

# Golden tilefish

## 2016 Update Assessment

SAFMC SSC Meeting

Geneviève Nesslage

May 4, 2016



# Outline

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- Data update
  - Life history
  - Landings
  - Abundance indices
  - Samples
- Model update
  - Base run configuration
  - Changes since SEDAR 25 benchmark
  - Results
  - Continuity and sensitivities
  - Uncertainty
- Projections

# Outline

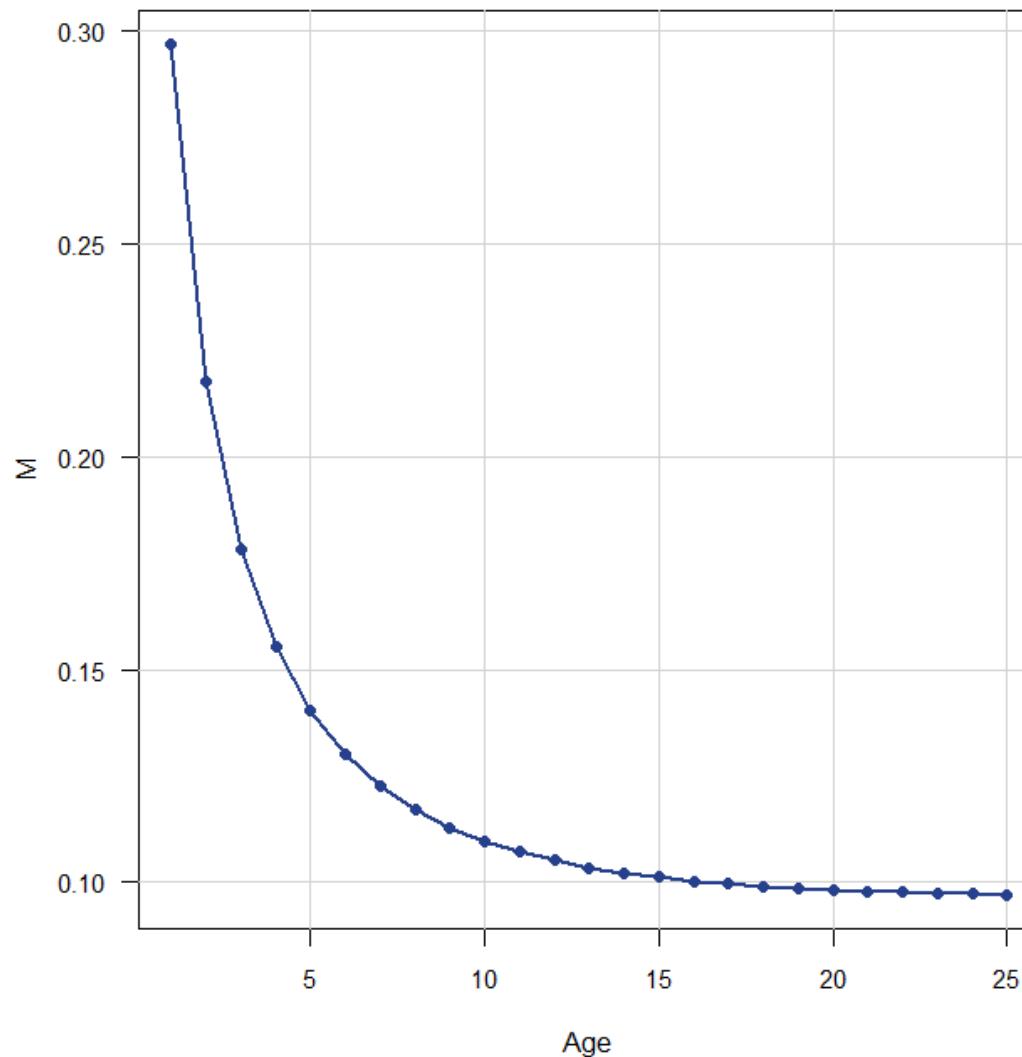
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# Data – life history

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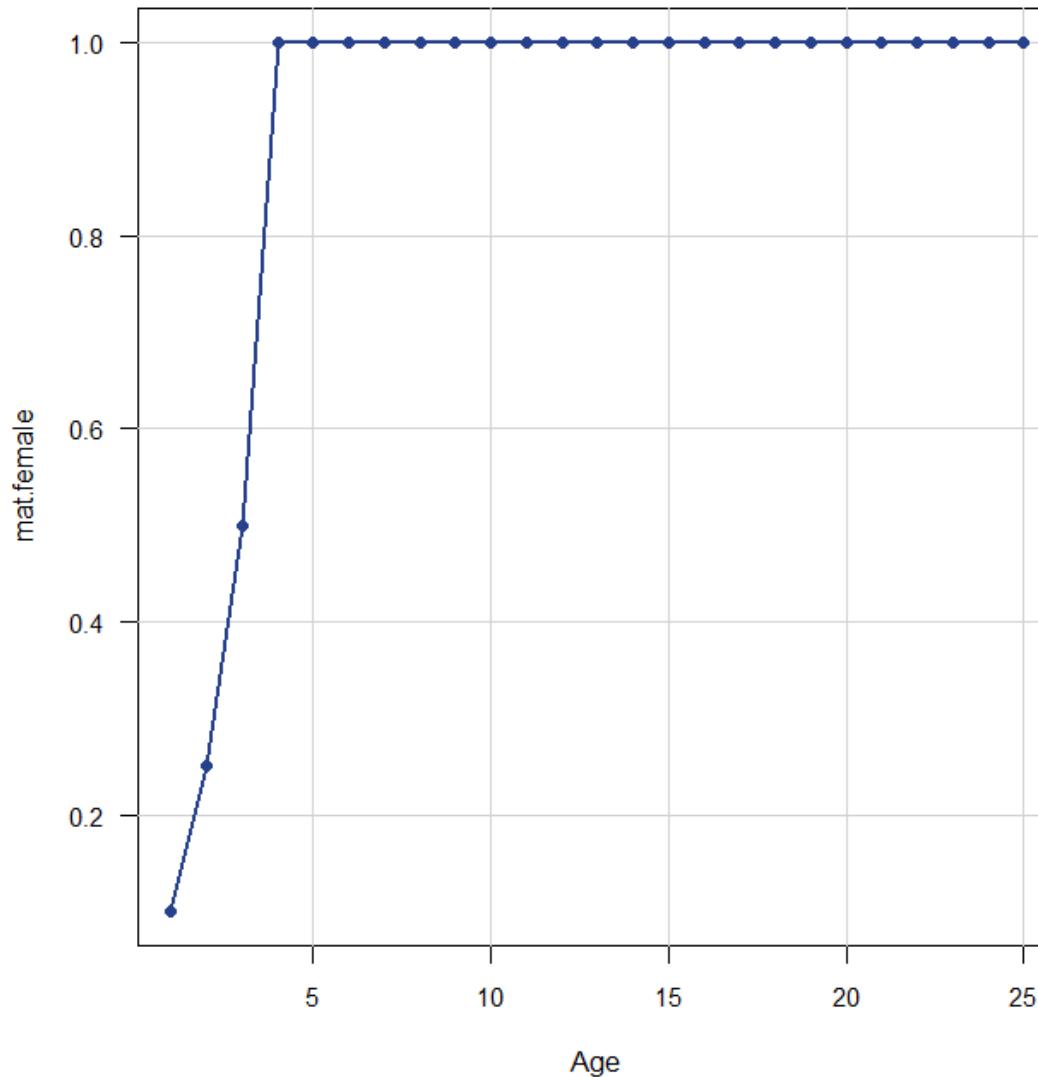
- Same as SEDAR 25 benchmark



