# SEDAR 15AU with MRIP-FES Data and Model Bridging

Halie OFarrell

Robert Muller

# Outline

1. SEDAR 15AU with MRIP-FES Data (TOR)
   - Data Preparation
   - Model Runs
     - MRIP-FES total landings and discards
     - MRIP-FES for all recreational data inputs
2. Model Bridging
   - Data Preparation
   - Model Runs
     - Mean Weights
     - Mean Weights + Landings
     - Mean Weights + Landings + Indices

# SEDAR 15AU with MRIP-FES data

TOR: Compare SEDAR 15AU to a continuity model with MRIP-FES landings and discards and SEDAR 15AU configuration and terminal year.

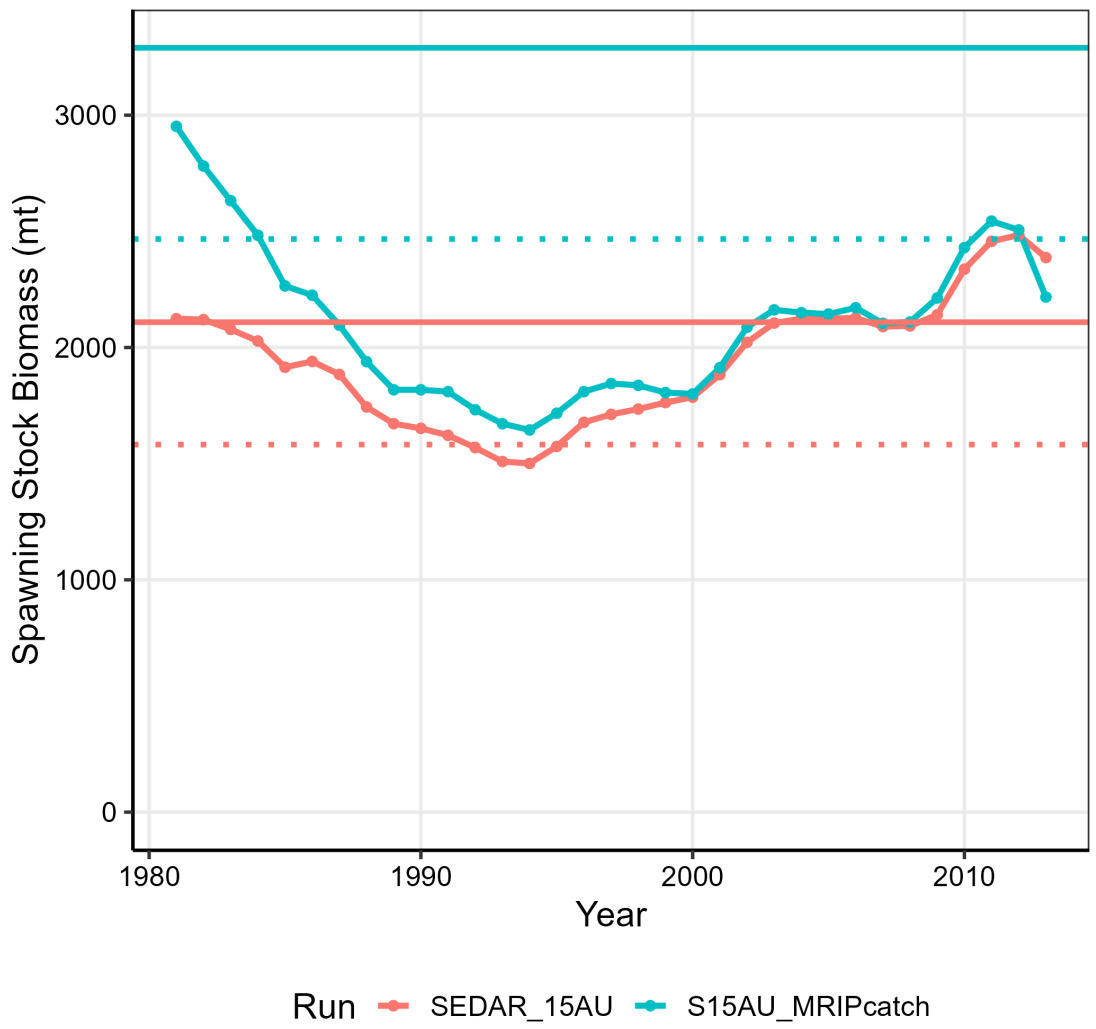
# Data Preparation

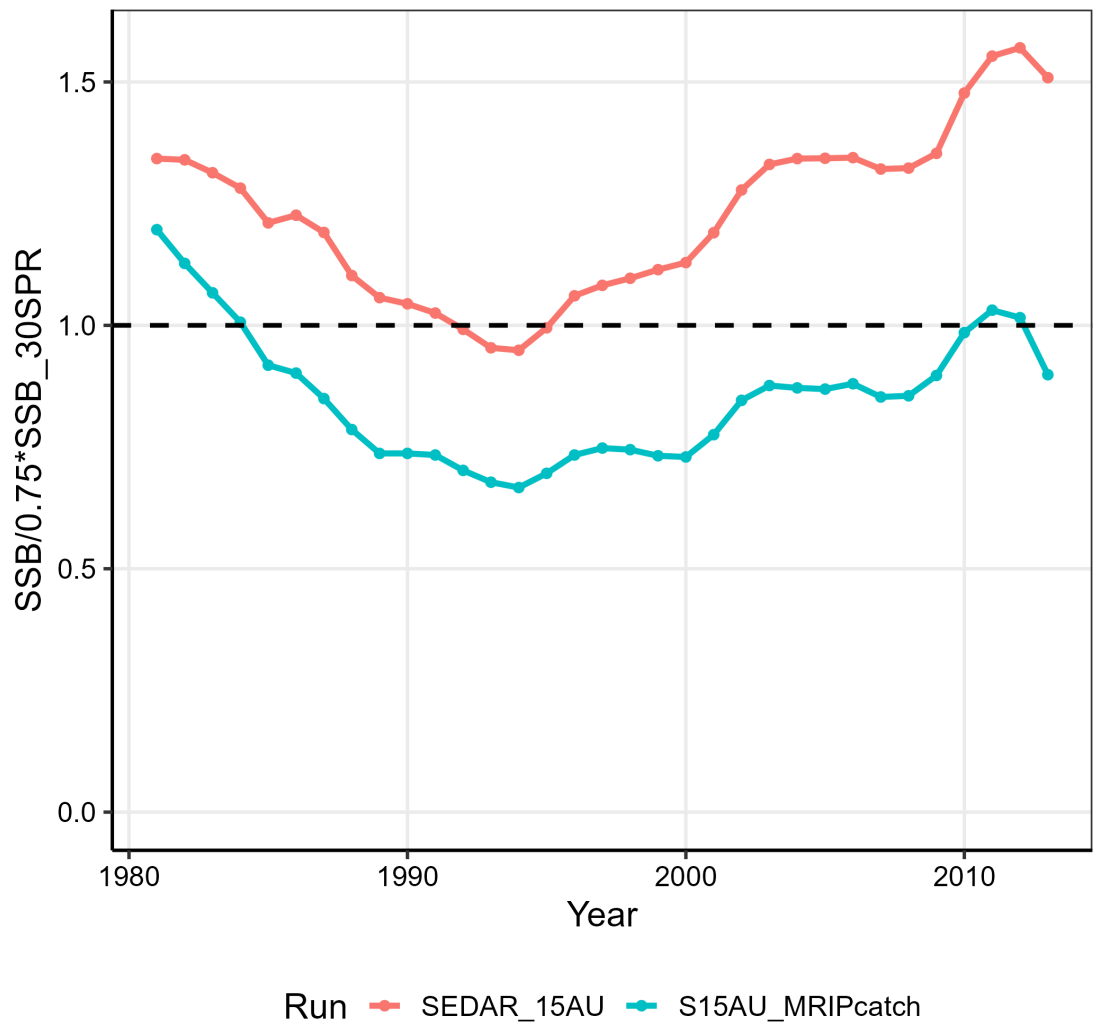
- General
  - Missing early years in S79 data, all missing years = earliest year available
  - Missing Age 1 in S79 commercial data = Age-1 values from combined datasets
  - Extending S79 Age 15+ to Age 25+: Ages 16+ = mean of ages 10-15
- Model specific stay tuned!

