WCVI Worked Example

2023-11-22

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Document Contents

- Summary
- Key code repositories, where to find data, etc. ("Data Map")
- Reference to comparison paper: https://publications.gc.ca/collections/collection_2023/mpo-dfo/fs70-5/Fs70-5-2023-010-eng.pdf
- Link to iwam-package repository
- Preliminary code loading
  - Packages (code chunk)
  - Source functions (code chunk)

Stage 1: IWAM Model (Produce initial SREP estimates)

- IWAM_model - produce the initial SREP estimates
  - Run code internally - what is worth hiding versus not?

Data Setup

TMB Model Call and Run

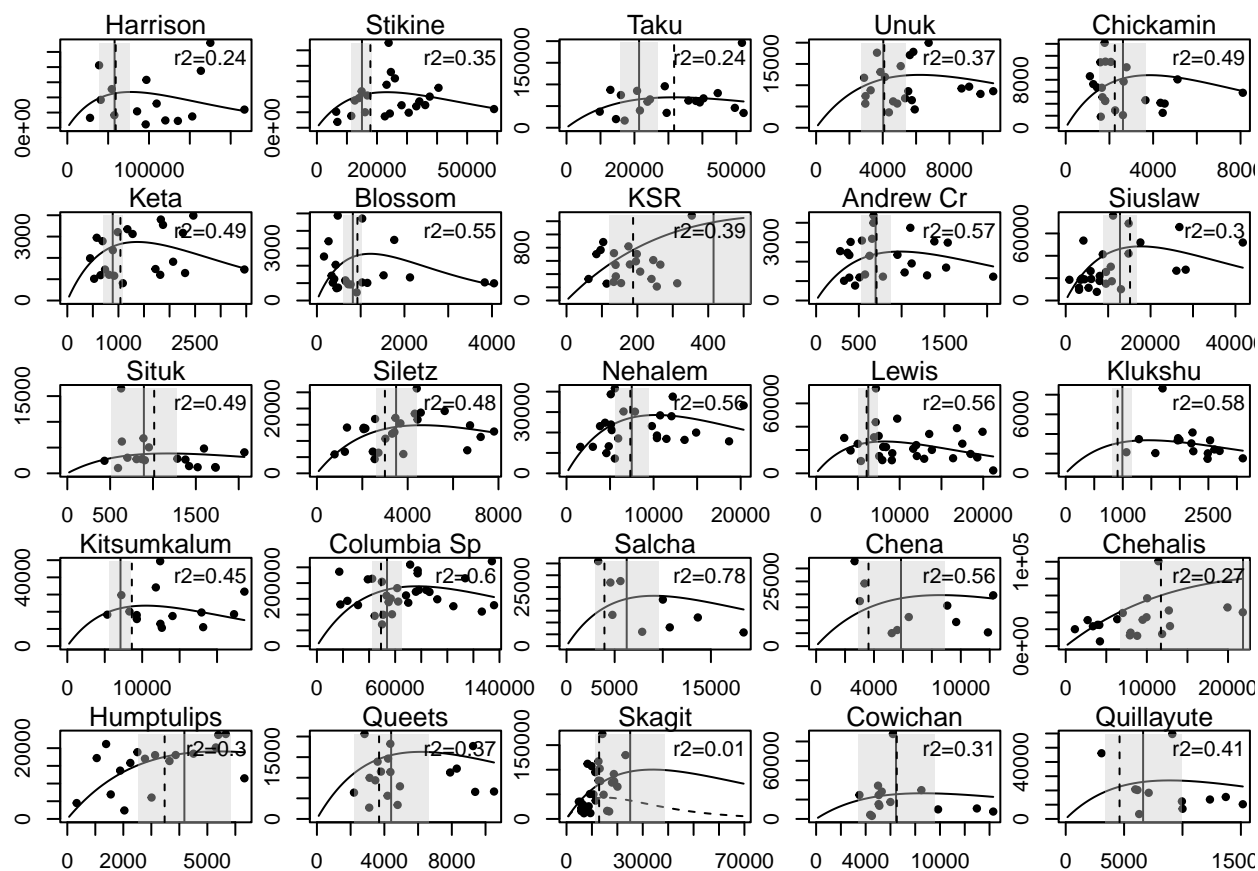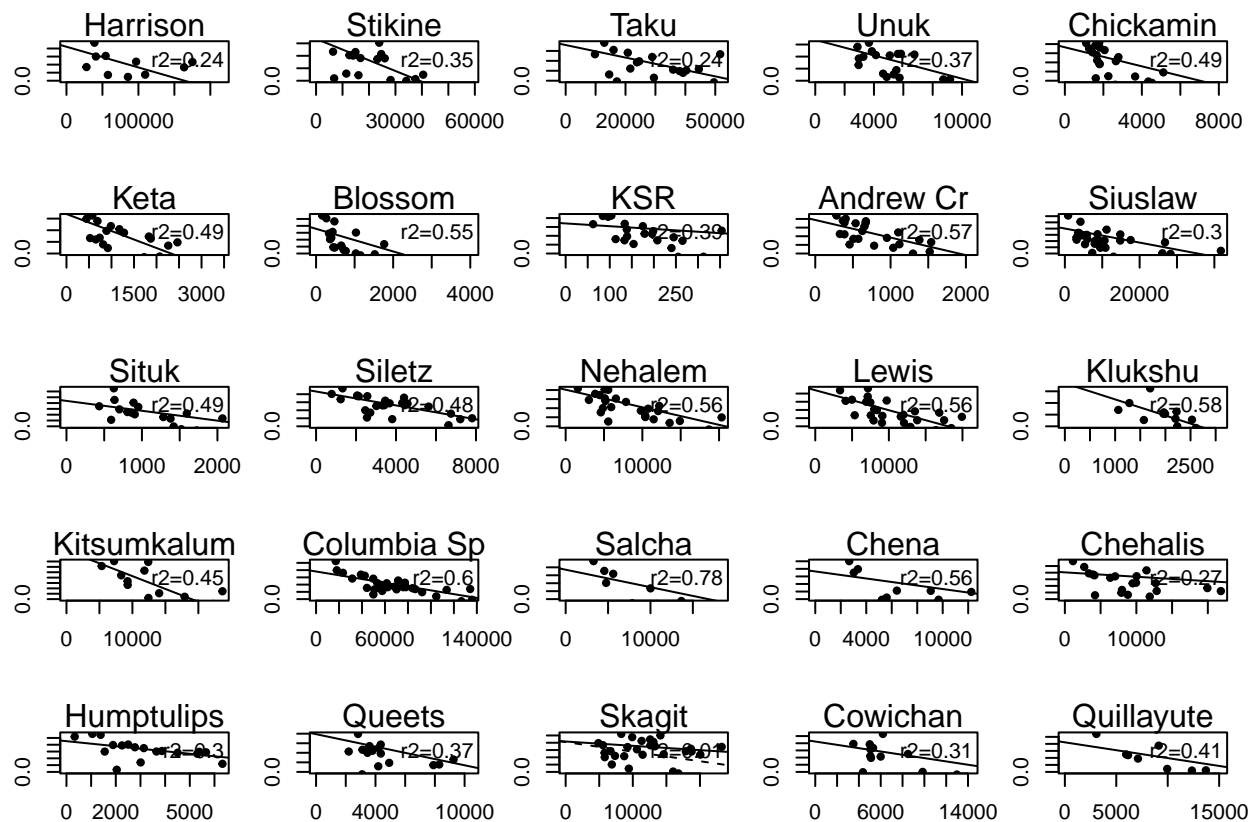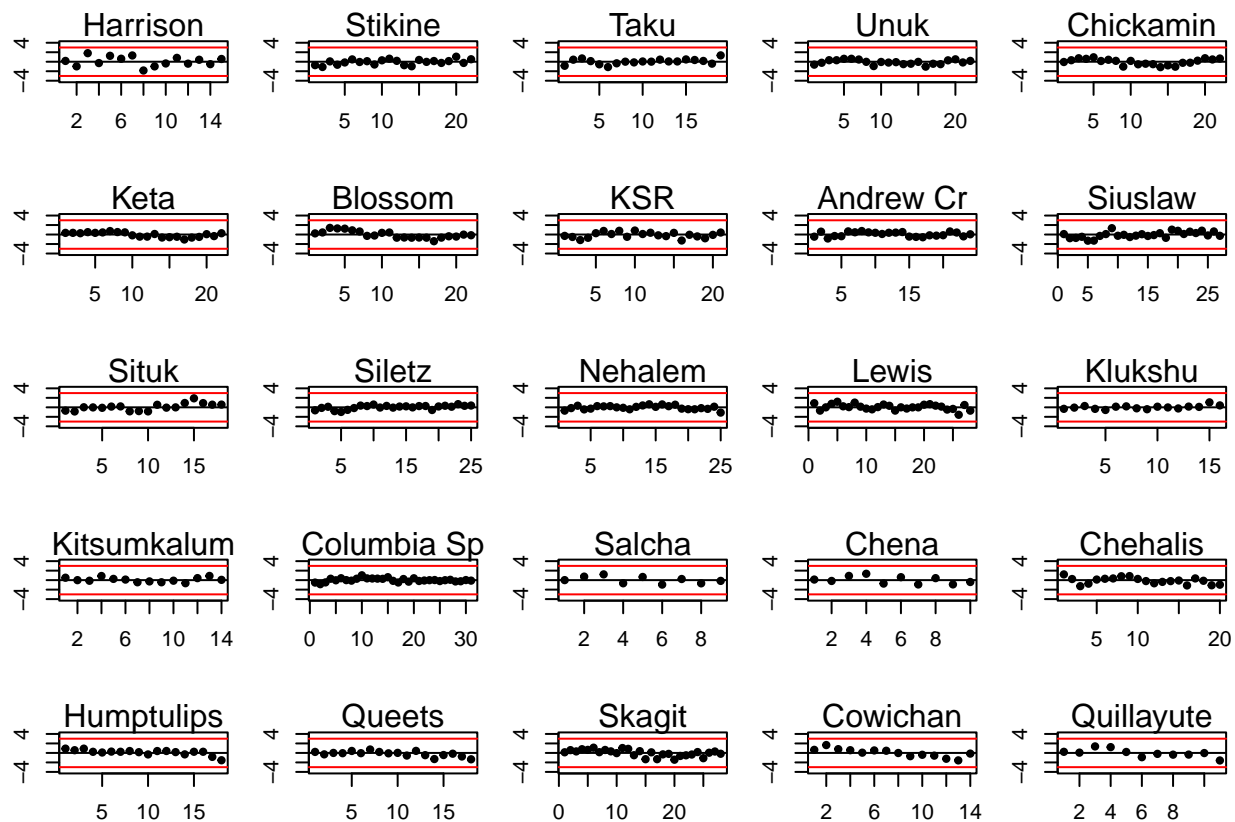**Add functionality to turn on and off.**