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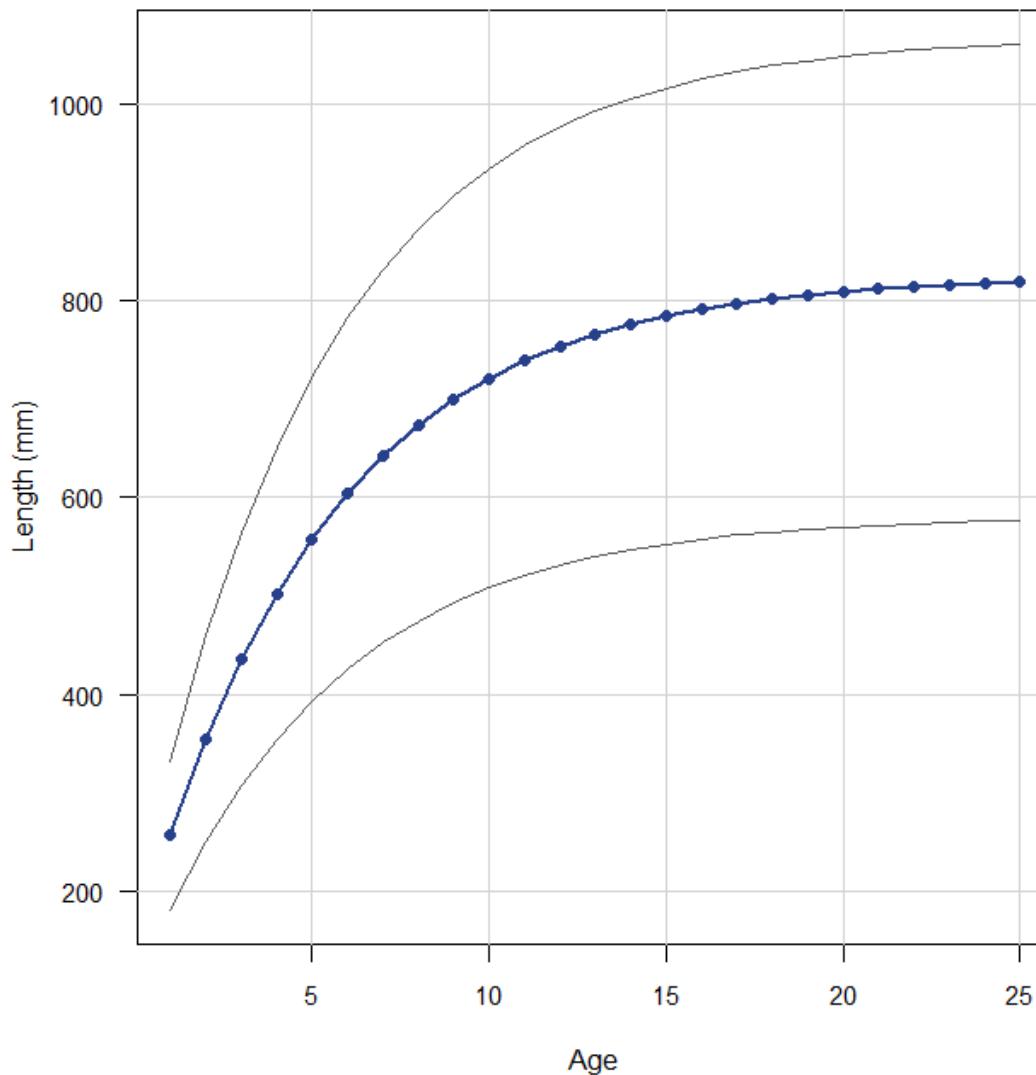
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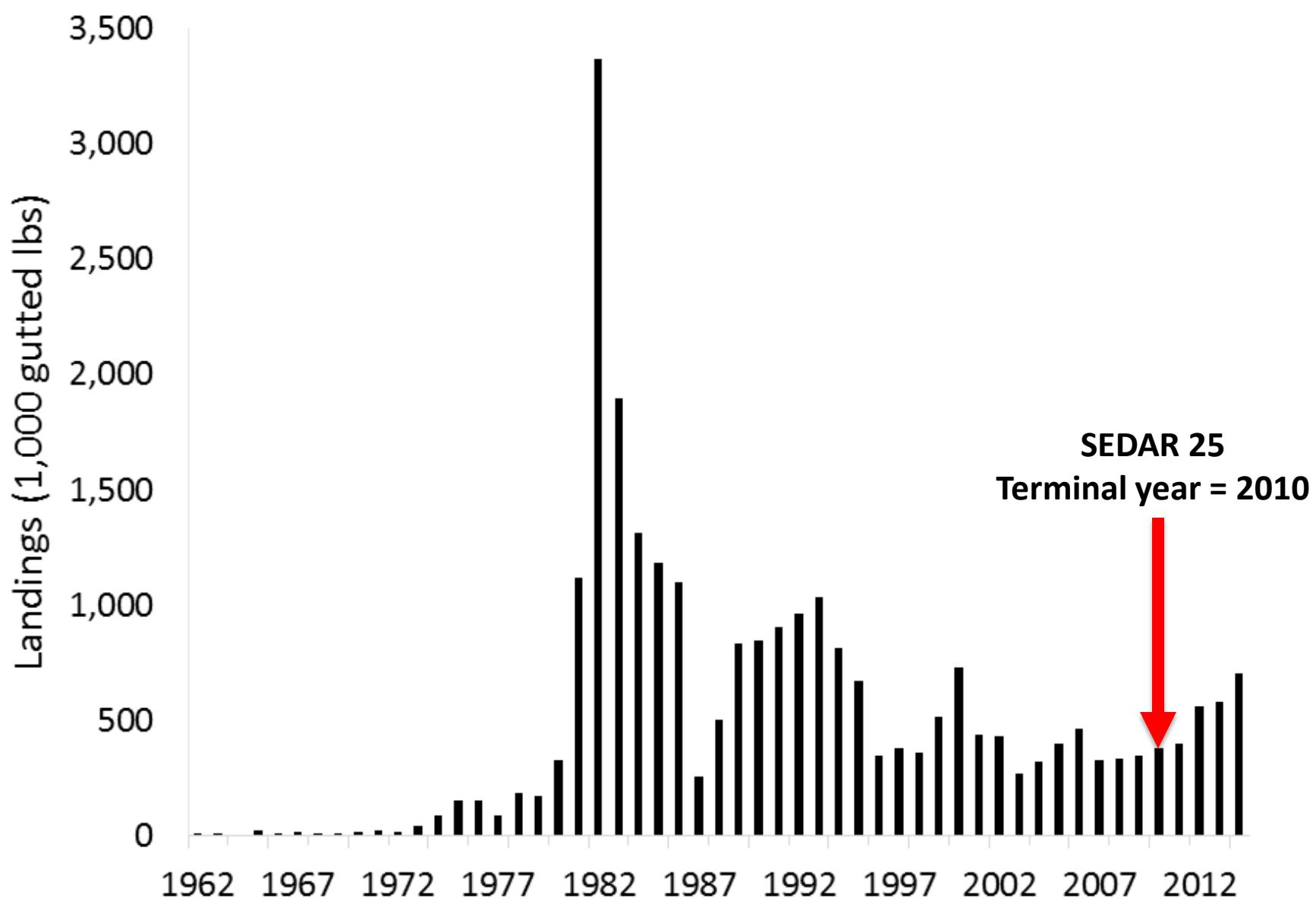
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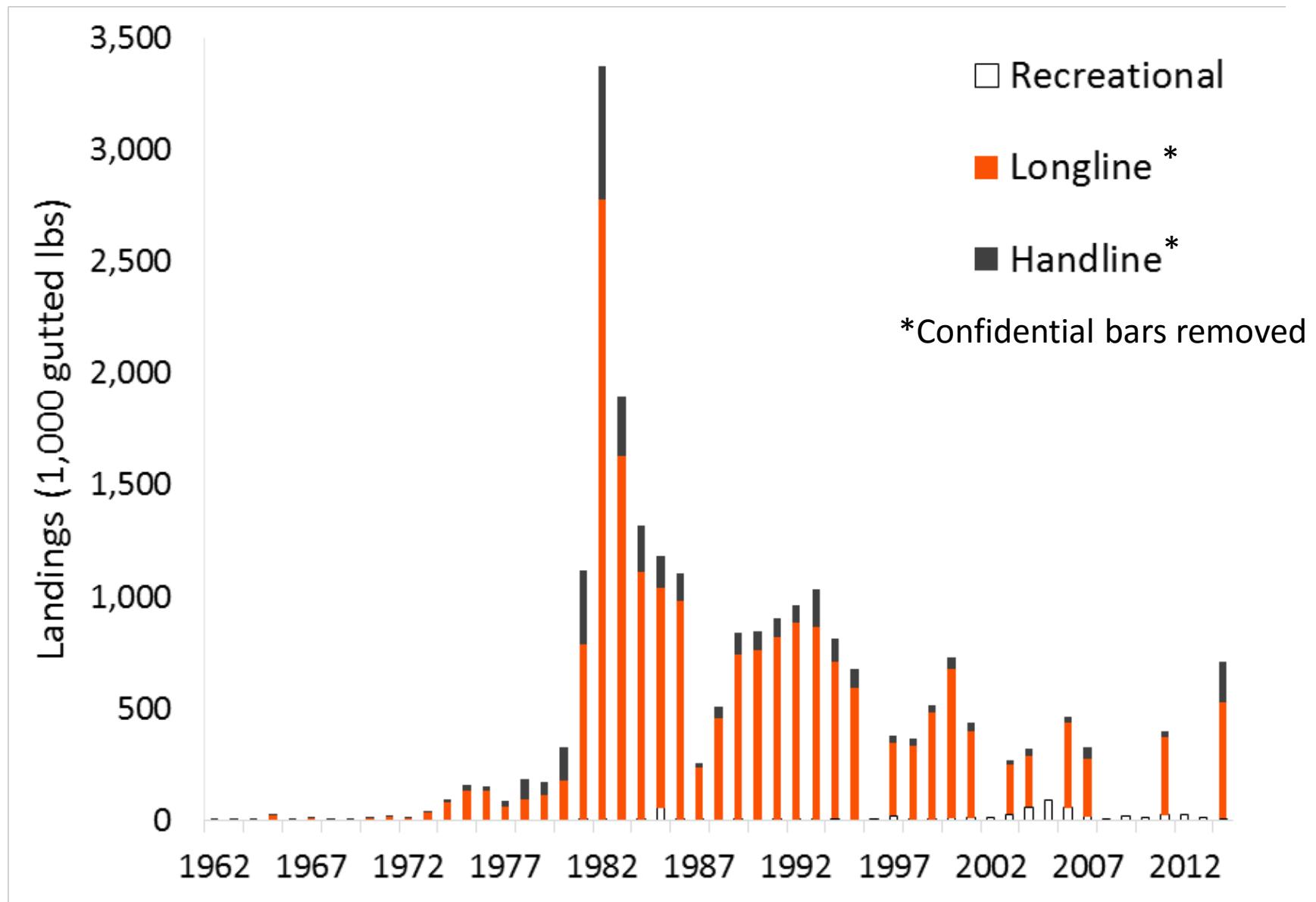
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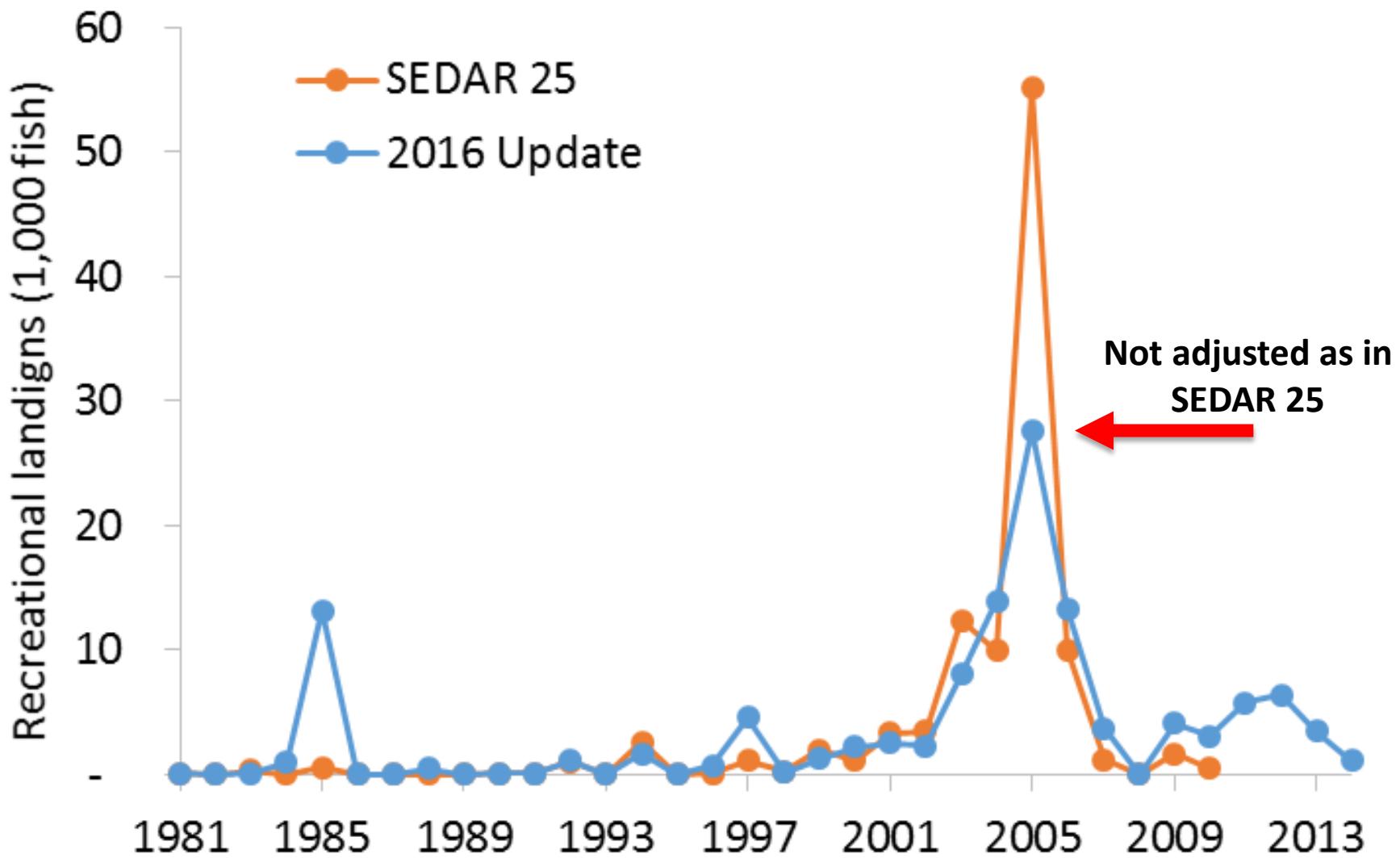
# Data – landings