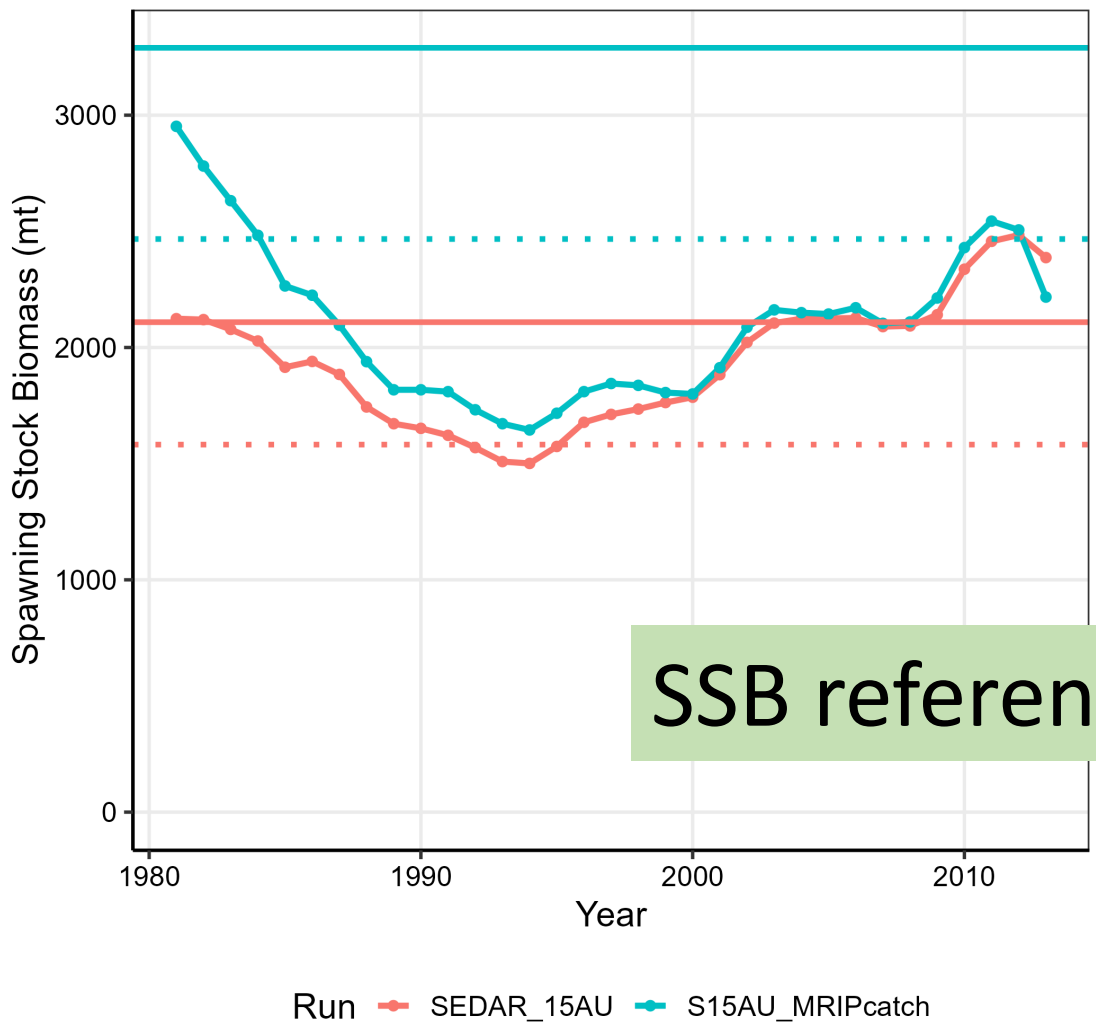
# MRIP-FES total landings and discards

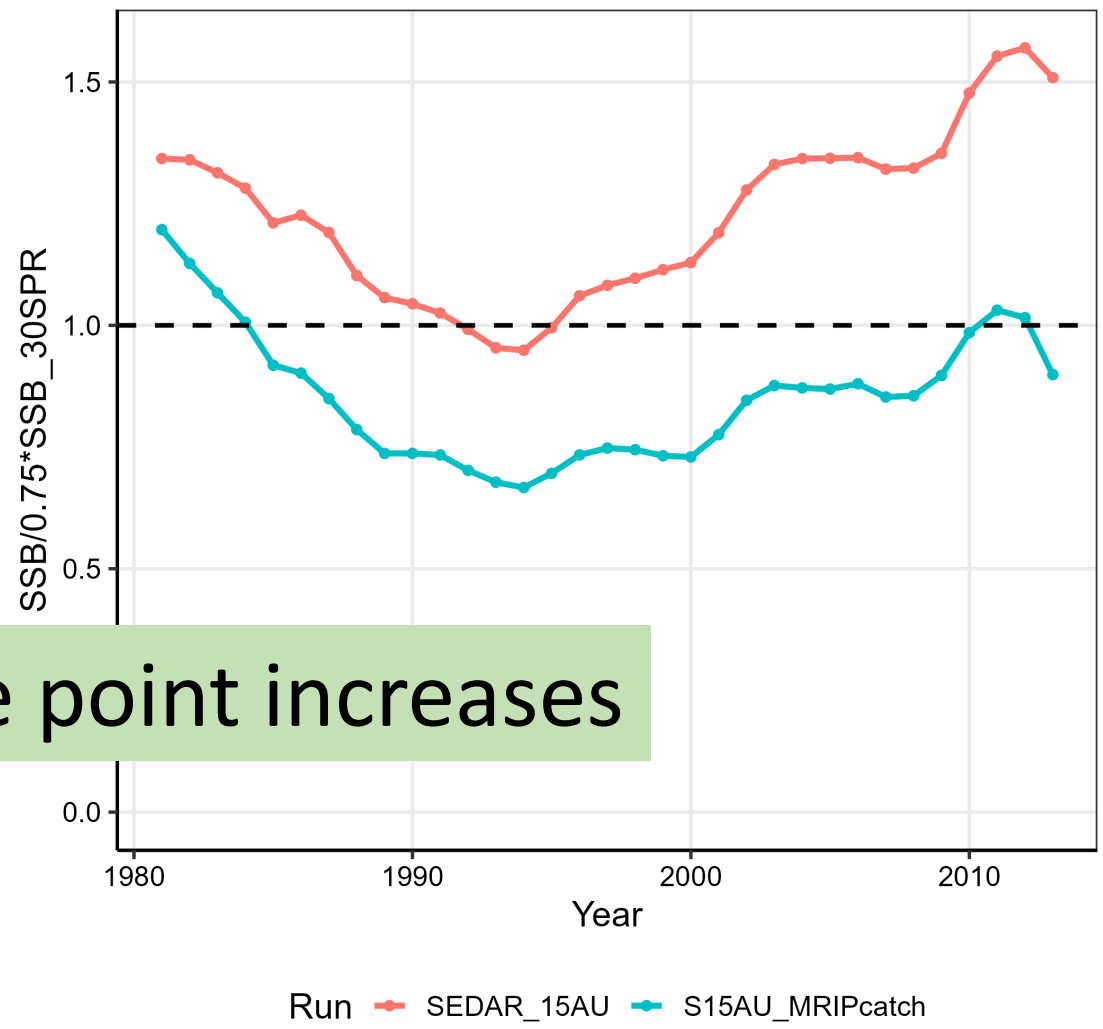
Model Name: S15AU_MRIPcatch

- Total MRFSS landings and discards by year → 1981-2013 MRIP-FES landings and discards (and associated CVs) from SEDAR 79.
- All other data, including Headboat landings and discards and associated CVs, remained unchanged.
- No further data adjustments needed

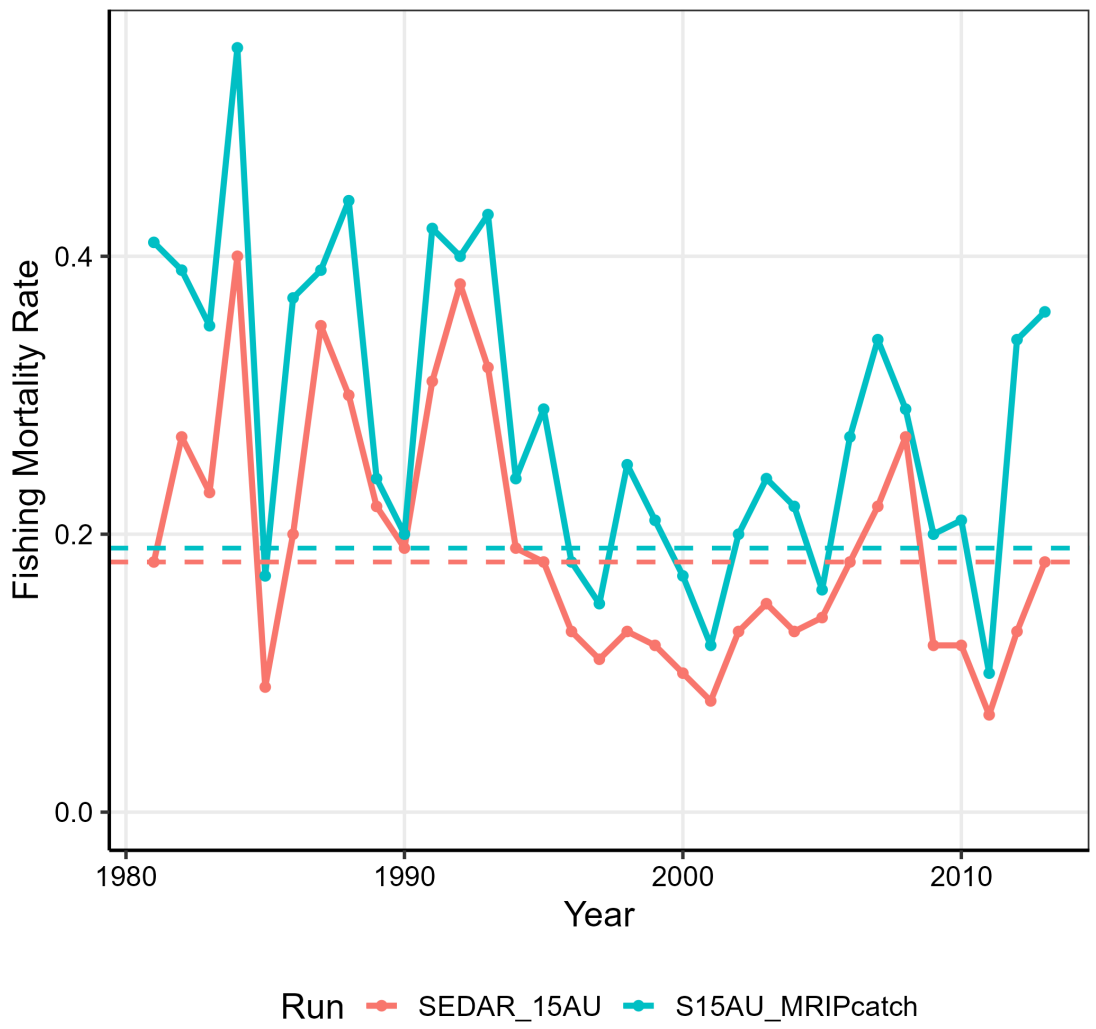

Spawning Stock Biomass (mt)
3000
2000
1000
0
1980
1990
2000
2010
Year
Run
SEDAR_15AU
S15AU_MRIPcatch