Plotting IWAM Results

Figure Caption 1.

Harrison — r2=0.24
Stikine — r2=0.35
Taku — r2=0.24
Unuk — r2=0.37
Chickamin — r2=0.49

Keta — r2=0.49
Blossom — r2=0.55
KSR — r2=0.39
Andrew Cr — r2=0.57
Siuslaw — r2=0.3

Situk — r2=0.49
Siletz — r2=0.48
Nehalem — r2=0.56
Lewis — r2=0.56
Klukshu — r2=0.58

Kitsumkalum — r2=0.45
Columbia Sp — r2=0.6
Salcha — r2=0.78
Chena — r2=0.56
Chehalis — r2=0.27

Humptulips — r2=0.3
Queets — r2=0.37
Skagit — r2=0.01
Cowichan — r2=0.31
Quillayute — r2=0.41

Harrison
Stikine
Taku
Unuk
Chickamin

Keta
Blossom
KSR
Andrew Cr
Siuslaw

Situk
Siletz
Nehalem
Lewis
Klukshu

Kitsumkalum
Columbia Sp
Salcha
Chena
Chehalis

Humptulips
Queets
Skagit
Cowichan
Quillayute

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Prior Ricker sigma and prior WA regression sigma

log(Delta1)=1.57, Delta2=1.02

log(Delta1)=3.21, Delta2=0.66

log(SMSY)

log(Watershed Area, km2)
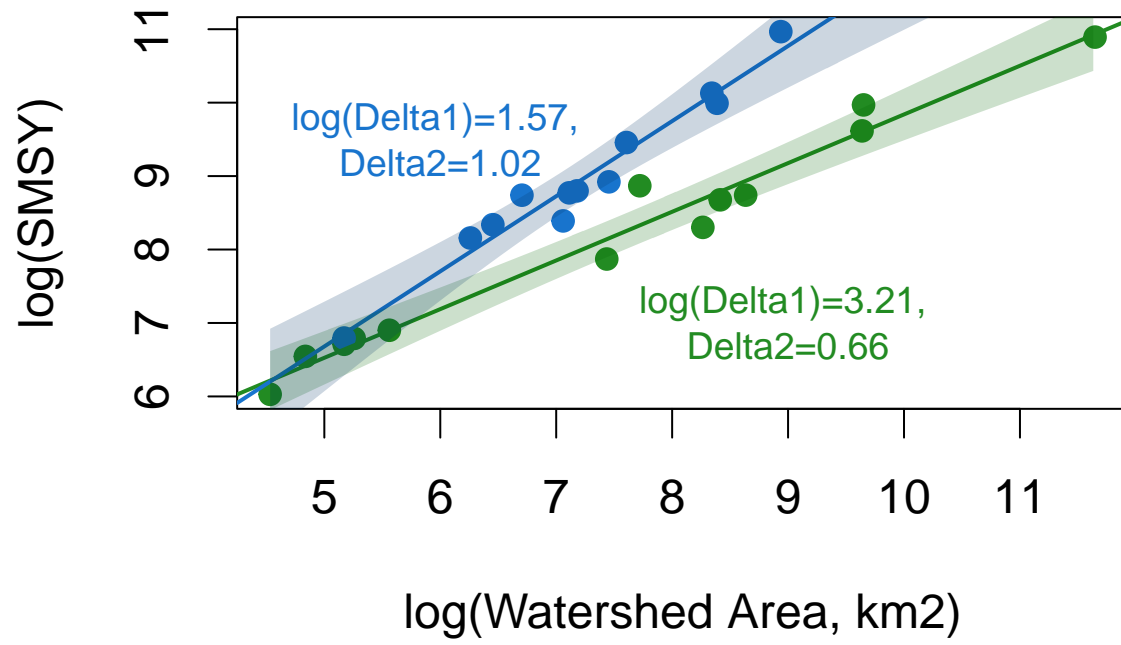
Prior Ricker sigmas and prior on WA regression sigma