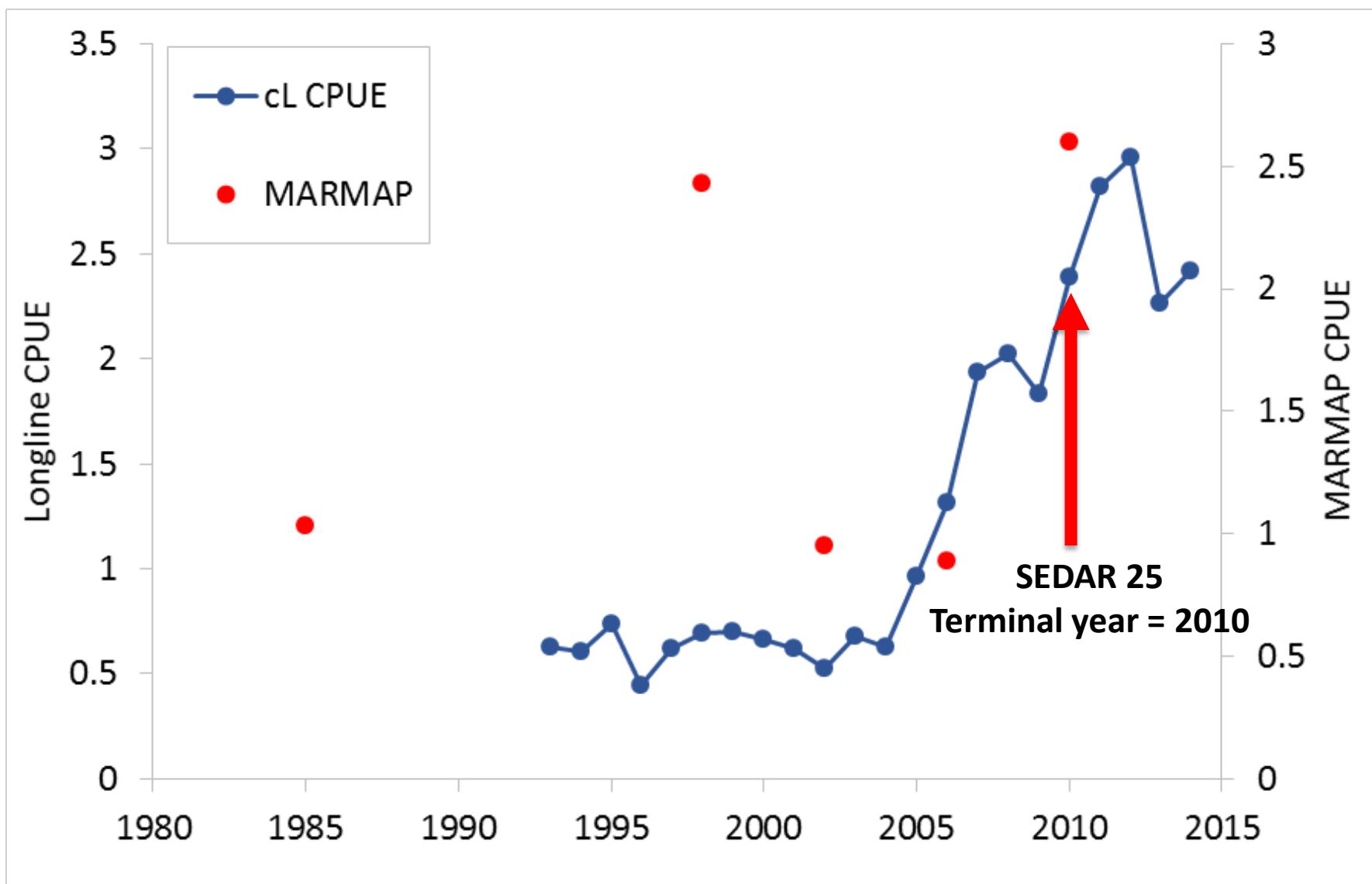
# Data – landings



# Data – landings



# Data – abundance indices



# Data – trips/sets sampled (Table 7.5)

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Year	len.cH	age.cH	len.cL	age.cL	len.rA	age.mm
1984	2	.	.	.	.	.
1985	7	.	.	.	.	155
1986	3	.	.	.	.	.
1987	2	.	.	7	.	.
1988	.	.	8	.	.	.
1989	.	.	7	.	10	.
1990	.	.	7	.	7	.
1991	8	.	51	.	.	.
1992	.	.	.	100	.	.
1993	3	.	.	141	.	.
1994	3	.	77	.	.	.
1995	6	.	.	64	.	.
1996	3	.	.	.	.	.
1997	.	5	.	19	3	.
1998	.	2	.	.	.	74
1999	.	8	.	.	.	.
2000	.	8	.	13	.	.
2001	.	7	.	23	7	.
2002	.	13	.	19	6	59
2003	.	.	.	10	7	.
2004	.	.	.	15	4	.
2005	.	5	.	16	9	.
2006	.	2	.	36	4	52
2007	.	.	.	35	.	.
2008	.	.	.	20	.	.
2009	.	.	.	25	5	.
2010	.	2	.	24	5	93
2011	.	3	.	22	.	.
2012	.	21	.	48	.	.
2013	.	19	.	29	8	.
2014	.	38	.	18	.	.

# Data – changes

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- 2005 MRIP estimates not adjusted
- SRHS samples reduced by ~ 1/3 from SEDAR 25 due to improved data query
- MARMAP age comps corrected

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# Model – configuration

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- Ages 1-25+
- Spans 1962-2014
- $F_{init} = 0.01$ ; equilibrium abundance at age
- Constant, specified growth, maturity
- Estimated constant, logistic selectivities (3 fleets and MARMAP survey)
- Constant catchability
- Beverton-Holt recruitment ( $h=0.84$ ), annual deviations 1976-2007

# Model – estimated parameters (188)

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- Growth: length at age cv (1)
- Recruitment: R<sub>0</sub>, SD, annual deviations (34)
- Selectivity: slope and age at 50% for each fleet & MARMAP survey (8)
- Catchability for CPUE, MARMAP (2)
- Average F and annual deviations for each fleet (54+54+35)

# Model – implementation

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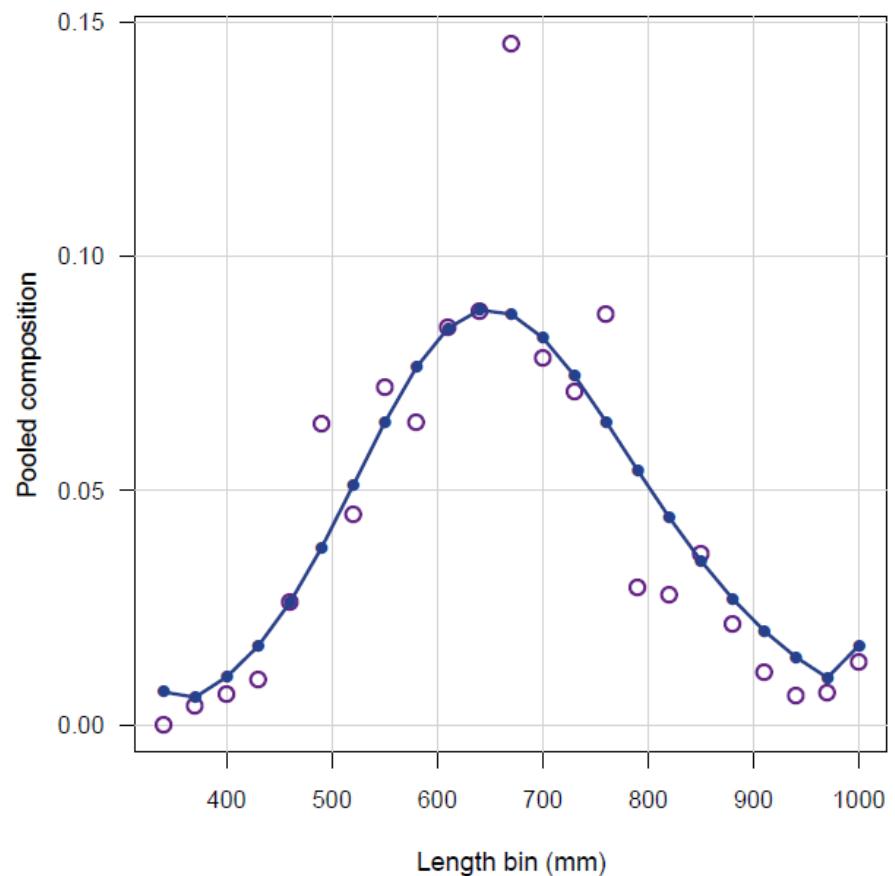
- Priors on growth CV, selectivity slopes, recruitment SD
- Iterative reweighting of likelihood components to achieve SDNRs of 1. Commercial CPUE then up-weighted to 3 as in SEDAR 25.
- Uncertainty:
  - 5,000 MCB trials
  - Observed landings, comps, indices bootstrapped
  - Steepness drawn from truncated beta [0.32,0.99]
  - M drawn from truncated normal [0.03,0.21]
  - CPUE index weighting drawn from uniform  $3 \pm 25\%$