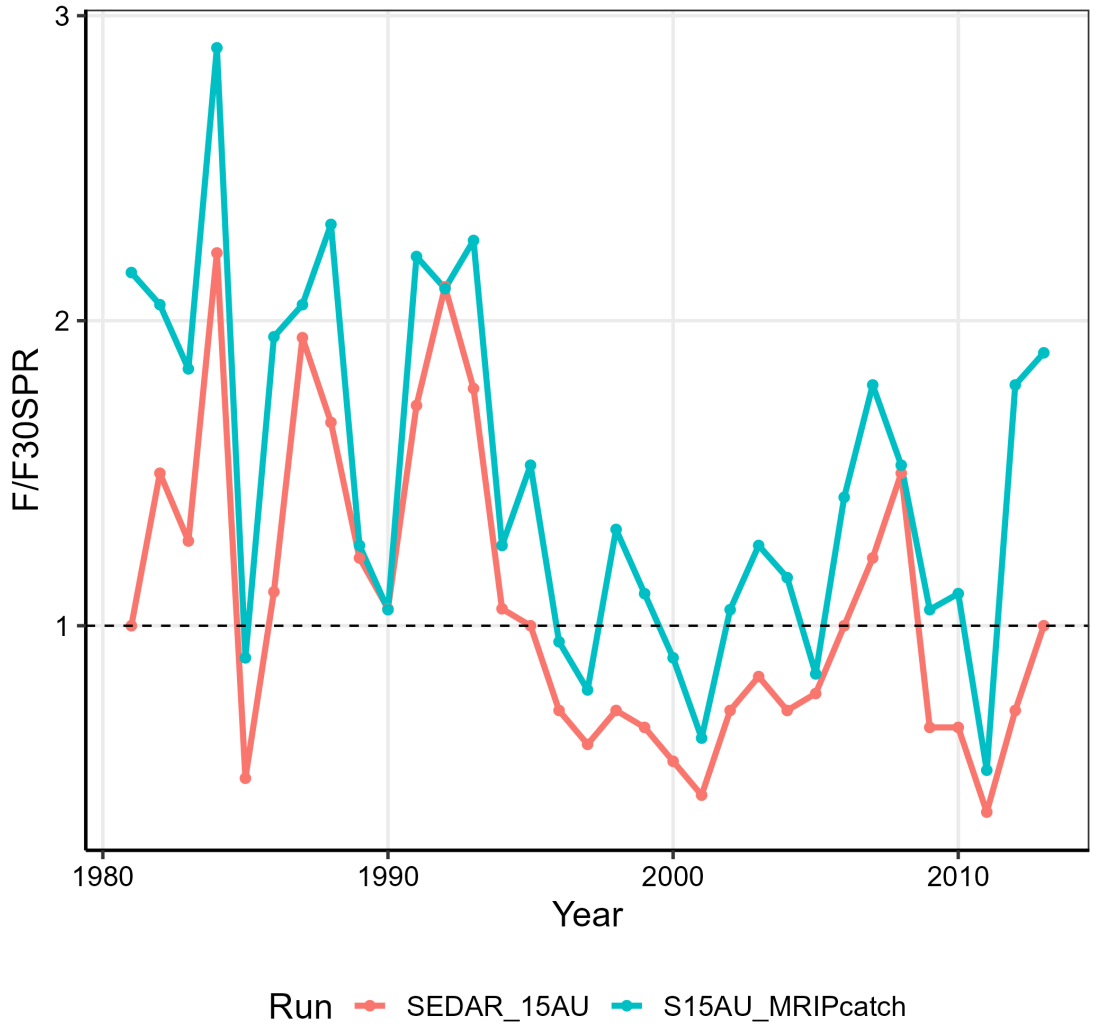

SSB/0.75*SSB_30SPR
1.5
1.0
0.5
0.0
1980
1990
2000
2010
Year
Run
SEDAR_15AU
S15AU_MRIPcatch

