

WCVI Worked Example

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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

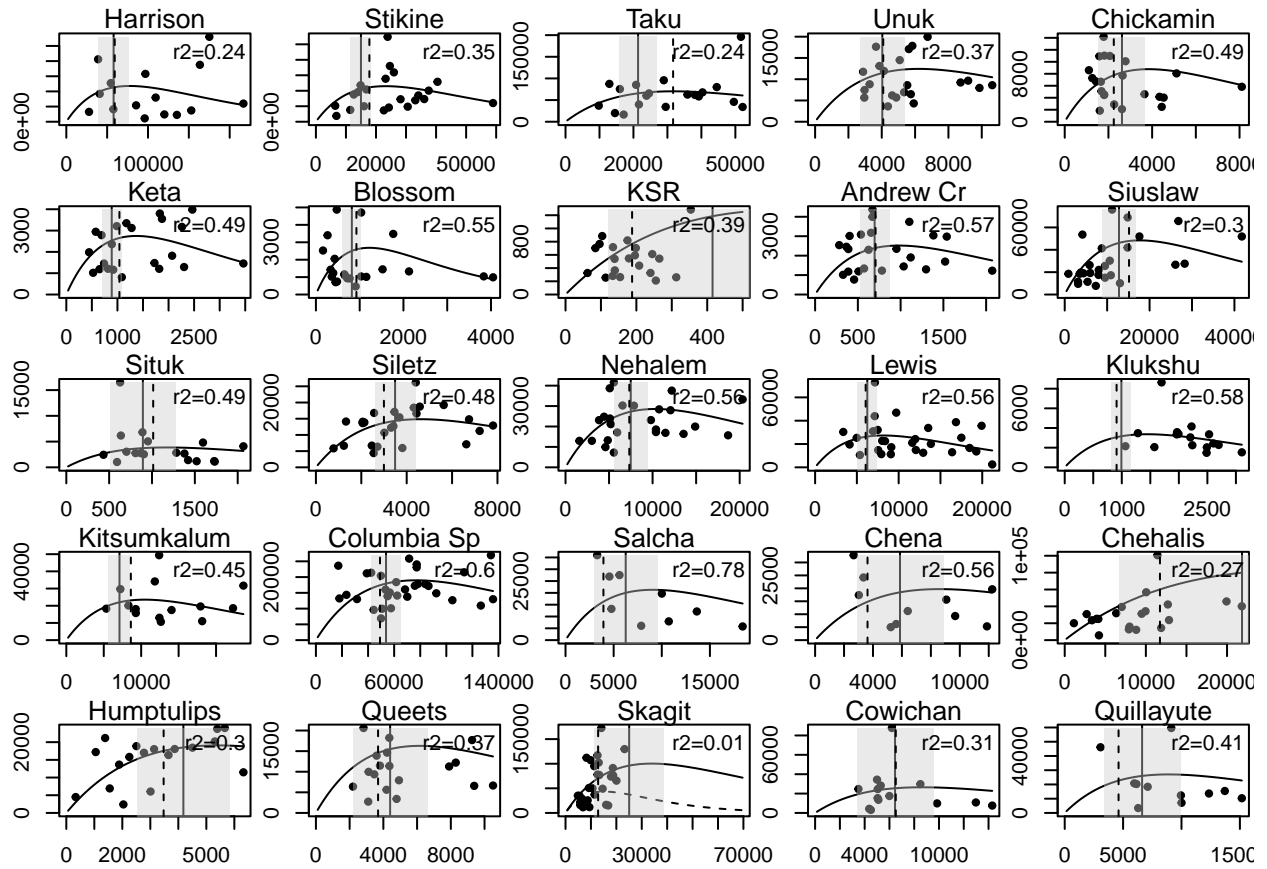


Figure 1. Stock-Recruitment Curves per WCVI Stock. INCLUDE UNITS.