# Model – changes

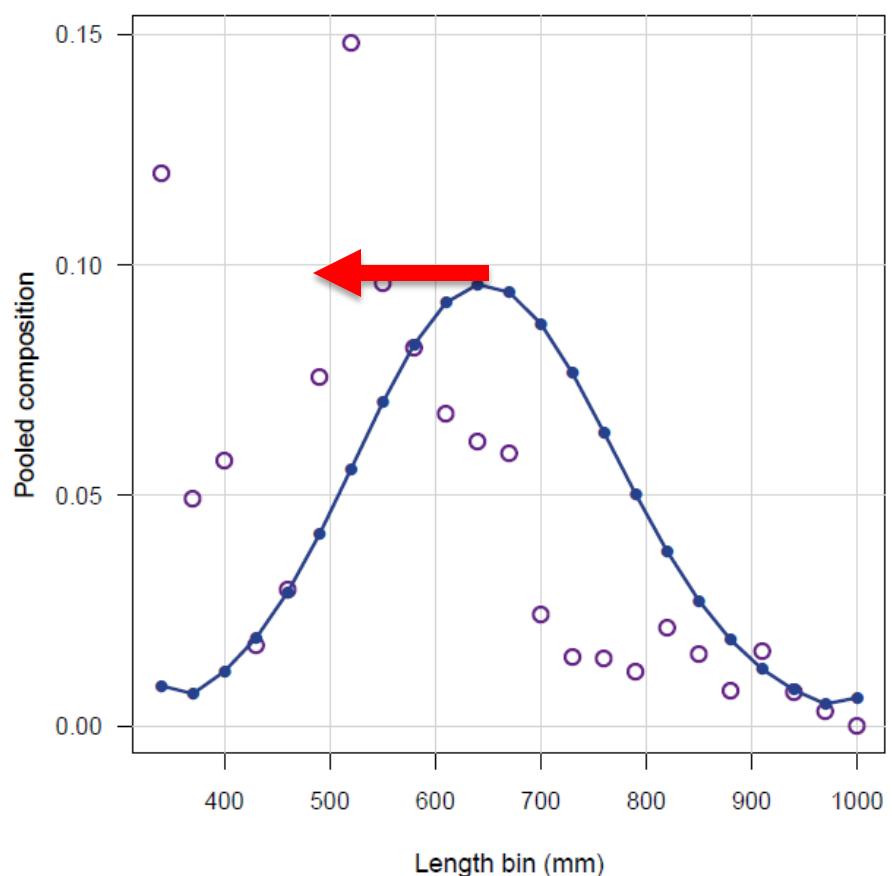
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- Code
  - Recreational landings fit
  - CPUE fit in whole pounds
  - Use of a robust multinomial likelihood – sensitivity S1
- Longline length samples from 1996, 1998, 1999 excluded from base run - Sensitivity S3
- Estimation of recreational fleet selectivity - Sensitivity S2