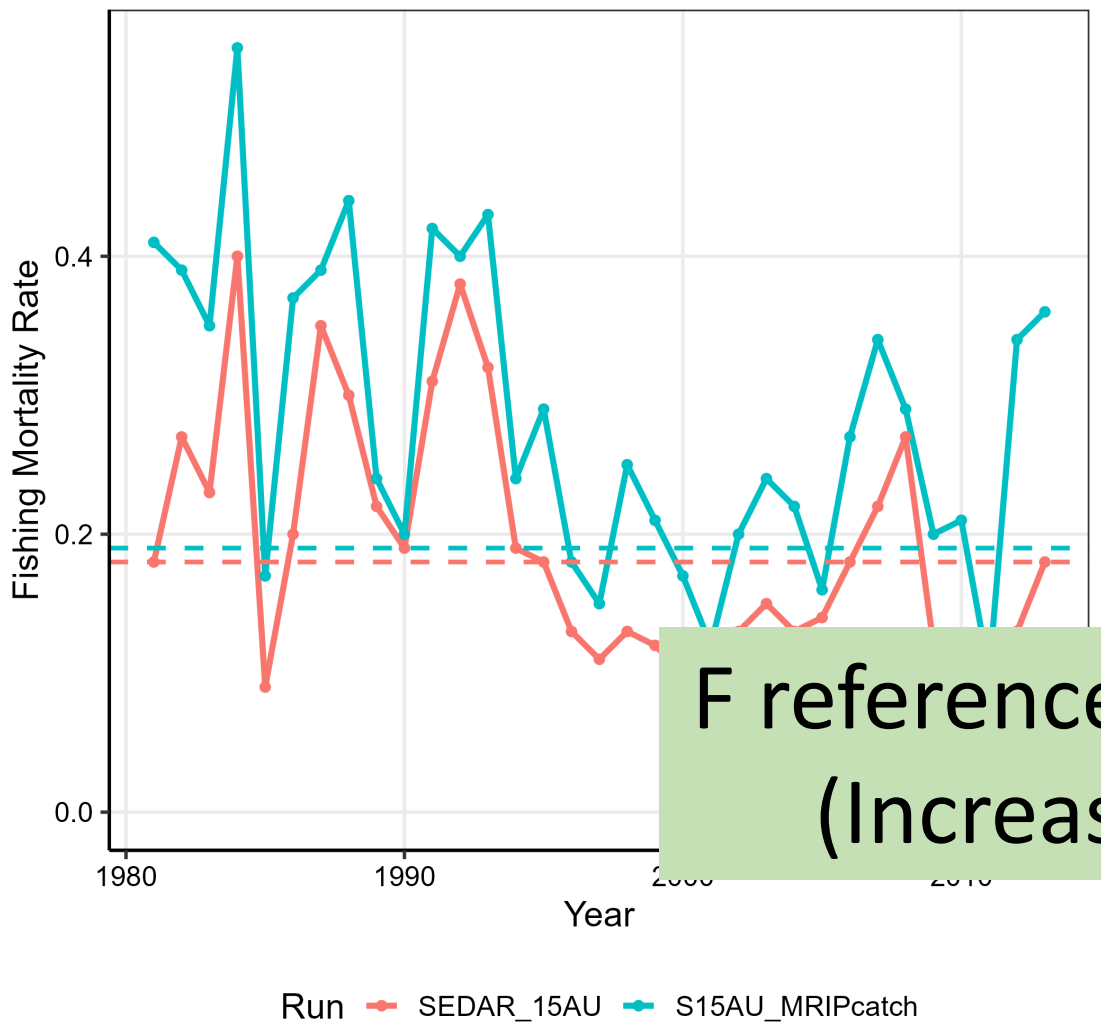


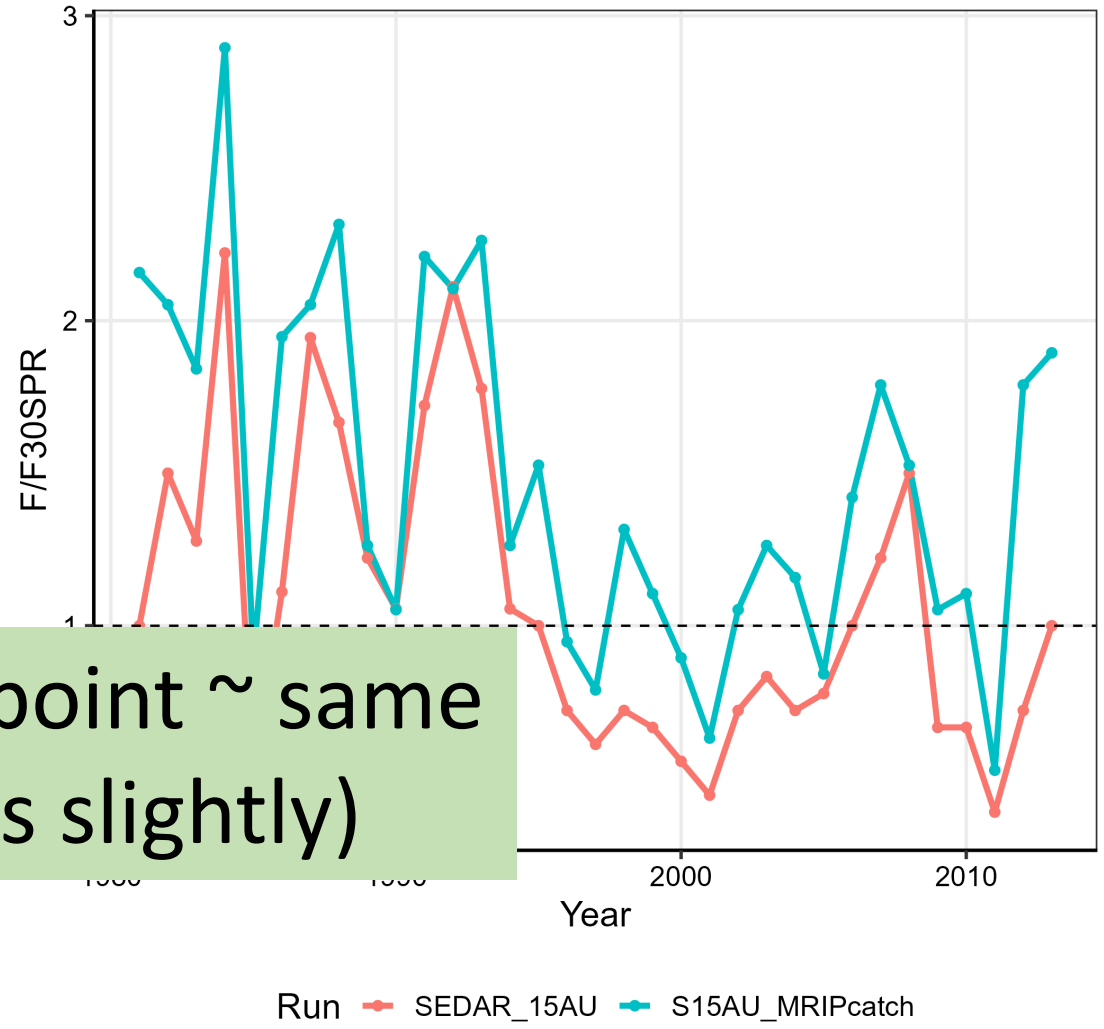




# SSB reference point increases


Fishing Mortality Rate
0.0
0.2
0.4
1980
1990
2000
2010
Year
Run
SEDAR_15AU
S15AU_MRIPcatch


