

# FRSSI Future Planning

## Fraser River Sockeye Spawning Initiative

presented to: FN JTWG & FN Forum  
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# Outline

- Overview of FRSSI process & model
- FRSSI Overview
- FRSSI Model Features
  - FRSSI “does” and “does not”s
- Future Planning

# FRSSI Overview

# Model vs Process

- FRSSI Process
  - consultative process, workshops, etc.
  - Steering Committee, Working Group, Technical Working Group
  - Process is where the decisions are made
- FRSSI Model – is used by the process
  - outputs are used by the FRSSI process to inform the decisions

***Both Process & Model continue to evolve with feedback***

# Spawning Initiative Overview

## The Challenge

- Find a Balance between Catch and Escapement at different abundances

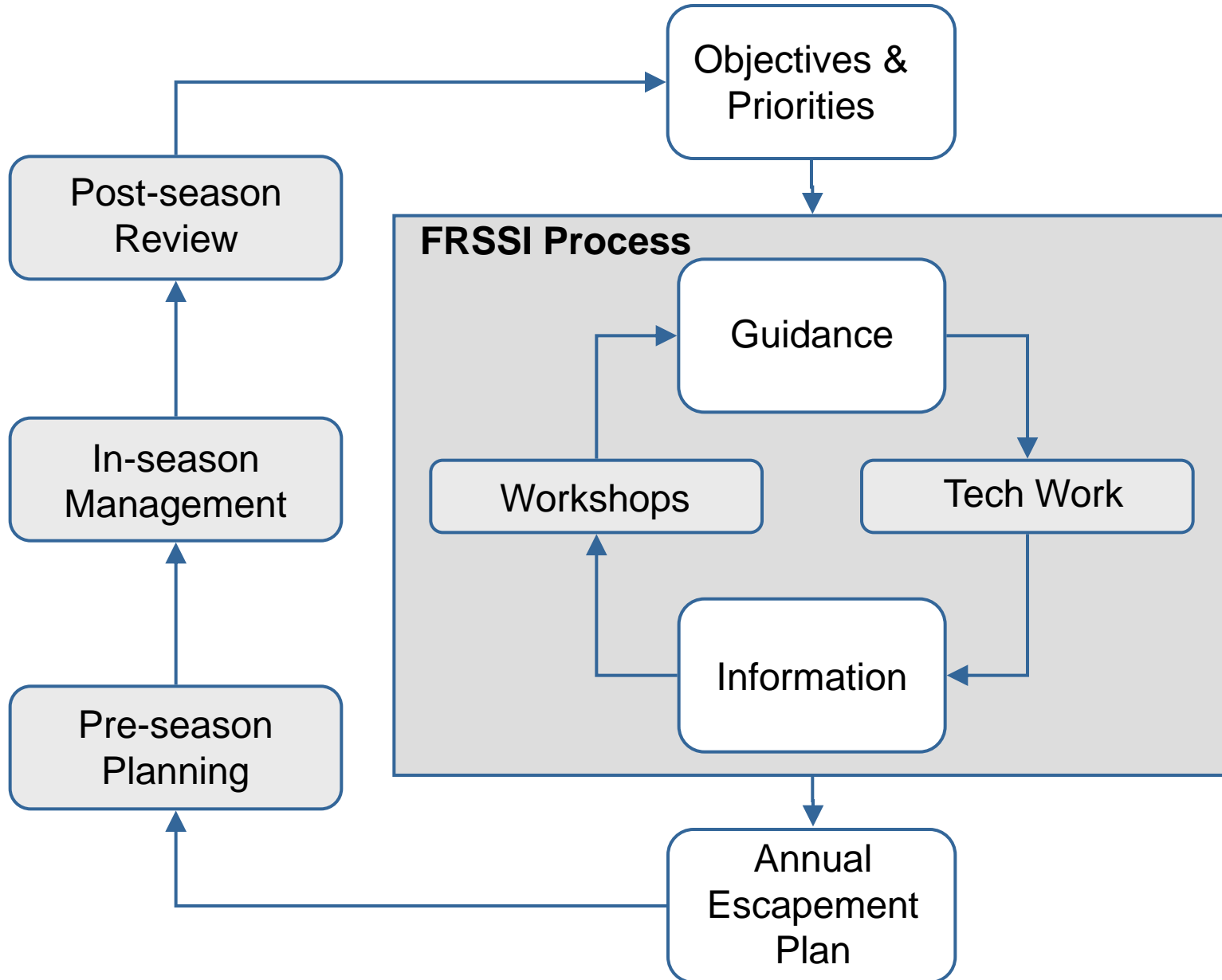
## Goals

- Participatory process to develop a new set of guidelines for setting Fraser River sockeye escapement targets
- Long-term strategy based on clear objectives and assumptions
- Improve consultation by focusing on proactive discussion of escapement targets under different scenarios
- Implementation guidelines (in-season adjustment mechanisms)

# How many should be caught vs. allowed to spawn?

- The answer depends on many considerations:
  - Biological considerations:
    - Assumptions about population dynamics (i.e. how much can a lake produce?)
    - Uncertainty about how many spawners produces largest harvest, or largest returns
    - Uncertainty about cause and implications of population cycles in Fraser sockeye?
  - Socio-economic based factors
    - Preferences for harvest/escapement
    - Social preferences
    - economic factors
    - risk tolerance
- The FRSSI model was developed to help address this question by providing information on the implications of different harvest strategies. Focus on Biological side.