## Commercial handline



## Recreational

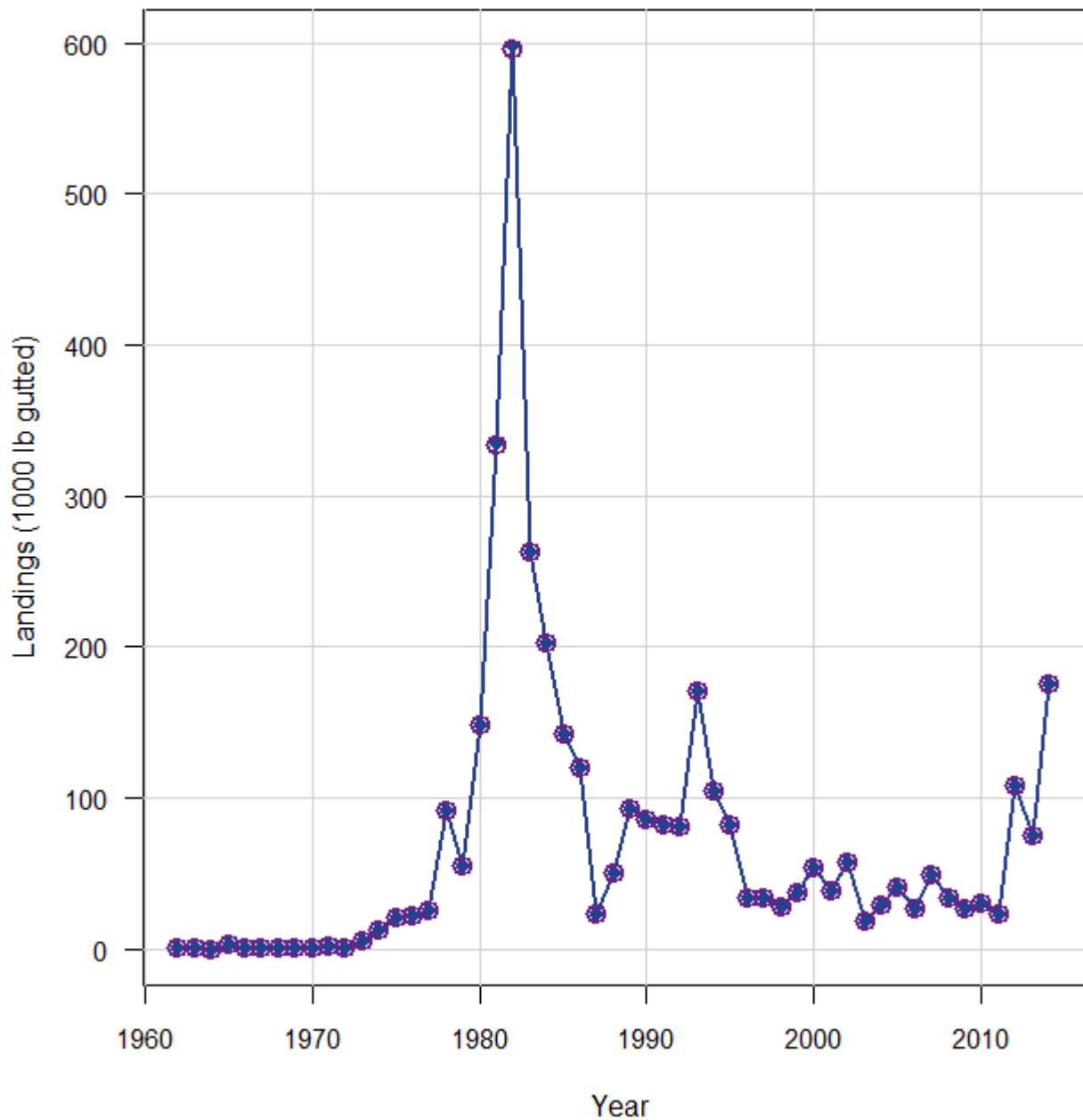


# Outline

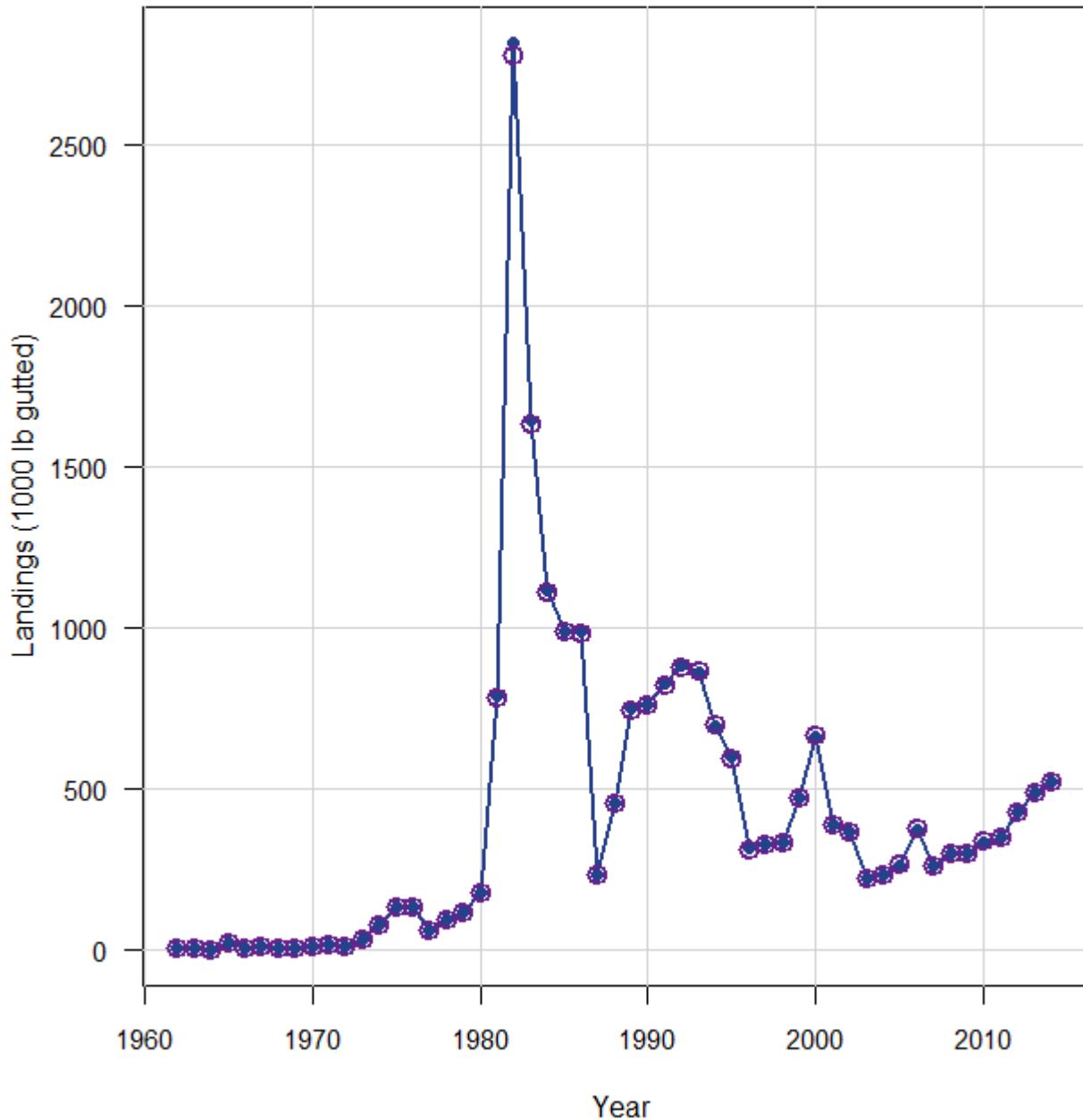
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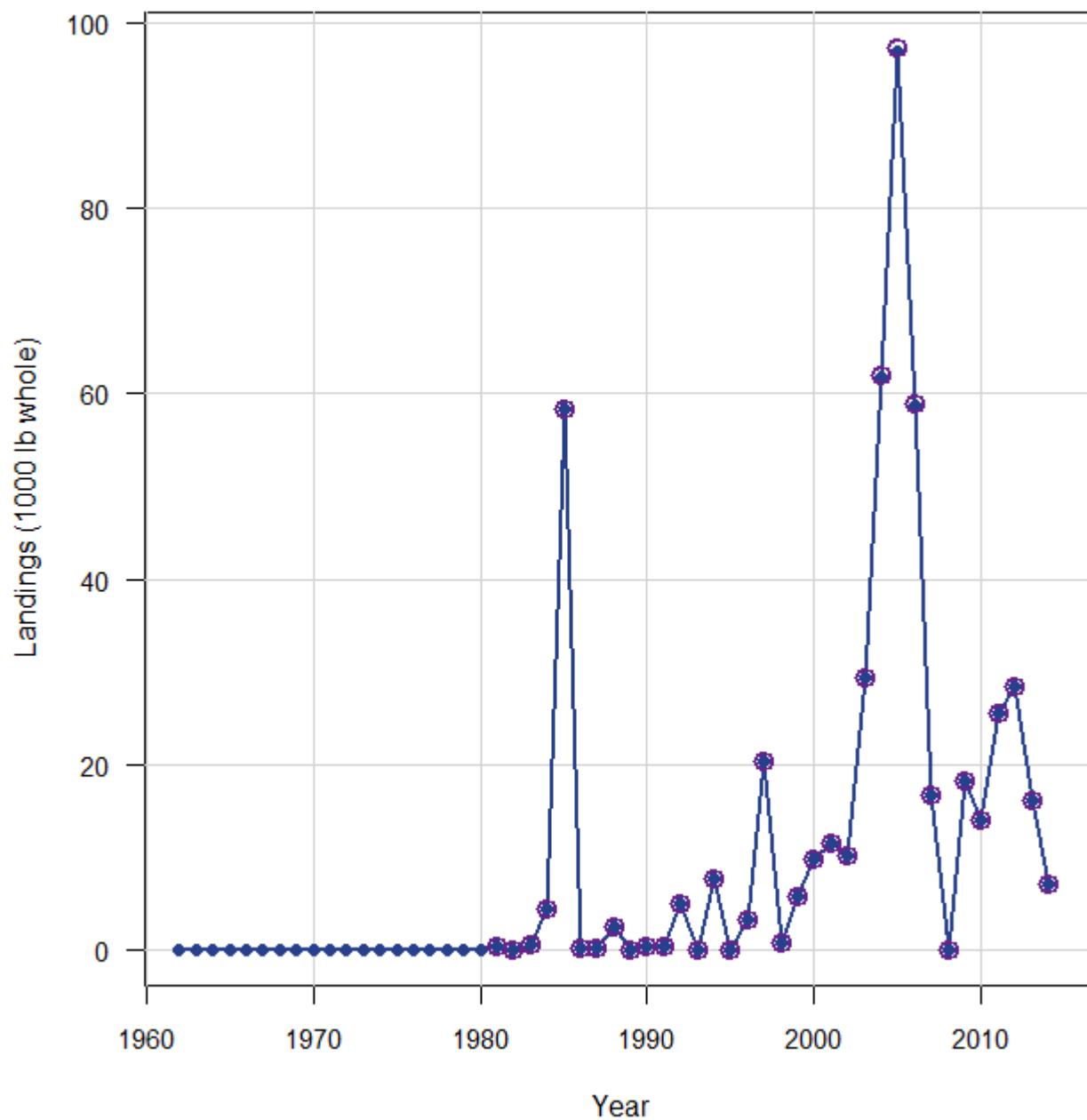
# Commercial handline landings



# Commercial longline landings

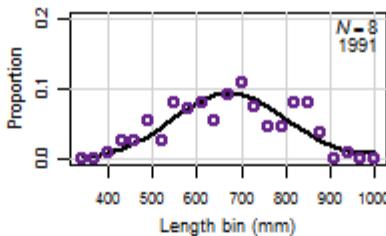


# Recreational harvest

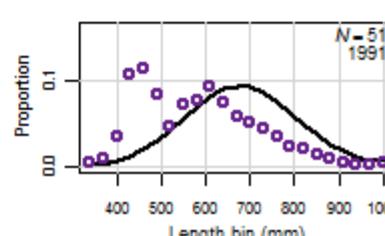
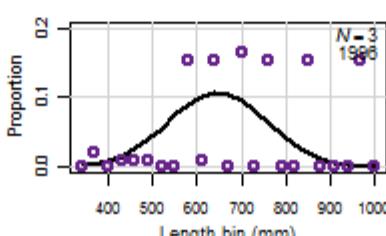
