ADF&G Herring Model Workshop

24 July, 2016

# Overview

The overarching objective of this 3-day workshop is introduce the proposed changes I'm recommending for the Sitka Herring ASA model. In its current form, the ASA model uses a weighted least squares approach for parameter estimation and quantifying uncertainty. I'm proposing changes that would bring the ASA model into a more modern statistical realm, where data weighting issues and additional structural assumptions can be explored jointly. Uncertainty in short-term forecasts are easily quantified and integrated into a decision making framework for managers.

# Day 1

* General Introduction to Statistical Catch Age (SCA) models
  + A biologist view.
  + A statistician/biometrician view.
  + A manager/decision maker's view.
* Technical differences between herring and other fisheries (e.g., groundfish, crab).
  + Pulse versus continuous fisheries.
  + Announce the Naming Contest
* Benefits of a new statistical model
  + What information is available in composition data.
  + Can easily explore, or integrate over, structural uncertainty.
  + Less subjectivity associated with data-weighting.
  + Better represent uncertainty in forecasts under an integrated framework.
  + AD Model Builder has many statistical features for constructing joint posterior distributions; critical for decision analysis.
* Demo (Data->Model->Reporting->Summary)
  + Input data & control file.
  + Simulation testing.
  + Sitka 2015 Assessment.

# Day 2

* Herring Age Model (HAM) source code.
  + input data
  + control file
    - parameter bounds & priors
    - selectivity options
    - time-varying parameters
* Workflow and collaboration
  + Introduction to version control
  + Tools
    - [Git](https://git-scm.com)
    - [GitHub](https://github.com)
  + [Alaska Herring Model Code on Github](https://github.com/seastateinc/AlaskaHerring) **Fork and it's yours**.
* Workshop time: Q&A, Obtaining Code, Running Models, R-Scripts.

# Day 3

* Summary of Applications and Modifications
  + Using this code with other regions.
  + Code addition: e.g. adding another selectivity option.
  + Code modification: (stress the importance of branching)
  + When does the coding stop?
* The future:
  + Is excel good enough?
  + R & Template Model Builder
  + Dynamic Documents (RMarkdown & Pandoc)