F/F30SPR
1
2
3
1980
1990
2000
2010
Year
Run
SEDAR_15AU
S15AU_MRIPcatch



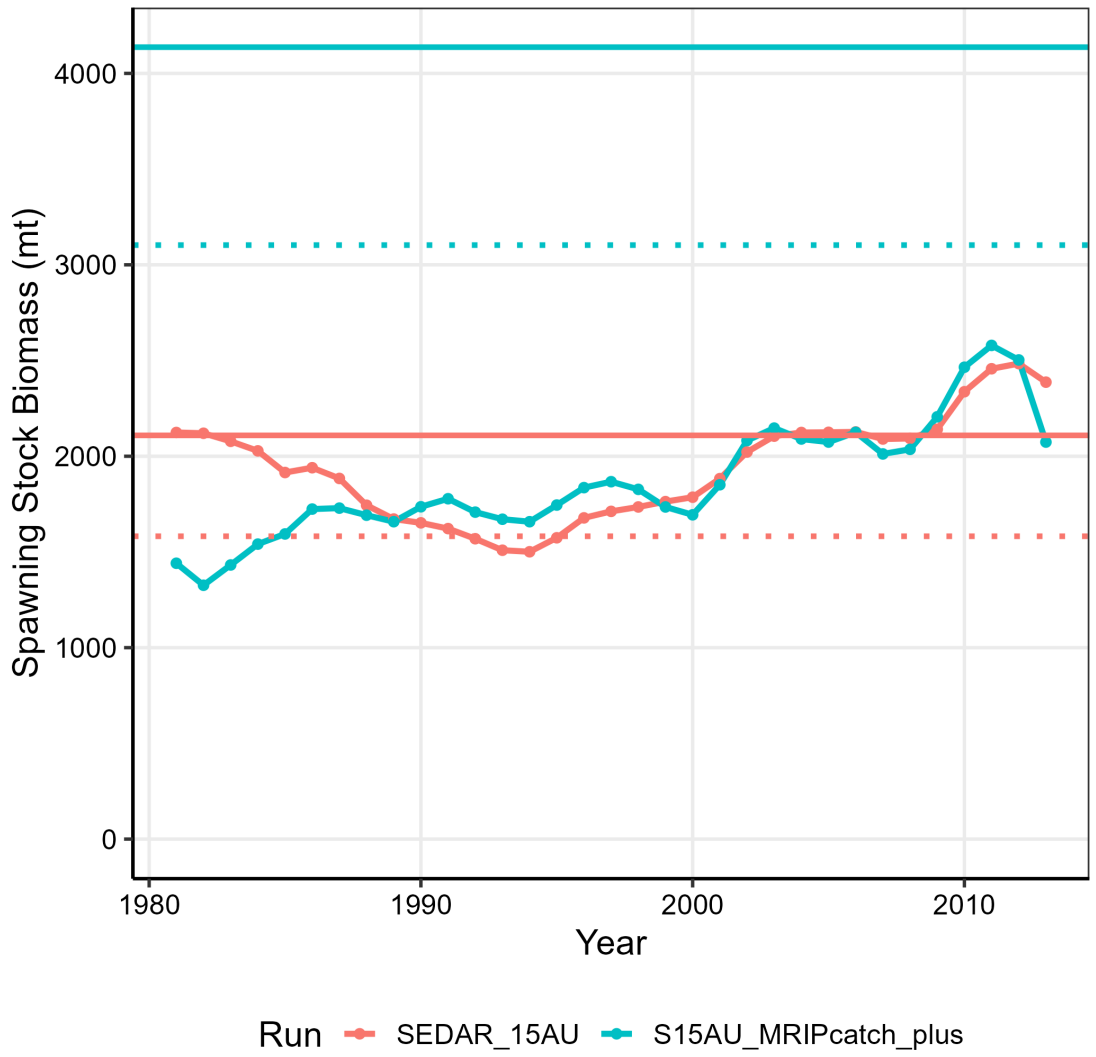



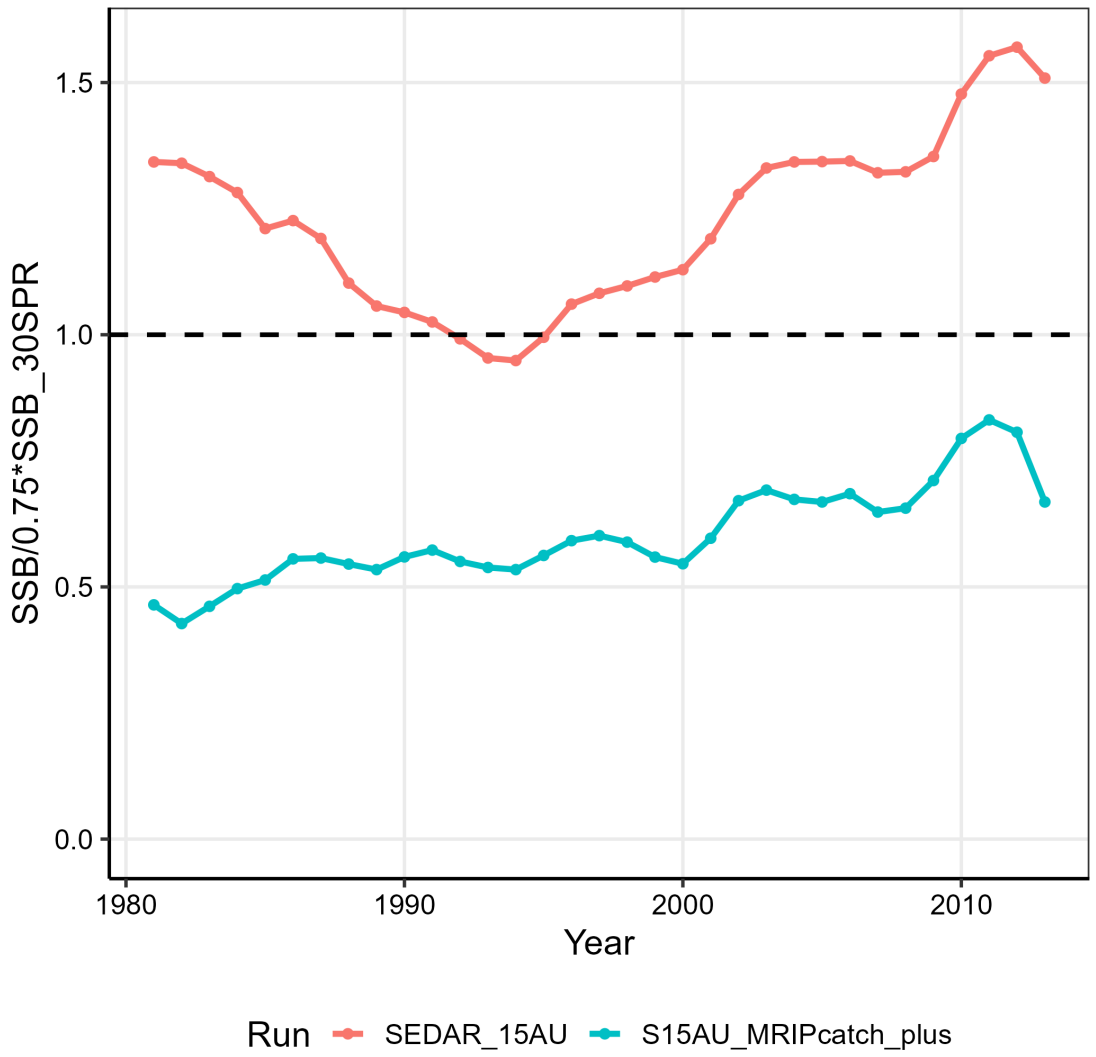

F reference point ~ same
(Increases slightly)

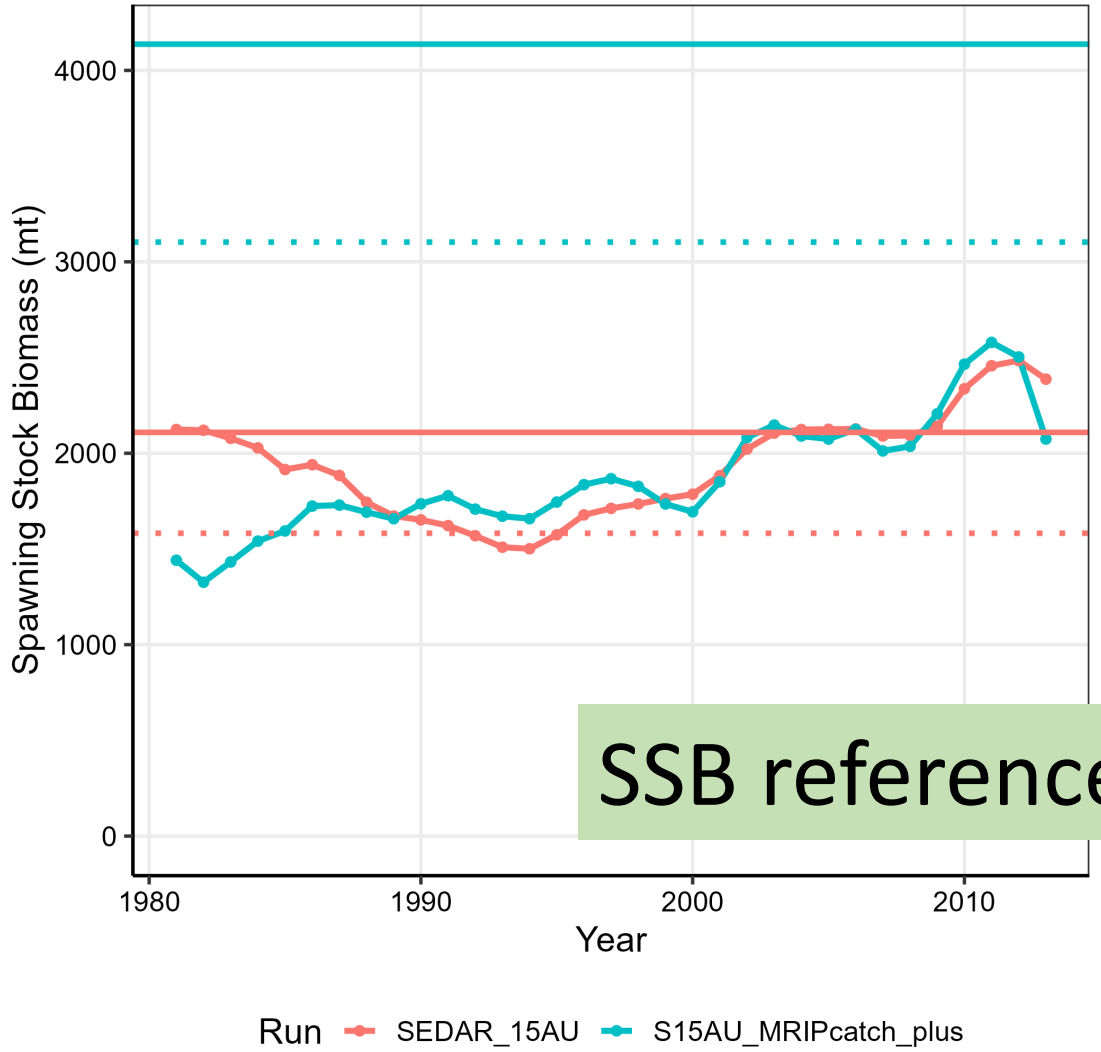
# MRIP-FES for all recreational data inputs

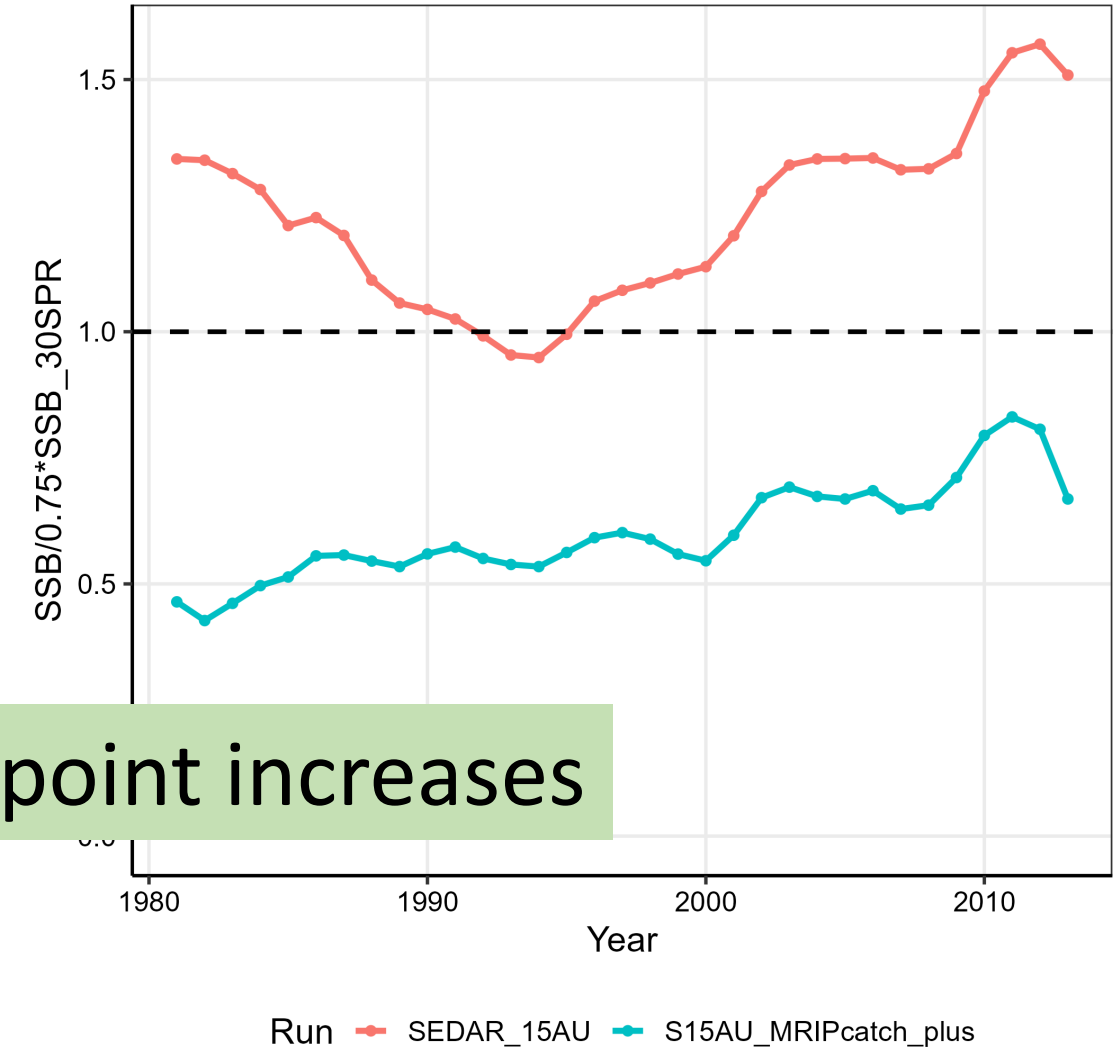
MODEL NAME: S15AU_MRIPcatch_plus

- All remaining components related to MRFSS updated using SEDAR 79 data
  - MRIP-FES landings and discards
  - updated catch and discard proportion catch at age
  - updated catch and discard weight-at-age
- Adjustments
  - SEDAR 15AU weights-at-age: constant over time
  - SEDAR 79 weights at age: vary over time
  - To adjust, the SEDAR 79 weights-at-age were averaged over time by age
  - *Single weight-at-age matrix used for all fleet catch and discards (retained here with the updated matrix applied to all fleet catch and discards not just recreational)

