

Juvenile Migrant Data Exchange

Draft Project Proposal

July 15, 2010

Background

Under the sponsorship of the Puget Sound Partnership (PSP), representatives from the Northwest Indian Fisheries Commission, Tribes; state and federal fish & wildlife agencies; water quality and quantity agencies; land managers, and agencies providing restoration and protection action grants are working together to design and establish the *Puget Sound Data Exchange*. Using the Exchange Network (EN), participants are collaborating to standardize, integrate and exchange information as part of their shared efforts to monitor and restore the health of the Puget Sound watershed. The EN provides tools and approaches for data to be shared efficiently and securely over the Internet, providing real-time access to higher-quality data while saving time and resources for partners. This project will focus on the exchange of juvenile migrant salmon data.

Purpose

The purpose of the Juvenile Migrant Data Exchange Project is to use the Exchange Network (EN) to collect and integrate Washington State's juvenile migrant salmon information.

Process

The Northwest Indian Fisheries Commission (NWIFC) and the Washington Department of Fish and Wildlife (WDFW) are the main collectors of this information and will be providing access to this information to inform decisions and activities designed to restore and protect the Puget Sound watershed. The Juvenile Migrant Data Flow Development Workgroup (JMWG) was formed to enable the sharing, interpretation, and integration of juvenile migrant salmon data from multiple sources.

The following outcomes will be accomplished through the *Juvenile Migrant Data Exchange* project:

1. Improved sharing of juvenile migrant salmon information, using the EN, between Washington Department of Fish and Wildlife (WDFW), Northwest Indian Fisheries Commission (NWIFC), participating Tribal Nations, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) and the Puget Sound Partnership (PSP);
2. Improved tools for data entry and management, allowing for normalization of juvenile migrant salmon information within and among WDFW, NWIFC, Tribal Nations, NMFS, and PSP;

3. Tools to exchange juvenile migrant salmon information among organizations, including a Node-Client User Interface for NWIFC and WDFW.

Deliverables

- Node plug-in for JMX Node
 - .Net for NWIFC
 - Java for WDFW
- JMX Node-Client for submitting and receiving data via the Exchange Network (EN)
- Node interface for synchronization of data and other tasks
- Desktop database user interface for working with the JMX database
- Web-based database user interface for working with the JMX database
- Documentation, training and materials for the above

Objectives

The Northwest Indian Fisheries Commission (NWIFC) and Washington Department of Fish and Wildlife (WDFW) have received funding from the PSP and will work collaboratively on the technical development of the Juvenile Migrant Data Exchange.

The project will consist of:

- 1) Generation of a JMX database schema and supporting domains (look-up tables), including:
 - a) Primary juvenile migrant data,
 - b) Abundance estimates based on those data, and
 - c) Descriptions of the methods/approaches used to produce these estimates.
- 2) Generation of Data Exchange Template (DET)
 - a) Review definitions of primary (field collected) and derived (calculated) data elements and
 - b) identified relationships among data elements
- 3) Generation of the Flow Configuration Document (FCD)
- 4) Development of a Node-Client to exchange data between data contributor and JMX
- 5) Development of node plug-ins to exchange data between NWIFC and WDFW, including synchronized database relationship between NWIFC and WDFW JMX Nodes.
- 6) Development of a Data User Interface System for daily entry and retrieval of primary and derived data from the JMX database. This work will be completed with the input of State and Tribal biologists who supervise juvenile trap studies and manage juvenile migrant data in Puget Sound and statewide.

NWIFC, in collaboration with WDFW, will accomplish the following objectives:

1. Implement the juvenile migrant data flow per the Flow Configuration Document, including providing the Puget Sound Partnership and other relevant partners the needed security permissions on the JMX Node
2. Conduct Quality Assurance-Quality Control testing of the Node-Client UI.

3. Conduct Quality Assurance-Quality Control testing of the Node administration interface
4. Conduct Quality Assurance-Quality Control testing of the Database User Interface.
5. Provide the available metadata on the juvenile migrant salmon data per the format in the Data Exchange Template (data dictionary).

Contractor Tasks:

To establish the Juvenile Migrant Data Exchange, the NWIFC and WDFW will need to consider several components in its move towards the flow implementation. These are:

1. Complete an XML Schema, a Data Exchange Template and a Flow Configuration Document.
2. Design and implement a data flow which provides data to partners, by either responding to queries or solicit requests for information.
3. Design and deploy a central database at both the NWIFC and WDFW offices. These central databases must be set up to permit the automatic synchronization on a pre-determined schedule.
4. Design and deploy two JMX node plug-ins. One Java-based for WDFW, one .NET based for NWIFC.
5. Design and deploy a Node-Client UI for manual transfer/receiving of data.
6. Modify the NWIFC Node to process Juvenile Migrant Data Flow, and Pacific Northwest Water Quality Exchange Data.
7. Provide training and support materials on the Node administration, Node-Client, and the Database UI.
8. Database UI – Data Collection / Management Tool
 - a. General requirements
 - i. Develop and deploy a database interface operable on a client's workstation to work with supplied JMX database
 1. Provide capacity to login user prior to interface access
 2. Provide capacity to enter data
 3. Provide capacity to edit data (single record or bulk)
 4. Provide capacity to bulk load data
 5. Provide capacity to delete record(s)
 6. Provide capacity to query/sort database

- 7. Provide capacity to export data
- 8. Provide capacity to access topic sensitive help
- ii. The Database UI will have 3 screen sections (see the JMX common database schema for these sections)
 - 1. The Primary Day-day data entry screens
 - a. Allows the user to enter their daily fish trap collection data
 - b. Allows the user to have bulk retrieval of data into an excel spreadsheet format. This allows the users to make changes and additions to the excel spreadsheet and then a bulk update them back to the tables.
 - 2. The Derived data entry screens
 - a. Allows the user to enter derived data calculations based on the primary data collection from the day-to-day entry screens.
 - 3. The Protocol Manager data entry screens
 - a. Allows the user to enter Protocol Management Records into the system
 - b. Has a Copy/Create procedure for Protocol objects
- iii. Implement business rules and flow logic to validate data entered into the database via the interface.

b. WDFW Specific Requirements:

- i. All data will be synchronized to a staging database and a review process will need to be developed before it is published to the central JMX database for Node-Client data sharing
- ii. Develop a centralized online web-based Database UI utilizing Java and WDFW preferred Java Libraries (Spring, Swing, ibatis, etc.) and deploy on WDFW's central Tomcat application server. The Database UI will have a login authentication which will be based on the user's WDFW active directory credentials.

9. Node-Client User Interface

- a. Review data
 - i. Provide the ability to review data before sharing it with partners
 - ii. Provide the ability to review data which has been obtained from partner
- iii. Link to database interface
- b. Provide data to partner
 - i. from database or file
 - ii. by date range
 - iii. identified for submission
 - iv. for originator organization only
- c. Import data from JMX partner
 - i. to database or file

- ii. by date range
- iii. by organization
- d. Activity history
- e. Configuration

10. Node Interface

- a. Schedule to synchronize between the two nodes
- b. Node generates message to Node-Client for both successful and failed submissions
- c. Security to control access by authorized partners