

# PSC Data Den presentations

11 February 2019, 5 – 6 pm, Fireside Room, Embassy Suites, Portland

## Interactive Visualisation

By: **Catarina Wor, Gayle Brown and Mary Thiess** (Fisheries and Oceans Canada)

We use two R and R Markdown tools (flexdashboards and plotly) to construct interactive html files (no internet required). These files can be used to visualise both data and model outputs.

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Resources: <https://plot.ly/r/> and <https://rmarkdown.rstudio.com/flexdashboard/>

## Making (data) life easier with VBA

By: **Brittany Jenewein** (Fisheries and Oceans Canada)

What is time really worth to you? How much of it do you spend painstakingly formatting data using classic spreadsheet techniques like copy/paste, nested "if" statements, and VLOOKUP, only to have to repeat the entire process again and again when you receive an updated dataset? Want to do this in half the time and refocus your work life on interpreting the information? Let me show you how you can do this using Visual Basic for Applications (VBA), a coding program already built into Microsoft Office. I'll demonstrate the power of automating repetitive tasks in VBA using a protocol I wrote to quickly convert 13+ years of fishery opening data into matrices of open hours and areas to feed into a fishery exposure model.

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## Basic Shiny Apps for Collaboration

By: **Gottfried Pestal** (SOLV Consulting)

*Shiny* has opened up the world of interactive web apps to a much larger pool of potential users, because it automatically takes care of most of the headaches associated with web development (browser compatibility, adjusting for device screen size etc). However, uptake among fisheries analysts has been slow, mainly because of the perception that *Shiny Apps* have to be these fancy super-tools that must be perfectly polished before they are shared with users. *Not so!* A basic app can fulfill the same role as the countless spreadsheets flying back-and-forth among tech committee members (with names like "XYZ\_pre\_final\_rev12.xlsx"). Instead of copying the latest data into an excel file and sending that around, just upload it to the app, and all WG members instantly have the latest version, which is always accessible on the same website. After you've done it once, setting up a basic display with a plot and a few drop down menus doesn't take any longer in Shiny than it does in Excel.

*So take the plunge already!*

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Resources:

Template for a basic app: <https://github.com/SOLV-Code/Shiny-Data-Viewer-Template>

Sample of a basic app: <https://solv-code.shinyapps.io/genericdataviewer/>

Sample of a not-so-basic app – Fraser Sockeye Larkin Fits: [https://solv-code.shinyapps.io/frssi\\_srfits/](https://solv-code.shinyapps.io/frssi_srfits/)

PSC Shiny Server is ready to deploy your apps -> Connect with John Son ([son@psc.org](mailto:son@psc.org)).

## Automating Periodic and Annual Reports

By: **Derek Dapp** (Washington Department of Fish and Wildlife), **Gary Morishima** (Quinault), **Angelika Hagen-Breaux** (Washington Department of Fish and Wildlife)

Many of the annual and periodic reports produced by PSC workgroups follow a similar format of reports from previous years, incorporating new data and conveying critical information to fishery managers. Preparation of these reports can be an error-prone task, requiring time-intensive manual entry of figures, tables, and data. As duties expand within PSC workgroups, one solution that the Coho Technical Committee has found is by using automation to produce reports less likely to contain human-error and within a timely-fashion.

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## ForecastR: a cool tool for forecasting salmonid returns

By: **Antonio Velez-Espino** (Fisheries and Oceans Canada), **Michael Folkes** (Fisheries and Oceans Canada), **Gottfried Pestal** (SOLV Consulting)

The annual exercise of forecasting annual returns to natal streams is a critical aspect of management and conservation of Pacific salmon. ForecastR relies on the open-source statistical software R (R Core Team 2018) to generate age-specific (or total abundance) forecasts of salmon escapement or terminal run using a variety of generic models and enabling users to perform interactive tasks with the help of a Graphical User Interface (GUI). An html-based 'shiny' application has been produced to allow online forecasting exercises, enabling the user to select amongst forecasting models, measures of retrospective performance, bootstrapping methods, number of bootstrap samples, type of model ranking (age-specific or across-ages), subset of run years for the analysis, and type of ForecastR Report.

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Resources: Shiny App: [solv-code.shinyapps.io/forecastr](http://solv-code.shinyapps.io/forecastr)

Package Documentation and Examples: [github.com/avelez-espino/Ck-ForecastR-Releases/wiki](https://github.com/avelez-espino/Ck-ForecastR-Releases/wiki)

## State of the Salmon - Tools

By: **Sue Grant** (Fisheries and Oceans Canada) and **Gottfried Pestal** (SOLV Consulting)

The goal of DFO Science's new State of the Salmon program is to track and understand trends in Canadian Pacific salmon and their ecosystems. This program has three key pillars to achieve this goal: 1) Data & Tools: Build a quality-controlled set of CU-level data (across species and areas); interactive tools to explore and analyze the data (e.g. pattern matching algorithms, visualizations) 2) Collaborative Processes: Coordinate expert workshops focused on large-scale synthesis using the assembled data and tools. 3) Communication: Communicate through presentations, bulletins, publications, and email knowledge synthesized from State of the Salmon data/tools and processes.

We are taking a cutting-edge approach to tool development, using methods from psychological experiments to determine which questions you are trying to answer and how you would like to interact with the information. Based on interviews and observed behaviour during prototype testing, we can then develop more effective tools that are actually useful to people just like you (e.g. types of displays, interface structure).

Tools we are working on right now: Synoptic Status Evaluation Tool (SSET) for synthesizing status information across populations and Salmon Pattern Analysis Tool (SPAT) for statistical analysis of patterns across populations. SSET has interactive features that are used to learn, track and

prioritize salmon by their abundances and trends. It can also help link statuses with management actions mapping statuses onto management units, freshwater habitat zones, or to rank conservation units (CUs) to prioritize recovery actions. It can also track and evaluate that status of CUs following fisheries, habitat, or hatchery actions: are poor CUs improving or are we maintaining our CUs that have good statuses.

What we need from you: volunteers for prototype testing and funding ideas for taking the rough prototypes to the next level.

State of the Salmon team:

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## Using Recreational Anglers as a Source for Data Collection in a Funding and Time-Limited World

By: **Derek Dapp** (Washington Department of Fish and Wildlife) and **James Losee** (Washington Department of Fish and Wildlife)

Ectoparasites occur on anadromous fish throughout the Pacific Northwest. Despite the prevalence of ectoparasites and the deleterious effects they could have on fish health, there is a paucity of data regarding spatio-temporal shifts in their abundance. Lacking the time and funding necessary to perform field studies on ectoparasites, we developed an application that recreational anglers could use to report ectoparasites on their catches. 12 months and 1,933 reported fish captures later, we now have a better understanding of seasonality in ectoparasite infections. We encourage the development of similar, automated recreational angler data collection tools for biologically important questions when there is a lack of funding.

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