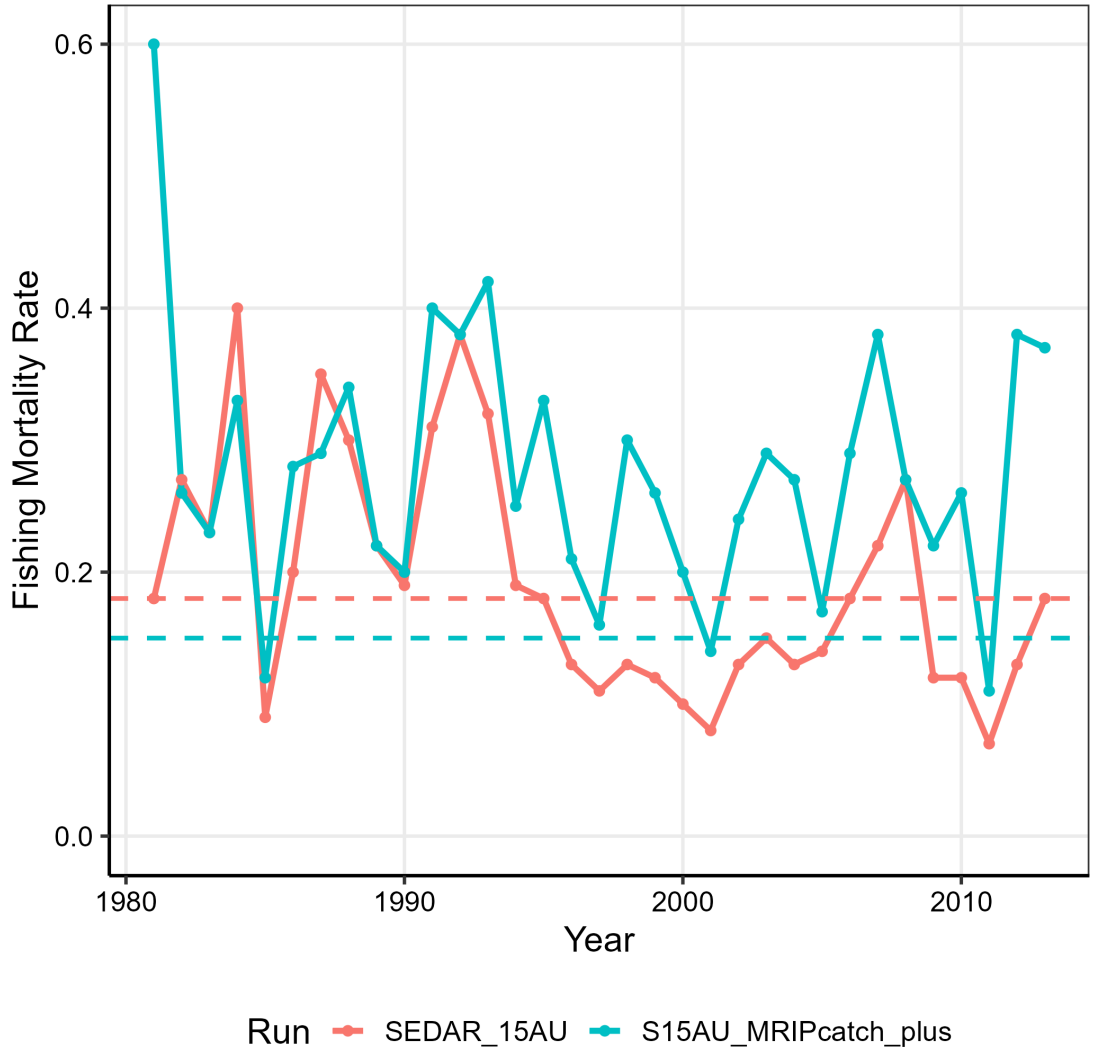

Spawning Stock Biomass (mt)
4000
3000
2000
1000
0
1980
1990
2000
2010
Year
Run
SEDAR_15AU
S15AU_MRIPcatch_plus

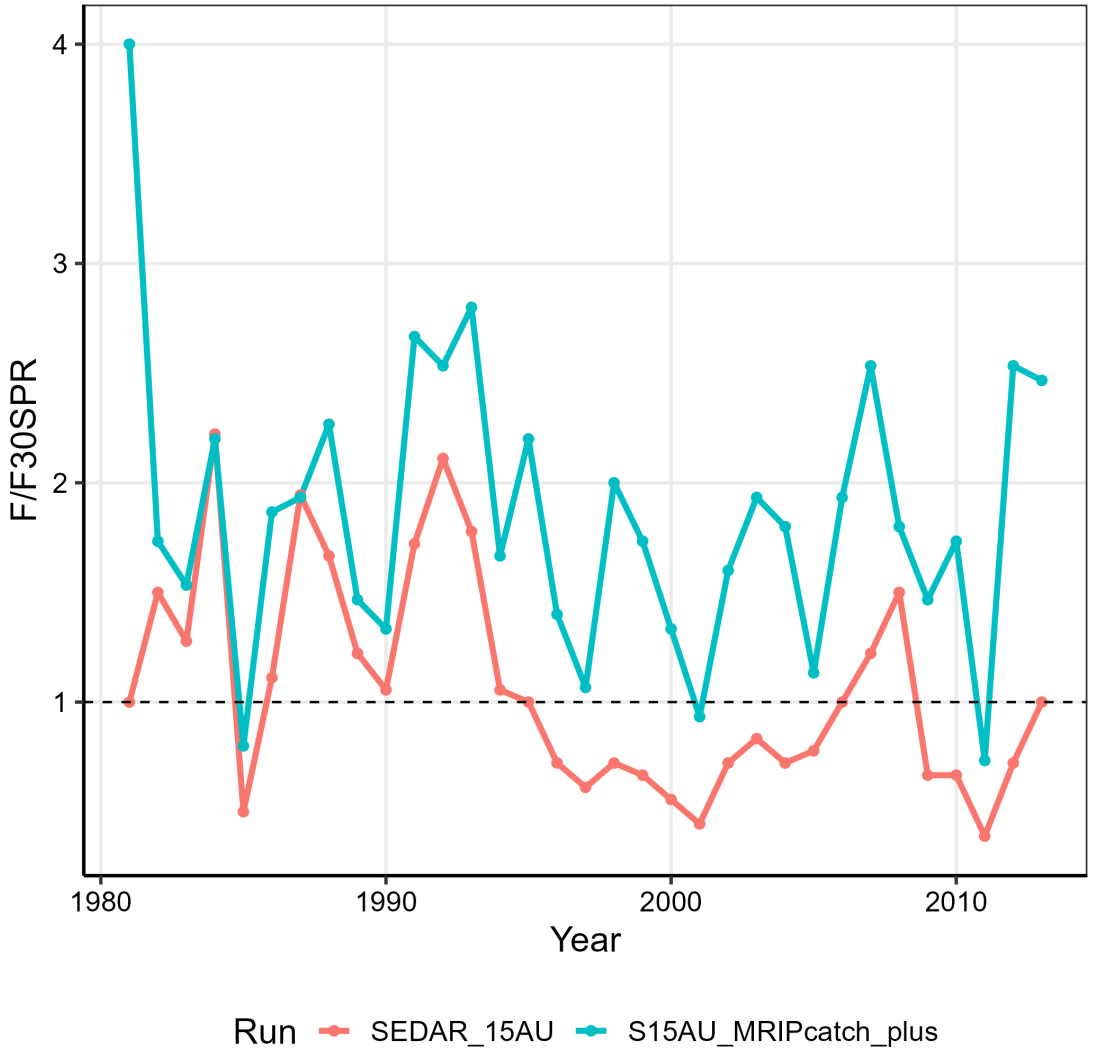

SSB/0.75*SSB_30SPR
1.5
1.0
0.5
0.0
1980
1990
2000
2010
Year
Run
SEDAR_15AU
S15AU_MRIPcatch_plus

