



FISH PASSAGE CENTER

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MEMORANDUM

TO: Randy Fisher, PSMFC
Executive Director

FROM: Michele DeHart

DATE: January 9, 2009

RE: FPC use of PITAGIS

In response to your January 7, 2009 request, the Fish Passage Center (FPC) staff developed the following summary discussion of the FPC use of the PITAGIS data system. As you know the PITAGIS system is a critical component of the FPC, Smolt Monitoring and Comparative Survival study projects. The following discussion summarizes the FPC use of the PITAGIS system. The FPC staff is committed to working with PSMFC to assist in anyway we can regarding the PITAGIS data system.

The FPC analysis requires access to large sets of data that are used in various analyses for entities both within and outside the Columbia Basin. Several years ago the PSMFC staff established a telnet based access to PITAGIS for the FPC. The FPC staff continues to use the telnet application to access PITAGIS primarily for two reasons. The current PITAGIS Web Interface Program does not produce an output format that is easily useable by the FPC and it is much slower than via the telnet.

FPC staff completely depends on the PITAGIS data system to meet the FPC contract deliverables, day-to-day data requests, the FPC Annual Report and the CSS Annual Report. The FPC must meet contract deliverables such as response to data requests and analyses that are time sensitive. Because the web interface system is not readily useable in its current format, it is

imperative that PSMFC allows the FPC to use the telnet option until a better and faster method is operational on the PTAGIS web portal.

Specific uses of the data by the FPC

After the data is downloaded from PTAGIS the information is stored in two databases locally. Records for individual fish may be downloaded twice or more over the course of a migration year. FPC staff downloads PIT-tag data directly from PTAGIS on an “as needed” basis throughout each migration year and stores these data in a “real-time database”. This is used for in-season analysis and management questions. This database may eventually include some dotted out fish. In addition, at the end of each migration year, FPC staff downloads all PIT-tags for that migration year and stores it in another database (that does not have dotted out fish) in order to have a complete and accurate data set for the entire migration year.

Data from our databases are used for analyses such as those for the Annual Report and/or CSS Report, and for data requests. In addition, the PIT-tag data are used in several interactive web reports and charts found on our web-site. These queries display daily adult PIT-tag returns by site and species. These data are displayed in a line chart showing the previous daily returns during the week and in a report format that the user can scroll through. The other interactive charts on our web-site include cumulative adult PIT-tag detections, daily PIT-tagged smolt detections, and cumulative PIT-tagged smolt detections. There are reports associated with each of these charts. These web programs are written in ASP.Net.

The format of the data

The current PTAGIS Web Interface Program does not provide the data in a format that is useful for FPC analyses. PIT-tag data are downloaded from PTAGIS via the telnet with queries generated in a program called AnizoWin; the results are stored in a text file format. First, FPC staffers use AnzioWin to register a list of PIT-tag IDs, and then run a “registered tag_id” list through the same application to get a “Detail Summary” report.

This report in particular, is difficult to attain from the web based interface in the same format. The report is one text file with six embedded tables. Each table contains a specific data type in a specific order and format; these are TAG, REC, MOR, DUP, OBS, and TDI. The fields and formatting for these 6 data types are also very specific. FPC staff has written a complex program, “FISHPUMP”, for processing this data and populating the FPC server with the resulting information. This program (FISHPUMP) currently is set up to download registered tag_id files in a form that is not available through the web access.

The FISHPUMP application (written in C# .NET) was created by FPC programmers to transfer data from the “Detail Summary” report to the FPC server. The TDI records are deleted from this report, prior to it being run through FISHPUMP. In addition to parsing data from the text file, the FISHPUMP program assigns the Capture History, Capture Disposition, and Burnham History codes for each individual. Every time an individual Tag ID is run through this program, the record for that fish is updated (e.g., subsequent juvenile and adult detections). The Detailed Summary report has separate headers for each new data type record, and the format of each field

is very specific. So, FISHPUMP was written to exactly join the Detailed Summary report to various locations in FPC database tables, and to create new tables based on additional data processing criteria added annually by FPC staff. FPC has used FISHPUMP or similar applications for more than a decade to process pit-tag data from PTAGIS.

If the telnet portal no longer exists, then the FPC would need to obtain directly from PTAGIS these same fields and formats in a text file as in the Detail Summary report. This format includes the five embedded tables in comma-separated-values (CSV) format. These five tables contain information about individual PIT tags. Headers are required for each table preceding that table's data. If a table is empty, the headers are still required as a placeholder. The five tables must always be in the same order and each header and datum must be enclosed in double quotes. The headers for the five ordered tables are:

1. *TAG type header:*
"type","capture_meth","coord_id","file_id","flags","hatchery","length","migr_yr","org","rel_site","rel_v_time","river_km","t_rear_type","t_run","t_species","tag_date","tag_id","tag_rem","tag_site","wt"
2. *REC type header:*
"type","re_capture_meth","re_coord_id","re_date","re_flags","re_length","re_org","re_rel_site","re_rel_v_time","re_river_km","re_site","re_tag_rem","re_wt","recap_file","tag_id"
3. *MOR type header:*
"type","cap_org","coll_site","flag_code","m_capt_meth","m_close_date","m_coord_id","m_file","m_rem","mort_date","mrt_lgth","mrt_wt","river_km","tag_id"
4. *DUP type header:*
"type","flags","migr_yr","seq_no","t_rear_type","t_run","t_species","tag_file","tag_id","tag_rem"
5. *OBS type header:*
"type","first_monitor_name","first_obs_date","intrgn_count","last_monitor_name","last_obs_date","obs_site","tag_id"

Timeliness in acquiring the data

A web interface would be acceptable if it could match the performance of the telnet interface. The web interface would allow for multiple simultaneous users at the FPC while the telnet interface, in its current configuration, only allows for one user at the FPC. The experience of FPC staff in running other queries or reports on the PTAGIS web portal is that the run times tend to be much longer than similar queries or reports run on the telnet application. Especially as more and more users are accessing the PTAGIS web portal, there appears to more delay in run turnaround time. Right now we are getting what we need in a timely fashion (but it does take a lot of time) from the telnet application in one data acquisition report. If the web portal allowed FPC staff to run a single query and get the multiple tables combined in one text file then the web portal would represent a reasonable alternative. As the web portal is currently configured it does not work nearly as well for our data needs as the telnet portal.

We are concerned that the web portal may not have the capacity to handle large data files. The size of the files of data that the FPC routinely is able to download through the telnet application, if attempted through the web portal, would place additional strain on the web based system. At certain times of the year, the FPC may need to access millions of pit-tag records. This volume probably greatly exceeds requests by most other users and it's possible that this could slow the web portal access for all users. Allowing FPC access through the telnet interface alleviates this potential problem as well.

We look forward to working with you. If you have further questions or need additional details, do not hesitate to call. The primary staff contacts are Lynnae Sutton, Sergei Rassk, Tom Berggren and Jerry McCann who can be reached at 503-230-4099.