

## Introduction

This document provides a very brief overview of Version 1.5, describes the comparison of Versions 1.5 to 1.0 and provides instructions for how to use the spreadsheet that implements version 1.5.

## Overview

Version 1.5 is a simple concatenation of statistical models that connect life stages of the salmon from the number of spawners in one year (say year  $t$ ) to the total escapement (spawners) produced by this brood year in the subsequent years ( $t+1, t+2, \dots, t+4$ ) – so spawners to spawners. The model does not close the circle using this set of predicted number of spawners in subsequent years to predict forward again. Given the simplicity of the model, the lack of detail in the ocean section and the coarseness of the model used to predict Mossdale smolts from spawners, we are currently reluctant to create a systems model because it will give the impression that the model can be used to predict the abundance of salmon years ahead in the future using only environmental variables and a beginning number of fish. The amount of residual prediction error even for just one cycle, would compound over time, which makes long term prediction at this point overwhelmed by noise.

## Contrast to Version 1.0

The original report for version 1.0 can be used for version 1.5, with the understanding of the differences outlined in the 1.5 Addendum by Dr. Alan Hubbard previously submitted. In short, these differences are:

1. New statistical models estimated using so-called proper models so that the range of predicted numbers from each of the models corresponds to the possible ranges of the predicted variable (e.g., if the outcome variable is a probability, a form of logistic regression is used which guarantees that no matter what are the values of the predictor variables, the prediction will always lie between 0 and 1.
2. New data from Ken Newman and also using his method to estimate survival were used to estimate parameters in delta survival model.
3. The hatchery portion in Version 1.0 is removed.
4. We only run the model for one year at a time, the year chosen by the user to reflect the flow scenario and number of spawners one wants to use to predict the number of spawners returning from this brood year.