original audit because they had already been involved with other PSMFC computer systems.

Rod presented what has occurred since the 4 February meeting. There is a search for an independent consultant to conduct an audit for a second opinion. Rod anticipated that it will take a couple weeks to interview consultants and choose one. The audit is expected to take one or two weeks, with a report by the end of March.

Randy emphasized that he wants to make sure everyone is comfortable with what ever decision is made regarding the future of PTAGIS, whether it means staying with the current system or moving to another platform. He wants to remove any misconceptions or misunderstandings that are currently floating around.

Rod said that TechHeads has developed a roadmap for a transition to a new platform based on their audit. He was concerned that sending it out would be premature given the upcoming second audit might necessitate a change in the current roadmap. The committee felt that the current roadmap would still be informative and accepted that changes are possible.

In discussions between Randy, Rod, Ivan, and the committee, it was decided that two members of the committee, Steve and Charley, would become involved with the second audit after the consultant is picked. The actual interviews will revolve around the technical abilities of the interviewees, which is beyond the committee's expertise.

During a break later in the day (Randy, Rod, and Ivan left after this agenda item), Randy was approached by the committee and asked that current PTOC staff be included in the meetings involved with the second audit and he agreed to having that occur.

Action Items:

A. Rod will send out the current roadmap developed from their audit, with the understanding that it might change.

B. PTSC members need to send problems people in their agencies are having with the current system to Doug this week. He will compile them and send them to Randy at the beginning of next week.

C. Steve, Charley, and current PTOC staff will participate in meetings with the chosen second auditor. [Note: Jack has volunteered to participate as well]

3. Presentation on M4 (John Tenney)

John gave a Powerpoint presentation on the development of M4, the new interrogation software (see PTAGIS Wiki page for presentation).

M4 will replace Minimon, Multimon, and Mobilemon. The program is written in modules, so users can only install the portions they need. All data will be stored in a Sql Server database. On the smaller devices previously targeted by Mobilemon, M4 will run on Windows XPe and use Sql Compact, a smaller version of Sql Server.

The overall goals for M4

- All data is 100% valid
- Near-real time access
- 99.9% up time
- Supports current and new devices
- Interfaces with existing systems
- Ease of use
- Standard platform
- Meets or exceeds current SxC efficiency

The program runs as a Windows Service, so it can automatically start when the computer boots. Because the data is stored in a database instead of flat (text) files, each data record can carry more information. For example, each data record will have the version of the site configuration map active when it was detected. Also, trigger devices (currently only GPS, but maybe temperature and other sensors in the future) can add data to each record when the tag is detected.

The monitoring of tags part of the program is nearly ready for an Alpha release in March. The separation-by-code portion is much more difficult. Currently, Multimon runs in DOS because of Windows doesn't run in "real-time", which is what is needed (for port access, etc.)(?). John is looking at two possible fixes or workarounds for this Windows issue. There is the possibility that moving to a 64-bit Operating System will allow M4 the time to conduct the necessary requirements for SxC. The second way is to build the program then port it to another software package that can perform the functions.

Additional functions in M4 include

- Data management/submission
- Event logging
- Ability to stop SxC without stopping monitoring
- Hope to add tools to patch data when one of redundant computers fails

Release schedule

- March 2009, Alpha version with just monitoring functionality
- Spring 2009, an SxC prototype
- Summer 2009, Data submission
- Fall 2009, Beta version with full functionality

- Winter 2009, Production release

Training in use

- Kennewick staff will be trained first
- Other users; possibly in a workshop environment

4. Update on PTOC software (P4, etc.) and the web application (PTOC staff)

John Tenney:

The following programs are in Maintenance Mode, i.e., no new features but fixing bugs

- P3
- Minimon
- Mobilemon

P4 development will begin after M4 is ready. Before beginning on P4, the users will be canvassed as to features they would like to see in the program, possibly using a web questionnaire.

Dave Marvin:

Dave presented a “State of PTAGIS” talk. He provided a look at the numbers:

- 610 Tag, Release, and Collection sites (excluding Intra-Dam sites)
- 189 sites have been added since the 2004 Specification Document was published
- 22 million tags
- 99.6% from juveniles
- 0.2% from adults
- 0.02% mainly resident or non-anadromous species
- 104 interrogation sites with data (116 total)
- 78 active, including 12 volitional release sites
- 20 under PTOC
- 7.8 million unique tags detected; 100 million detection events
- Over 800,000 tag have been recovered from bird islands
- There are over 700 web accounts and 33 telenet accounts

Dave also presented a request to add sites from the Okanagan River drainage to the database which will be operated and reported by the Colville Tribe but are located in Canada. During the discussion it was pointed out that we already have data from outside the US in the form of tag recoveries (Morts) from fisheries [note: forgot to include the one collected in New Zealand]. Because Canada doesn't have a HUC system in place, we decided to use the HUC for the section of river at the border.