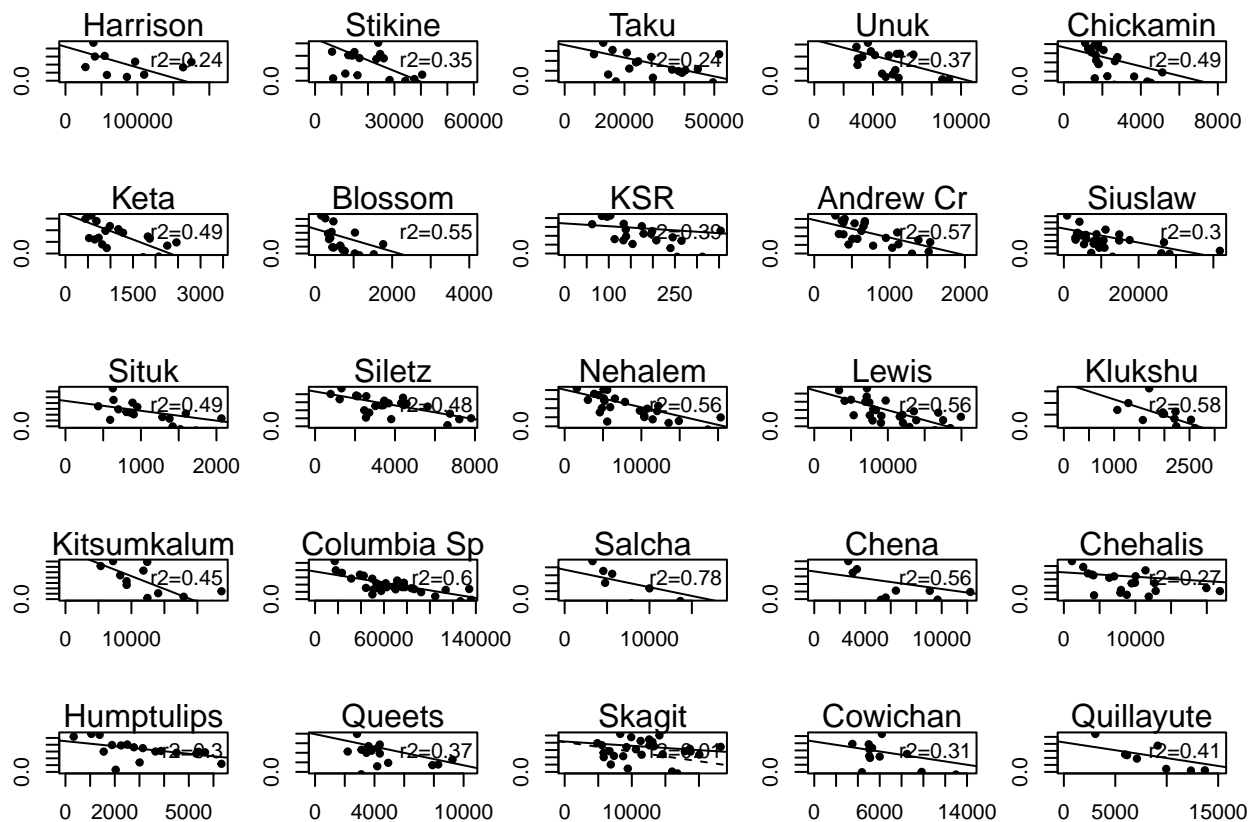


Figure 2. Stock-Recruitment Linear Relationship per WCVI Stock. INCLUDE UNITS.