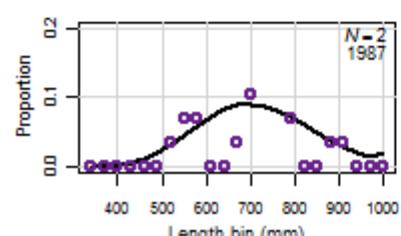
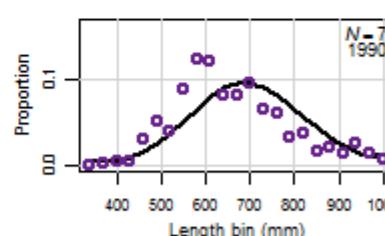
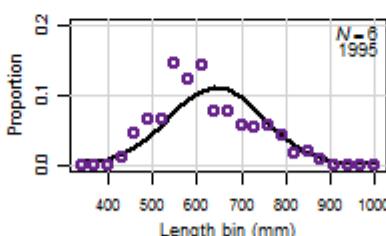
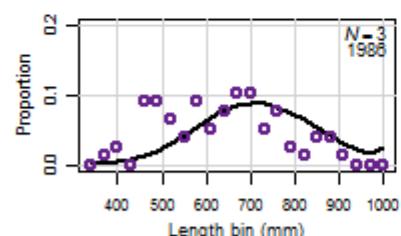
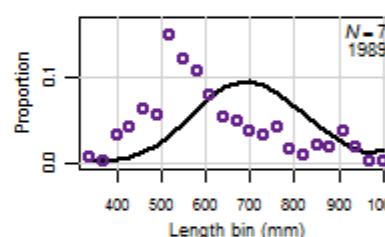
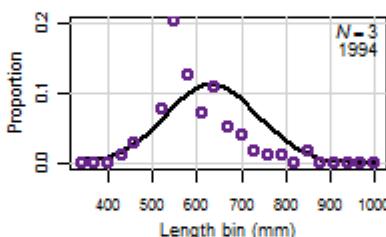
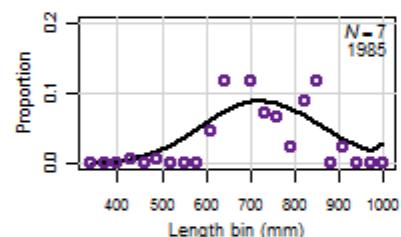
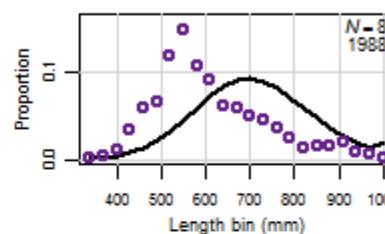
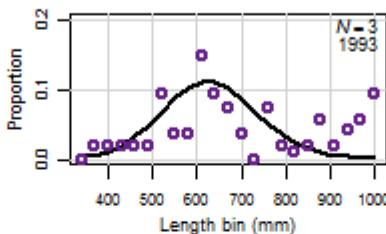
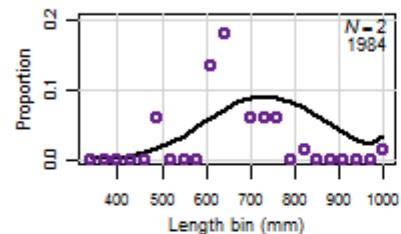