Ryan:

When developing the web-based query system, there was an effort to balance the needs of both the average user and the big downloaders. This resulted in the limits placed on certain fields. At one point in the development, the report writing interface was also limiting reports. The current interface is Java/Java Server Pages and the limit is in the Java driver (2,000 character limit in the SQL sentence). Communication speed is very hardware dependent.

Some of the current imposed limits are:

- 5 observation sites per report
- Can download only one year (365(6) days, not calendar year) of observations at a time when requesting data only by obs_date
- Registered tag files can contain 2-5,000 codes (number not certain) for "one fish history" type of queries. Registered tag files for other types of queries also limited, but uncertain of the number.

Instead of creating multiple classes of users, Ryan would like to make the interface usable for all users and wrote down several ideas presented during the discussion.

Action Item:

A. Allow sites in Canada to be inserted into database and use the U.S. HUC for the section of river at the border.

5. Discussion of in-stream monitoring and that activity's relationship with PTAGIS (Doug/Sandy)

On 23 February, there was a meeting of NOAA in-stream monitoring researchers. There are three groups of researchers at the science center involved in this type of tagging and monitoring, each operating independently. Some of the research is in the Columbia Basin and some is outside the basin, but the needs were common to both. The meeting had several objectives including presenting to the researchers what PTAGIS and its client software can do and presenting to PTAGIS (in the persons of John, Sandy, and Doug) what the researchers need from PTAGIS in order to make use of the regional database. Another major objective was to familiarize each of the groups with what the others are using in terms of data gathering and management.

Sandy mentioned that the researchers were impressed with John's presentation on the abilities of M4, and the possibilities of including their needs in P4. They would like to be able to include information such as antenna detection efficiency, detection system type (FDX, HDX, mux, etc.), the size of the tag, antenna type (flat plate, pass-by, etc.), and information on collected but untagged fish.

We told the researchers that the best way to assist in getting new data into PTAGIS is to standardize their operations, something they were already interested in doing, if for no other reason, to be able to compare the results between the groups.

In addition to discussing what came out of the NOAA meeting, we also discussed the increasing use of HDX tags and other vendors of detection equipment. Warren provided some background and information on both HDX tags and readers from Allflex and Oregon RFID. Regarding HDX tags, he mentioned that until a couple years ago, TI controlled HDX tags. Since then, other manufacturers

have been able to obtain the chips and build their own tags. He had two tags from Australia with him. There are some tags that are lead-free. (do I have this correct?)

Regarding readers, Warren mentioned that while some users buy boards and then make their own system, most have been purchasing complete readers. Newer boards can read both FDX and HDX. Oregon RFID is in the process of building a new reader (is this correct?). HDX technology allows for larger antennas, with the largest currently in use being 190 feet long with a read range of 10 inches. Dave mentioned that there are currently 17 HDX tags in the database. He was supplied with a code that was less than 10 characters, so he added HDX as the manufacturer's code and padded the left side with zeros to build the 3-dot-10 code. Warren mentioned that some tags (industrial-?) have 000 as the manufacturer's code. Zeke pointed out that full ISO readers might not read an industrial tag because of the regulations. As a reminder, the current readers in the basin are not full ISO because we ignore the HDX requirement.

6. Update on spillway interrogation (Sandy/DA)

Zeke and Sandy gave a Powerpoint presentation on what has been done and what is being looked at. From the testing at the repair bay at Bonneville Dam, it was found that with the antenna hanging at 90 degrees of the spillway floor, and with the ferrite tiles between the antenna and the spill gate, read range was 5 feet. A report has been written regarding the work done in the repair bay.

Another approach to the issue is to remove a section of the spillway ogee and insert an antenna. This method could allow for more than one detection location per spillway. Because of the chances of tag collision, the width of the spillway would require multiple short antennas along the detection site, each with its own transceiver (i.e., can't mux them). Major problem is flows can be as high as 90 feet/sec. This would require shortening the tag message signal. It's believed that the signal can be shortened from 32ms to 8ms, increasing the number of signals generated while the tag was inside the field by a factor of 4. There is the possibility of trying this at Ice Harbor Dam in 2010.

7. O&M update (Don)

Scott Livingston and Don gave a Powerpoint presentation on activities over the past year.

During winter 2008, all of the computers at non-SxC sites were upgraded. Computers at SxC sites can't be upgraded because Multimon has to run on DOS under the Windows 98se version. DOS under XP or Vista prevents Multimon from accomplishing SxC. To ensure there is back up for the older machines, PTAGIS totally re-built 12 older computers and installed all the necessary software. In January 2008, 3 transceivers from Bonneville Corner Collector were sent to Destron-Fearing and rebuilt. Those transceivers performed much better than they had previously.