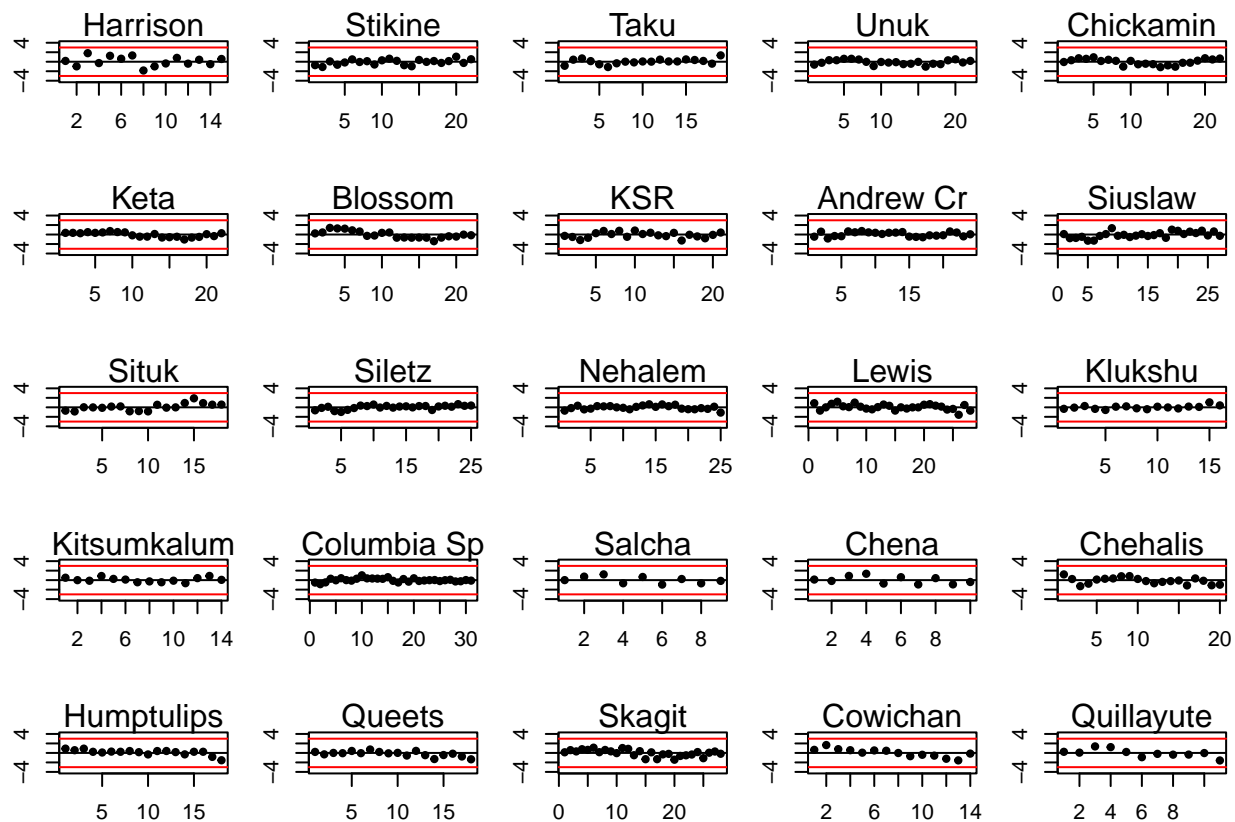


Figure 3. Standard Residuals. INCLUDE UNITS.