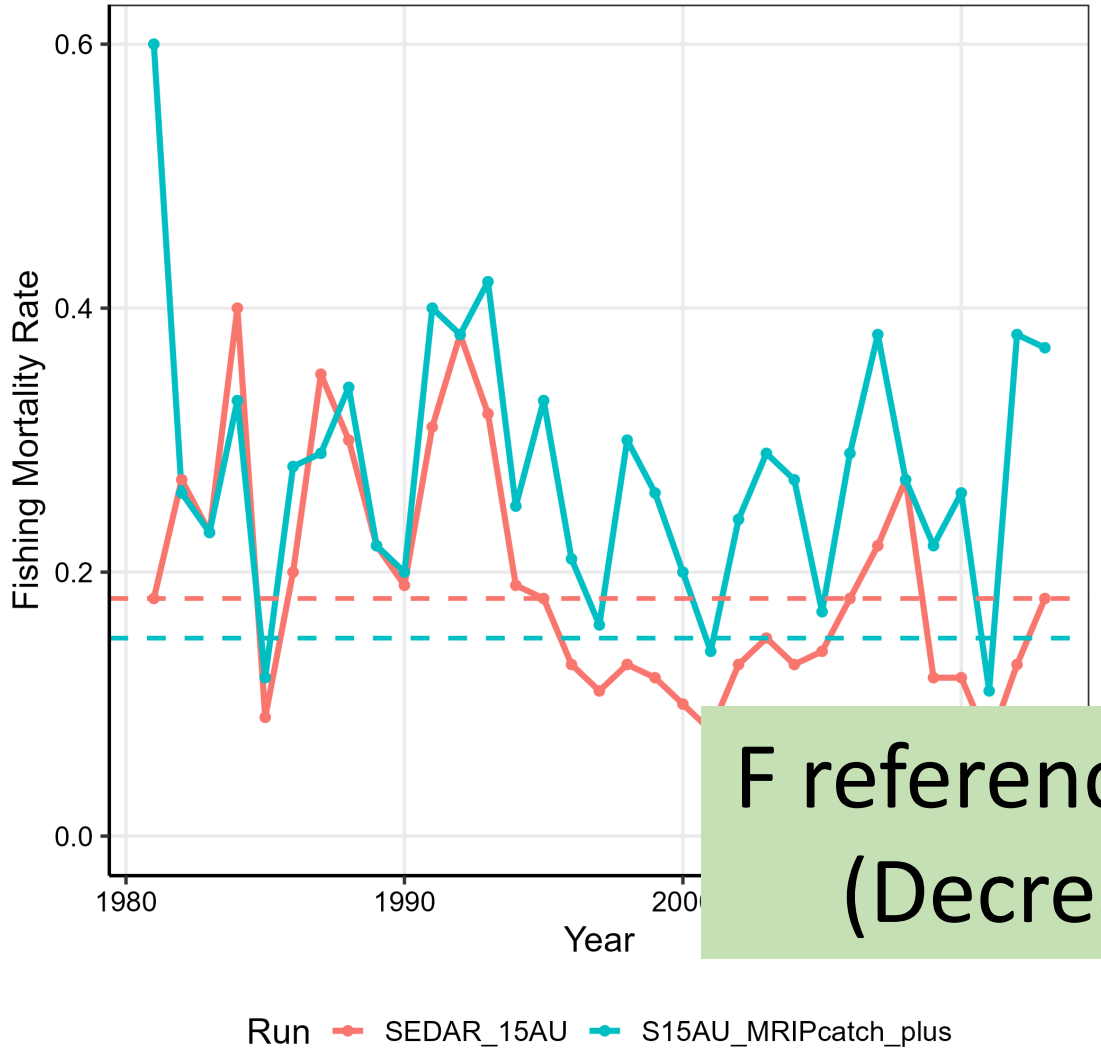


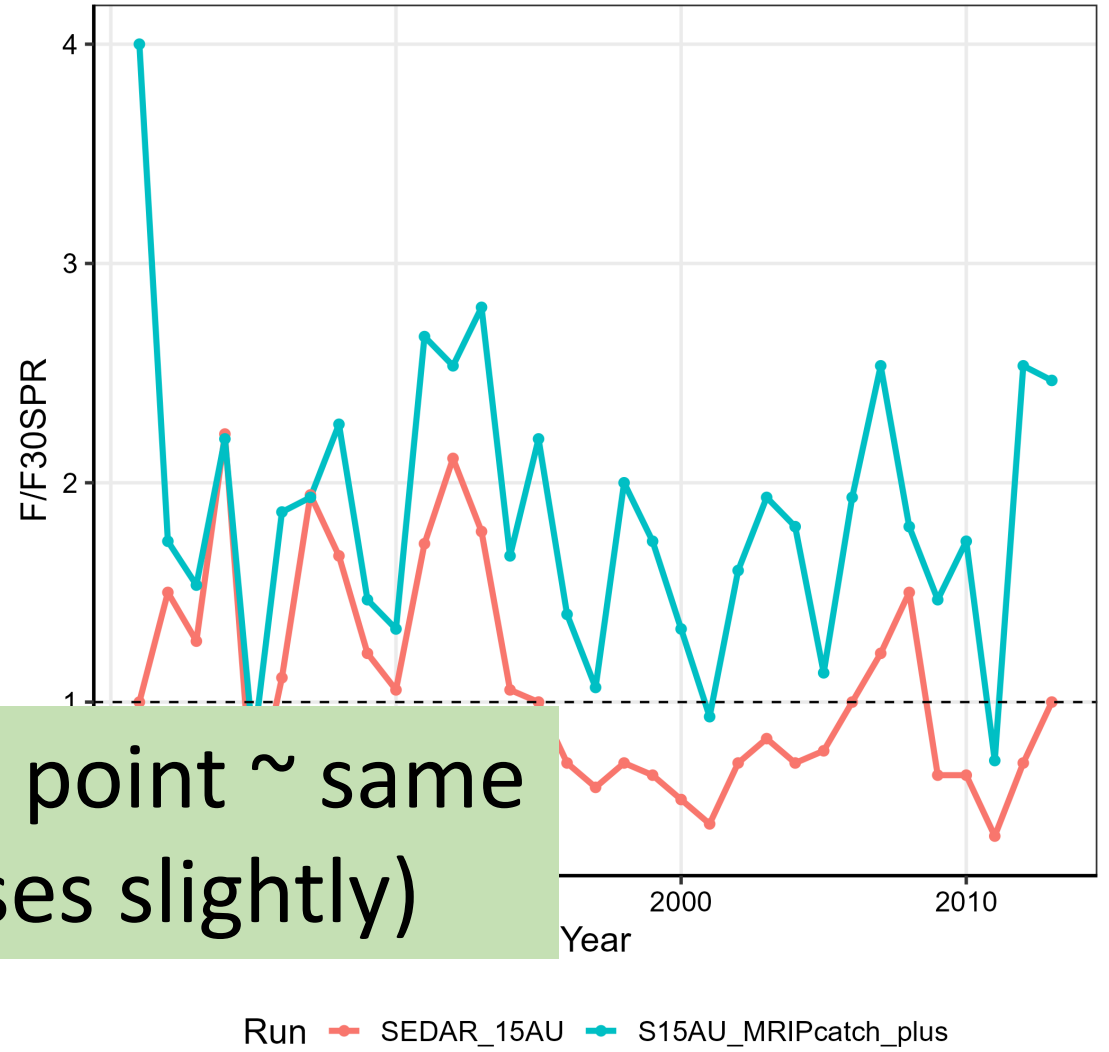

# SSB reference point increases


Fishing Mortality Rate
0.6
0.4
0.2
0.0
1980
1990
2000
2010
Year
Run
SEDAR_15AU
S15AU_MRIPcatch_plus


F/F30SPR
4
3
2
1
1980
1990
2000
2010
Year
Run
SEDAR_15AU
S15AU_MRIPcatch_plus




F reference point ~ same
(Decreases slightly)



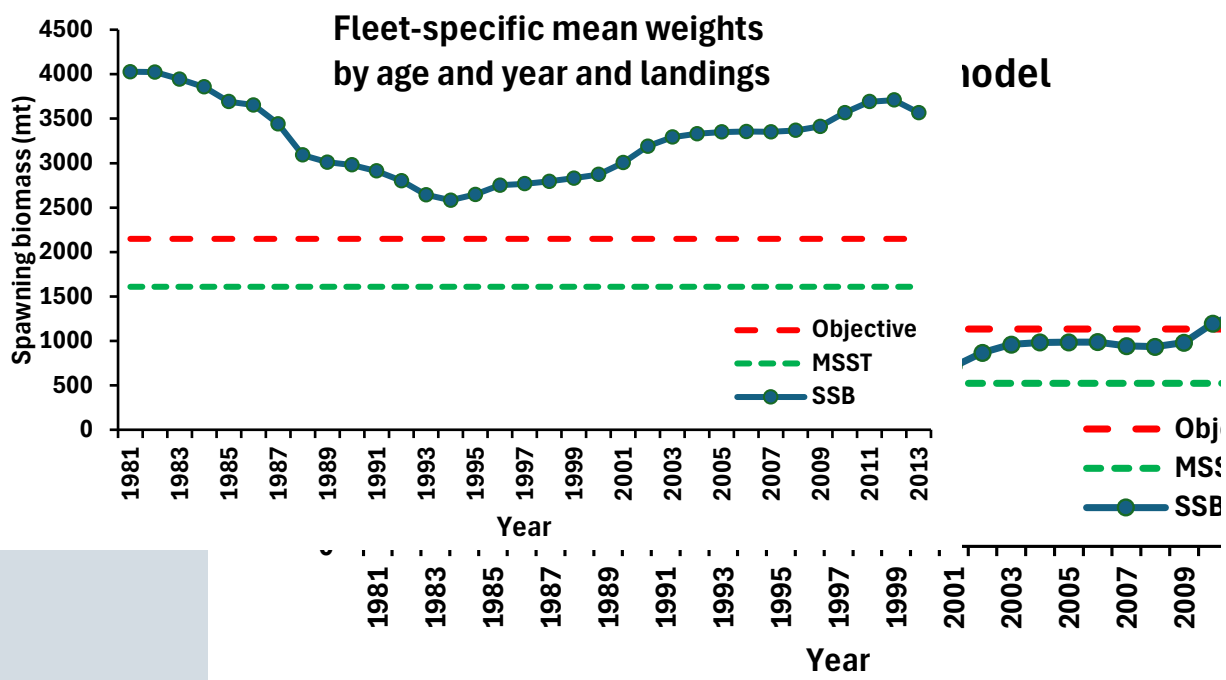
# Model Bridging

- Effect of configuration differences between the SEDAR 15AU Final Model and the SEDAR 79 Base Model
- Original SEDAR 15AU data with a configuration in ASAP 3 that closely resembled the SEDAR 79 Base Model configuration in Stock Synthesis