log(Nu1)=2.68, Nu2=1.01

log(Nu1)=4.19,

log(SREP)

log(Watershed Area, km2)
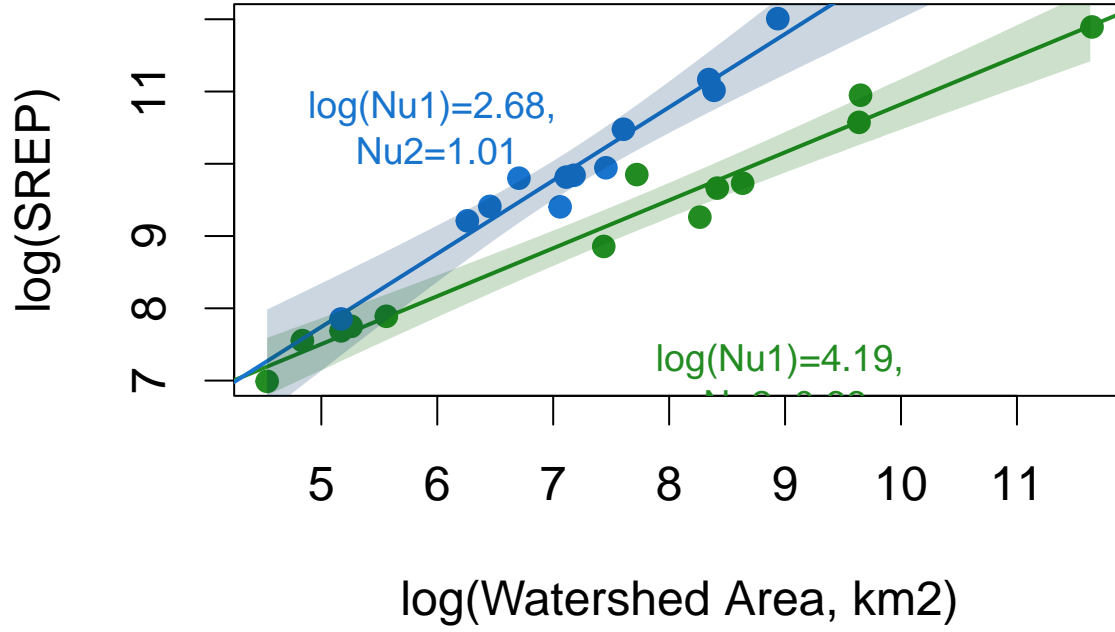
Output Data from IWAM Model

Stage 2: Bootstrapping and final estimates of SREP, SGEN, and SMSY

- WCVILRPs_bootstrap - produce final SREP, SMSY, and SGen estimates for stocks

Stock	SREP	Lower Quantile	Upper Quantile
Barkley	550	420	950
Clayoquot	8000	5000	15000
Kyuquot	5900	3200	8200
Nootka/Esperanza	1300	710	1800
Quatsino	2900	1600	3800

Table 1. SREP

Stock	SGEN	Lower Quantile	Upper Quantile
Barkley	73	43	320
Clayoquot	2600	640	7000
Kyuquot	1400	450	1800
Nootka/Esperanza	340	100	650
Quatsino	530	200	1000

Table 2. SGEN

Stock	SMSY	Lower Quantile	Upper Quantile
Barkley	230	180	440
Clayoquot	3500	2100	7500
Kyuquot	2600	1400	3600
Nootka/Esperanza	540	310	800
Quatsino	1200	670	1700

Table 3. SMSY

```
# Plot: plotWCVI_timeseries (PlotFunctions.R)
# plotWCVI_timeseries(WCVIEsc=xx$WCVIEsc, remove.EnhStocks = TRUE,
#                 prod="LifeStageModel")
```

Conclusions