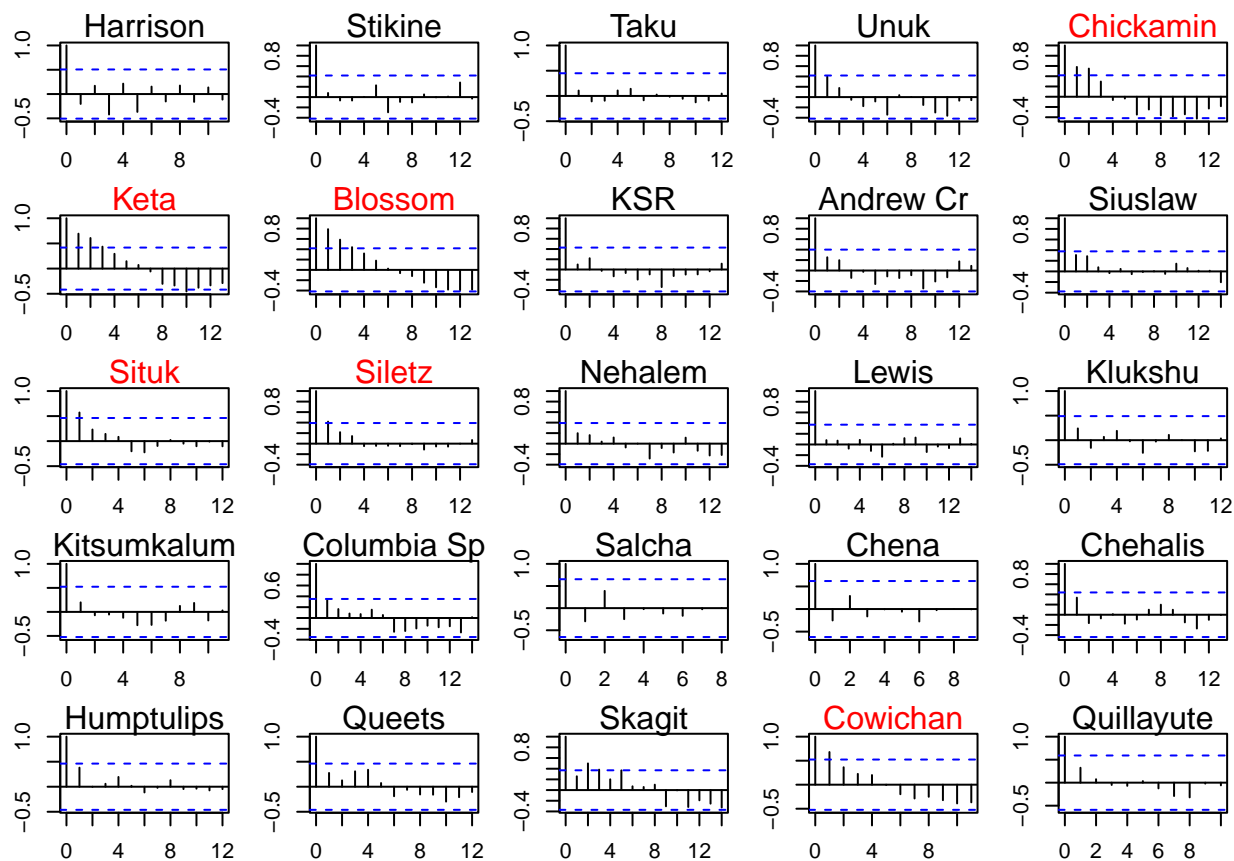


Figure 4. ACF. INCLUDE UNITS.