# Compositions

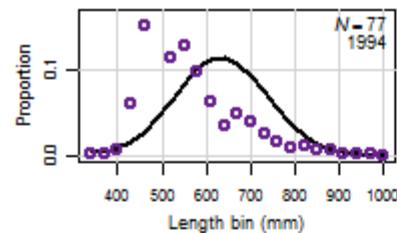
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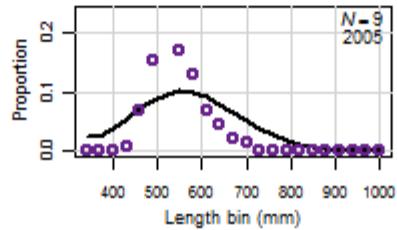
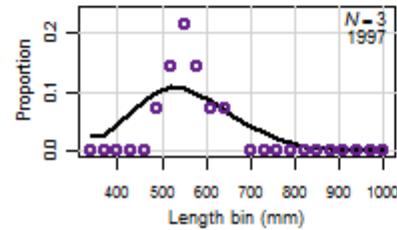
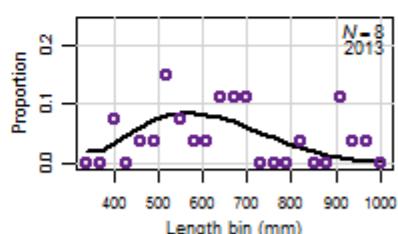
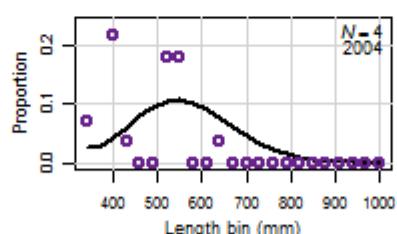
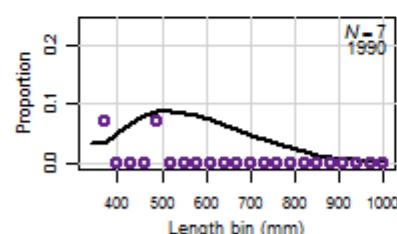
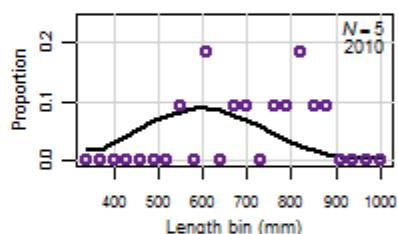
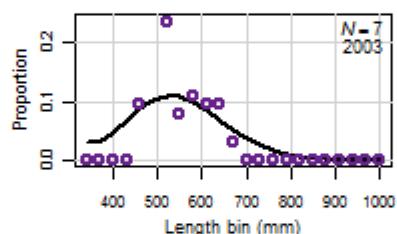
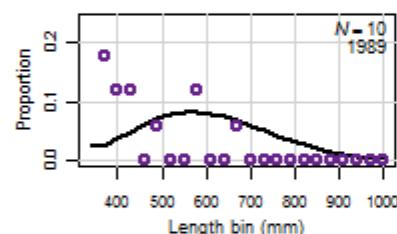
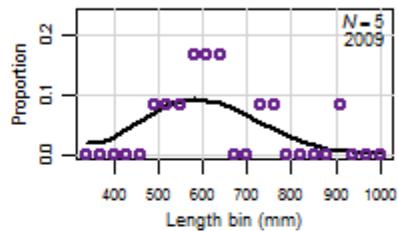
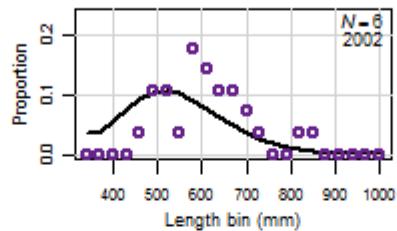
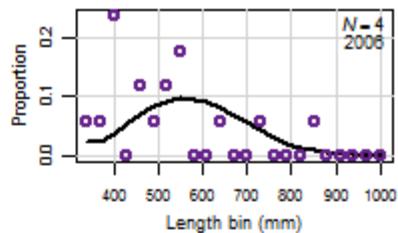
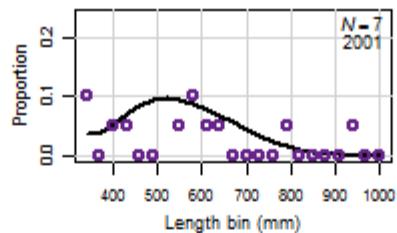
↓ lcomp.cL ↓