# Annual Cycle of Management



# Model Features



**“All models are wrong.  
Some are useful.”**

**- G.E.P. Box**

# Current model CAN do:

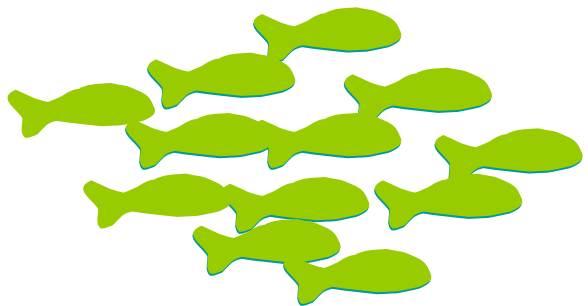
- Simulate performance of long-term harvest strategies
- Track aggregate and stock-specific performance measures
  - also, alternate aggregates
- Assume linear or patterns of change in productivity
- Apply stock-specific escapement strategies (or mix)
- reflects some current implementation methods:
  - Simulate all stocks at same time to get at overlap constraints (currently, two methods to choose from)
  - Assume a minimum harvest rate (test fishing, by-catch)
  - Apply management adjustment (Mission vs. Up-stream)

...not *all* of these items are done all the time

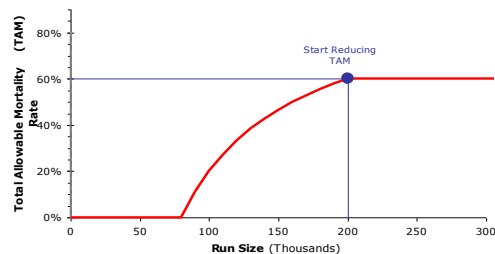
# The model does NOT...

- Spatial Component
  - FRSSI outputs total allowable mortality, does not model *where* the mortalities take place (e.g. marine vs in-river / mixed stock fisheries vs terminal)
  - FRSSI will not develop an annual fishing plan
    - currently, annual fishing plans are evaluated using the Pacific Salmon Commission pre-season model and IFMP development
- calculate allocations
- make annual adjustments to escapement strategy based on forecast
  - e.g. will not model this year, Option 1; next year, Option 3...
- assume there is any implementation error in applying TAMs
  - i.e., assumes that if there are 52,631 fish to catch, then 52,631 fish will be caught
  - note that there IS implementation error in applying DBE/MA
- get used in season
  - TAMs are used in-season, the model is not

# FRSSI Flow Diagram



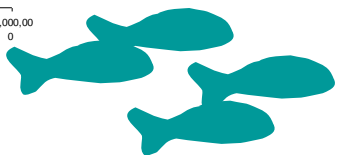
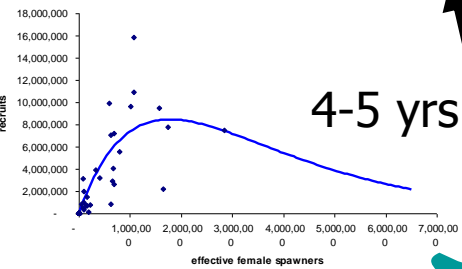
run returning