Prior Ricker sigma and prior WA regression sigma

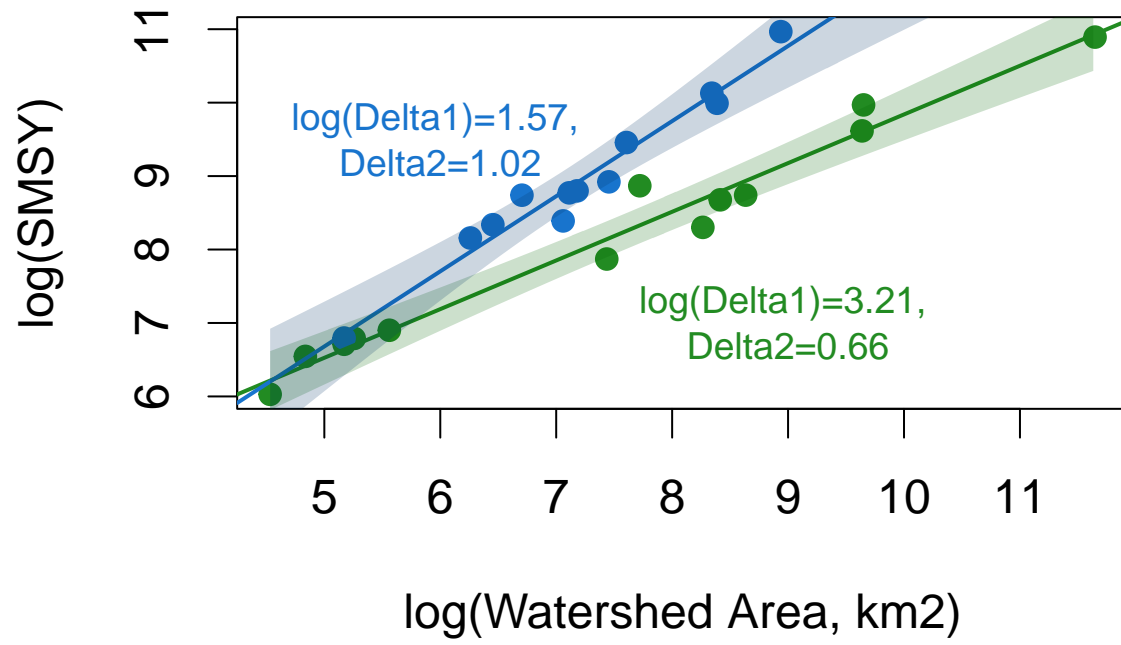


Figure 5. Prior Ricker sigmas and prior on WA regression for $\log(\text{SMSY})$ and $\log(\text{Watershed Area (km}^2\text{)})$.

Prior Ricker sigmas and prior on WA regression sigma

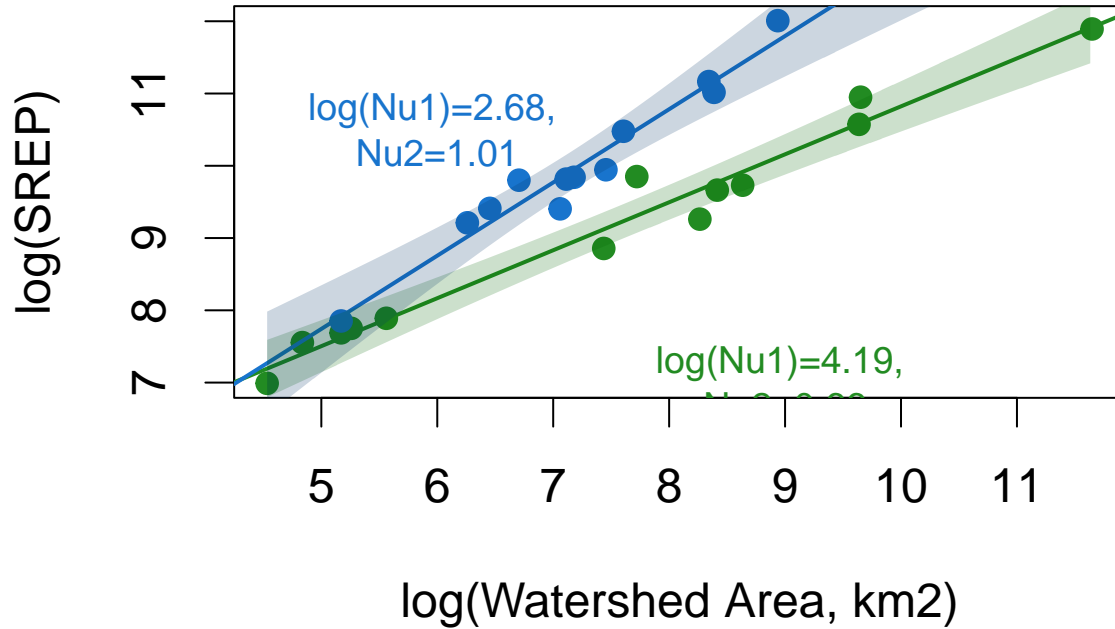


Figure 6. Prior Ricker sigmas and prior on WA regression for $\log(\text{SREP})$ and $\log(\text{Watershed Area (km}^2\text{)})$.

Fix the equation placement.

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

The following section includes the code for bootstrapping and the re-calculation of the SREP, SGEN, and SMSY estimates for the West-Coast Vancouver Island Stocks (Table 1-3).

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

Stock	SGEN	Lower Quantile	Upper Quantile
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

Conclusions