



What is the Southern Chinook Spawn Mapping Tool?

The [Southern Chinook Spawn Mapping Tool](#) is an interactive web application developed by ESSA Technologies for DFO's Pacific Region to aid in implementation of the Wild Salmon Policy. The Spawn Mapping Tool has been created to allow DFO's regional biologists, and potentially a larger group of qualified provincial, First Nations and consulting biologists to easily add and update information on the location and extent of Chinook salmon spawning areas.

Soliciting contributions from a broad range of fisheries experts in this manner represents a form of expert-based [Volunteered Geographic Information](#) (VGI), or [crowdsourcing](#), in order to acquire better BC provincial fish data.

Information provided online in this manner is automatically transferred to a centralized database currently maintained by ESSA Technologies.



The Spawn Mapping Tool allows users to continuously explore and add to spawning data in real time through the online map, which is organized by distinct Southern Chinook salmon populations ("Conservation Units"). The current iteration of the tool also allows expert users knowledgeable about specific Conservation Units to identify and map critical spawning habitats, former spawning areas, and local stressors to spawning habitats within the watersheds to aid in future habitat assessments. While development of the Spawn Mapping Tool to date has focused on collection of new and updated Southern Chinook spawning information there are no defined limits to the types of information that could be collected through this easy-to-use online application, allowing for potential improvements in map-based data collection that could help address a range of local salmon habitat issues.

Architecture

The Spawn Mapping Tool has been built using the ESRI suite of tools for ease and speed of both development and deployment.

- Front-end
 - Flex – using the ArcGIS API for Flex to display and interact with the web services
- Back-end
 - ArcGIS Server – web server, dynamic layers, user access control
 - ESRI Map Services – layer content and style
 - PostgreSQL database – data storage

Development principles

The Spawn Mapping Tool has been developed for the purpose of allowing stakeholders, each with specific knowledge regarding various watersheds, to build a better picture of Chinook spawning habitat within Southern BC. The tool can be accessed at any time, and by multiple users, using a web browser. The database, where all of the spatial and related tabular information is stored, supports access and security for individual users so that any given addition or edit can be tracked.

By using the ESRI development stack (ArcGIS Desktop to author the data and publish the map layers; ArcGIS Server to serve the spatial data; ArcGIS API for Flex to consume and display the maps), it makes it very quick to develop the required web maps and leverage built-in functionality such as exposing underlying attributes through popup boxes. Changes or additions to the underlying data can be easily incorporated and simply re-published.

The front-end application has been written using the open-source Flex framework to produce a stand-alone application that is run by the Adobe Flash Player in the user's web browser.

Benefits

- Rapid development and deployment of both web map services and front-end application.
- Using ESRI map services allows large and complex datasets to be loaded and displayed quickly within the application.
- Map services can be easily consumed by other clients (using WMS) making it easy to combine information from different data sources (i.e. data mashups).
- Consistent user experience – the application will look and operate in exactly the same way independent of which web browser/device is used.
- Quickly and easily transferrable to another use case or data collection scenario.