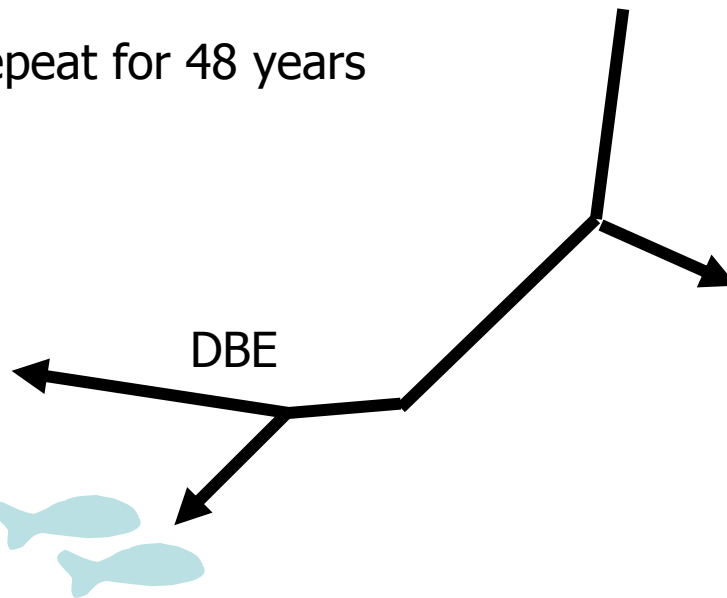
TAM Curve + MA

Repeat for 48 years

4-5 yrs



spawners

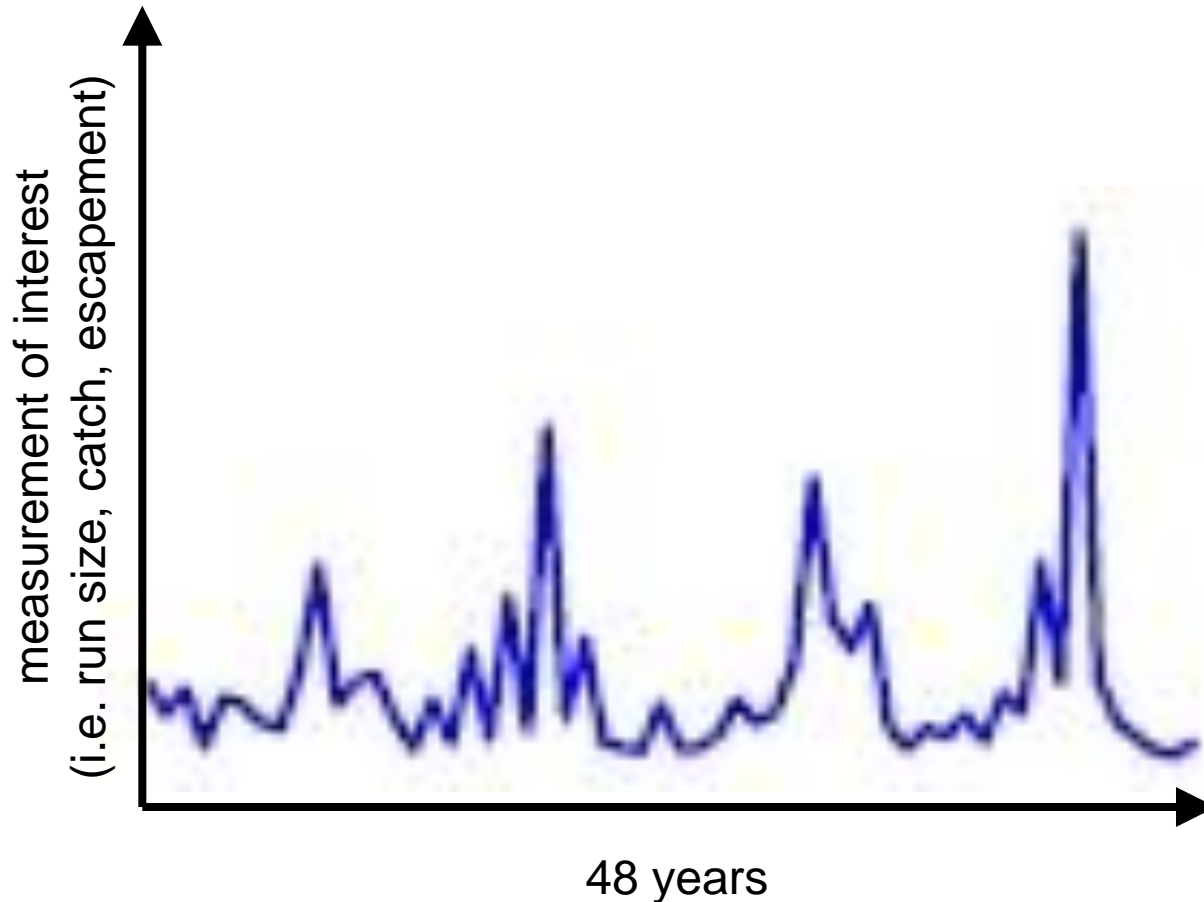


DBE

"en-route mortalities"