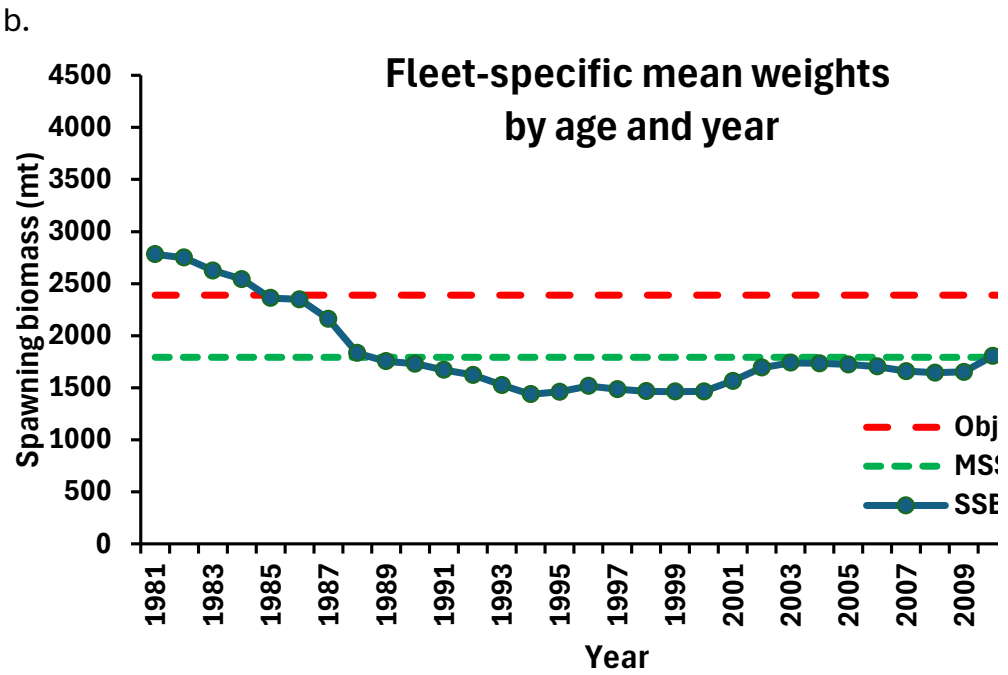
| | SEDAR 15AU base | Model Bridging Exercises | | |
|---|---|---|---|---|
| | | Mean weights | Mean weights plus landings | Mean weights, landings, plus indices |
| **Years** | | 1981 - 2013 | | |
| **Fleets** | Com H&L, Com LL, MRFSS, Headboat | Com H&L, Com LL, MRFSS, Headboat | Com H&L, Com LL, Rec East, Rec West | Com H&L, Com LL, Rec East, Rec West |
| **Indices** | Logbook HL, Logbook LL, Headboat, MRFSS, FIM YOY, NMFS-UM RVC, Riley Hump | Logbook HL, Logbook LL, Headboat, MRFSS, FIM YOY, NMFS-UM RVC, Riley Hump | Logbook HL, Logbook LL, Headboat, MRFSS, FIM YOY, NMFS-UM RVC, Riley Hump | Logbook LL, FIM YOY, NMFS-UM RVC |
| **# of Mean Weight-at-age Matrices** | 1 for fleets, 1 for SSB, 1 for Jan 1 | 10 for fleets (based on SEDAR 79 Data), 1 for SSB, 1 for Jan 1 | 10 for fleets (based on SEDAR 79 Data), 1 for SSB, 1 for Jan 1 | 10 for fleets (based on SEDAR 79 Data), 1 for SSB, 1 for Jan 1 |
| **Time-varying Mean Weight-at-age?** | No | Yes, for fleets. Constant WAA for SSB and Jan 1 | Yes, for fleets. Constant WAA for SSB and Jan 1 | Yes, for fleets. Constant WAA for SSB and Jan 1 |

# Data Preparation

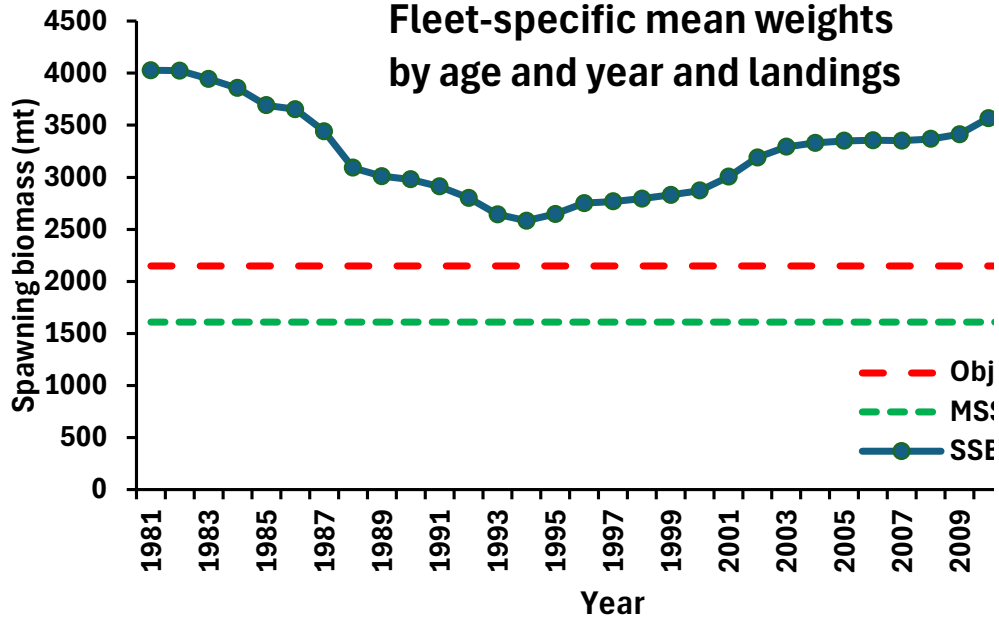
1. Mean Weights
   - Tally the SEDAR 15AU recreational lengths, weights and landings for the headboats and for MRFSS/MRIP fleets by region and then recombining them into the Recreational East and the Recreational West
   - individual fish lengths standardized to maximum total length
   - fleet lengths/weights grouped into 25 mm length bins, weighted by their landings and converted to ages using the SEDAR 15AU stochastic ALK
2. Mean Weights + Landings
   - Numbers /weights added to produce the numbers/weights of fish/age/year for the Recreational East and Recreational West fleets
   - Landings tallied for the new fleet definitions
3. Mean Weights + Landings + Indices


Fleet-specific mean weights
by age and year and landings
Spawning biomass (mt)
Year
Objective
MSST
SSB

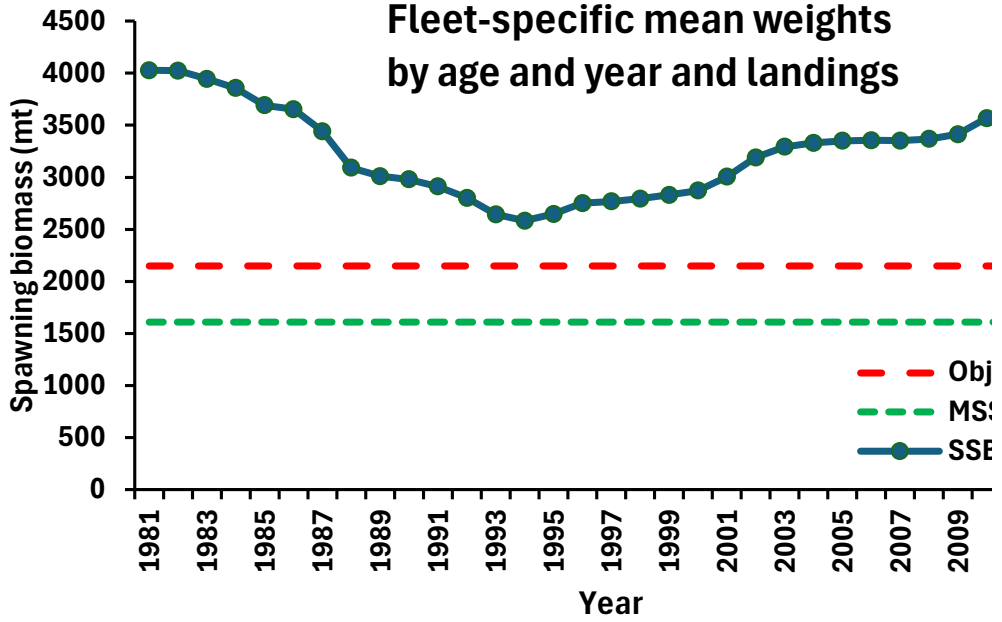
b.


Fleet-specific mean weights
by age and year
Spawning biomass (mt)
Year

c.


Fleet-specific mean weights
by age and year and landings
Spawning biomass (mt)
Year

d.


Fleet-specific mean weights
by age and year and landings
Spawning biomass (mt)
Year