Troy and the Kennewick staff have installed an Automated Read Range Tester at the corner collector. The read range fluctuates with changes in humidity, noise, water level, etc. (all of which they are currently monitoring). The ARRT extends a tag toward the antenna until it is read. It then measures the distance traveled. In addition to measuring read range, it also measures hit rate. This information is used to determine how well the antenna is functioning. Currently, it has to be run manually (but can be done over the internet), but the plan is to make it automatic.

Also at Bonneville, the entire network was rebuilt, making troubleshooting much easier.

As a result of increased security at COE sites, PSMFC has to get off COE lines and internet. They are deploying satellite communications at all Walla Walla District dam sites and should finish late-spring/early-summer 2009.

To improve data collection system uptime, more powerful UPS devices have been or will be installed at both the computers and transceivers. The computers can remain running for 45 minutes to 1.5 hours and the transceivers for 2 hours. The sites to receive the upgrades are BO1, BO4, John Day full-flow, MCJ full-flow, MC1 and MC2 counting windows, Ice Harbor, LMJ full-flow, and GOJ full-flow. The full-flow detection system at Little Goose Dam is being installed. The four units are on site. The target date is water-up on 1 April. Due to uncertainty with power availability, worse case is that detections will be buffered at the transceiver and manually downloaded.

Alan has developed a process to retrieve the tag code from broken tags. So far, agencies have sent in 20-30 tags.

PTOC is working with the Yakima tribe to establish five sites in the Yakama River. The first to go in is at Lyle Falls in 2010.

During a discussion of the Tag Distribution System (TDS), Jamie noted that she had to walk the vast majority of users through it, mostly likely because they hadn't read the instruction manual. So she wanted to make sure folks were aware that it is there.

Alan discussed the Automated PIT Tag Testing System (APTTS). This system is used to QA/QC tag distributed to users within the basin. It has also been used to select tags for different research efforts, including testing of the John Day Dam full-flow detection system. During that testing of 2,000 tags, 32 were outliers (beyond 3 standard errors of the mean), 30 were so-so, and 2 wouldn't read at all. The 32 outliers also didn't perform in the 4x4 antenna at Kennewick. There was discussion and agreement that the manufacturer and PTOC have to work together to develop the standards against which tags are tested. This will help both the user and the manufacturer. PTOC has allocated 24 days/year for testing, which allows for the full testing (takes 64 seconds/tag) of 1.8% of all tags or the minimal testing (test if a tag reads only; 6.5 seconds/tag) of 17.72% of all tags. A discussion followed as to what is acceptable. Several mentioned they understood that a 25 failure rate was expected. While this might be acceptable for those tagging large numbers of fish, it is too high for those who rely on small numbers.

8. Update on the next generation of transceivers (DA/Sandy)

Zeke presented information on the 2020 transceiver. The biggest advantages of this system is that it will replace the three different types of transceivers that are currently being used and it works very well in environments we currently are having problems operating in. During testing it performed quite well. This transceiver has auto-tuning, uses less power, and has data recovery. After testing, a report was written with needed changes to both hardware and software, with most of the changes in the software arena. These changes include the ability to communicate with all systems, added queries, and juvenile detection. The hardest part will be making it completely compatible with all systems. Zeke expressed concerns about budgeting time and resources without up-front money. During much discussion, it was generally agreed that the first set of transceivers ordered would include the added cost in the individual pricing.

An implementation/transition team, similar to the 400/ISO transition team, needs to be set up, with representatives from BPA, COE, DF, NOAA, and the states/tribes (a member of the steering committee). The target for installation of the new transceivers is 2012, and we would like to have the modified transceivers in hand to test for six months, at least, so they can be tested during the height of the outmigration and against the differing environmental conditions (i.e., heat) they will be exposed to.

There was also a discussion of the ACN multiplexer. Sandy wanted to make sure that everyone understood that the ACN multiplexer was the higher priority of the two transceivers being developed with an anticipated delivery date of the end of this year. The ACN system has the board on the antenna which communicates with a master controller. One question is that how the power demand is affected with the antennas going to stand-by instead of shutting off. In June, a master controller and two nodes (antenna/boards) are to be delivered for testing. Diagnostics will be added later.

9. Status of the 2009 Specification Document update (Dave)

Due to Jan being busy with tag distribution at this time of year, the draft document was not ready. Dave said that considerable work has gone into it, and once the tag distribution is finished, they plan to finish the document.

10. Selection of new committee chairman

Steve Pastor won a hard fought campaign to be the new committee chair, with Doug Marsh acting as vice-chair. Our heartfelt congratulations go out to Steve.