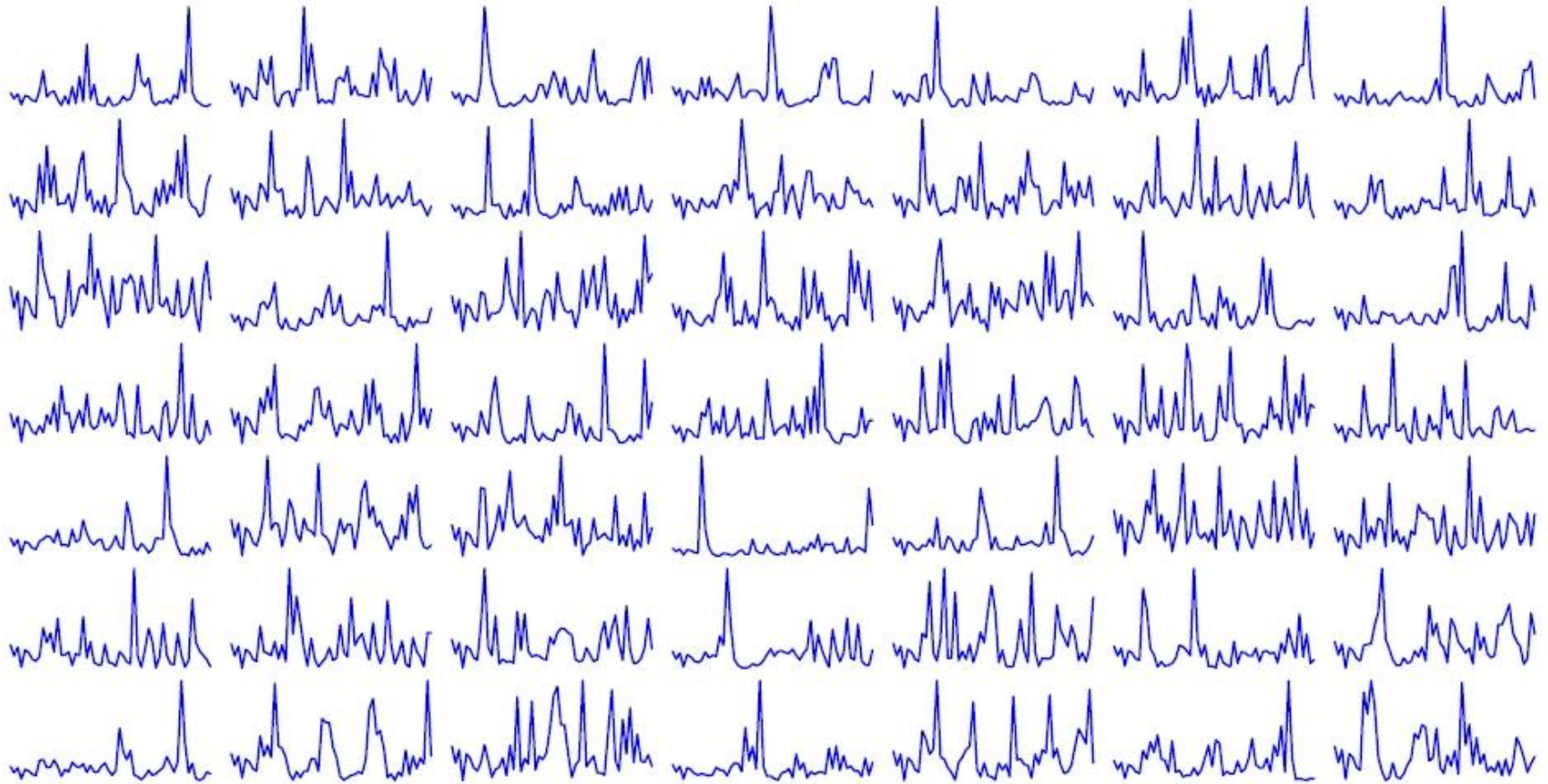
catch

# What one trajectory looks like:



Repeat 500 times (this is where computers come in really handy!)<sub>13</sub>

# What a bunch of trajectories look like:



For a given performance measure  
(e.g. Escapement below a benchmark)

- for each group of 500 simulated trajectories, keep track of the escapement in each year
- get a distribution of escapements from 2400 years (i.e. 48 years x 500 simulations)
- calculate the frequency that escapement was below some number(s)

# Future Planning



# 2015/16 Timelines

- March – agenda “small group”
  - input into April Agenda
- April 16/17 – expanded steering committee meeting
  - setting priorities for the technical work
- 2016 spring – workshop(s)(?)
  - reporting out from technical group re: outcomes

# March (pt 1)

- what do people want to get out from an escapement plan evaluation model? (e.g. goals & objectives)
  - what sort of information/outputs would you find helpful to get? (again, not FRSSI model specific, but general to the discussion around evaluating escapement plans)
  - what are your main concerns about the FRSSI model?

# March (pt.2)

- what techhies think the main assumption(s) that are affecting the results in the FRSSI model
- **Outcome:** *prioritize list of assumptions that small group would like to get more technical information about*
  - this becomes the list of technical items that will be presented at the expanded steering committee meeting in April

# April 16/17

- go over goals/objectives/concerns ID'd in March
- present background info on priority technical items ID'd in March
- **Outcome:** *identify priority technical items/scenarios for techhies to work on prior to March 2016*