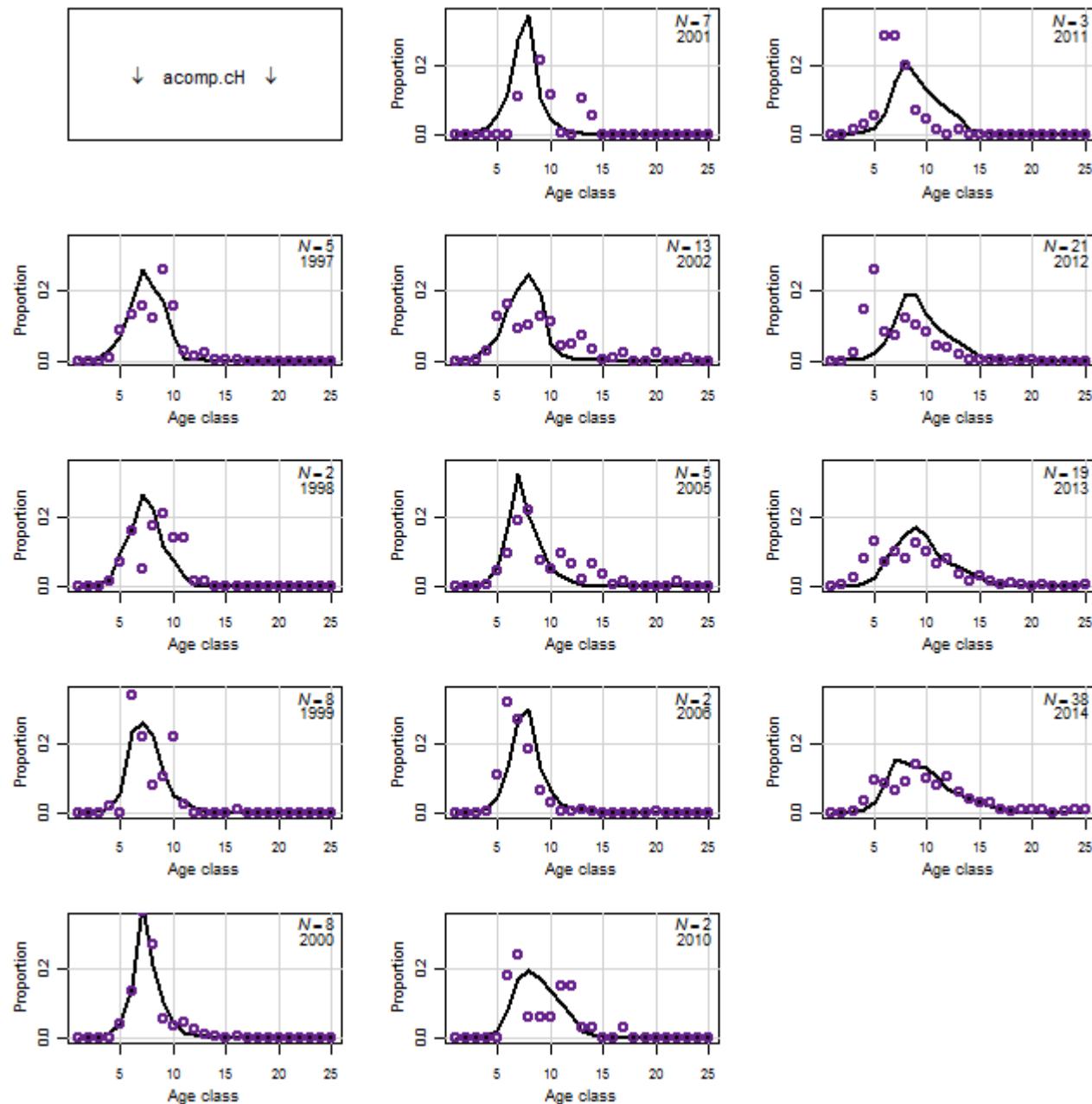
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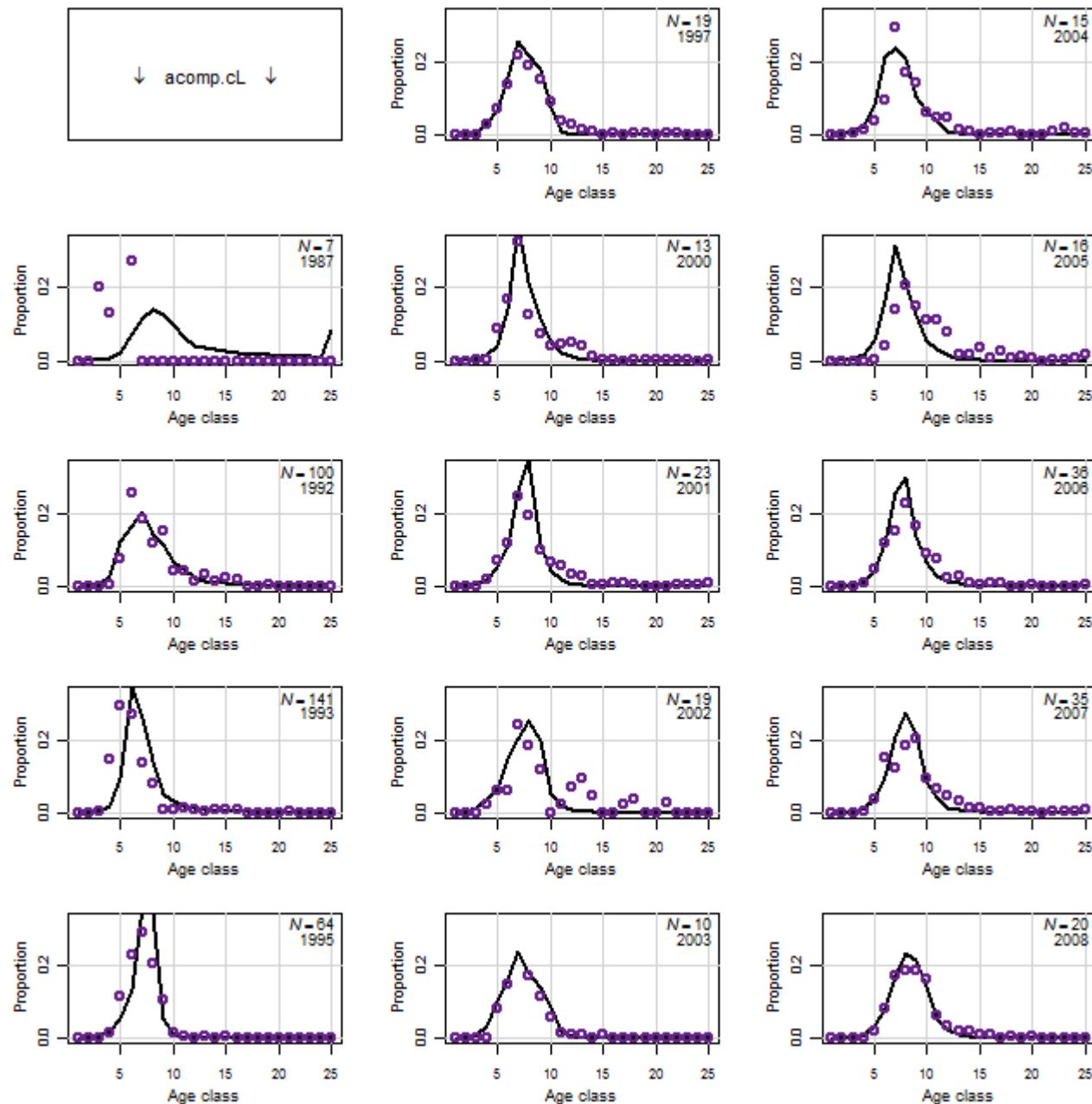
↓ lcomp.rA ↓



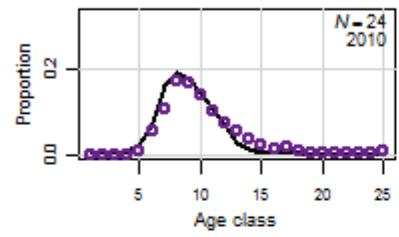
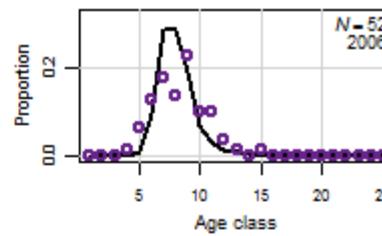
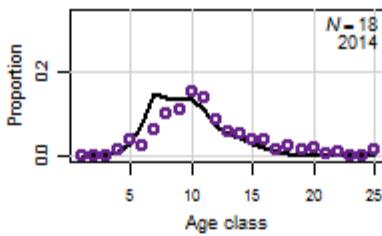
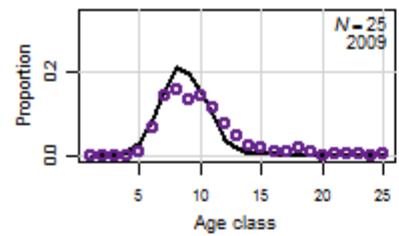
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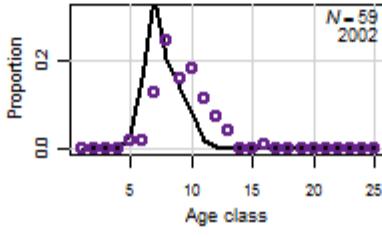
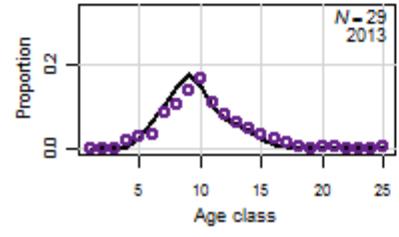
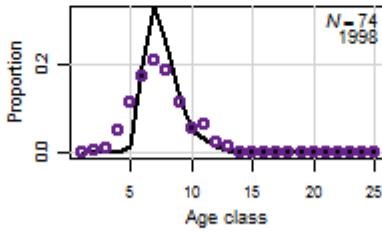
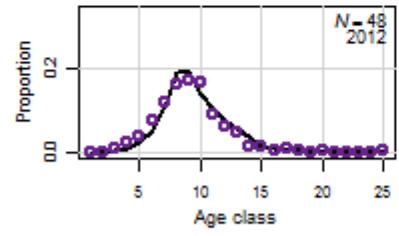
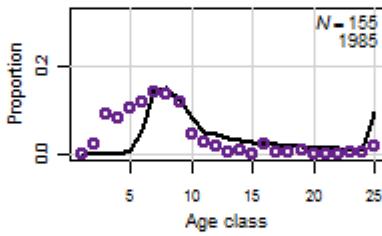
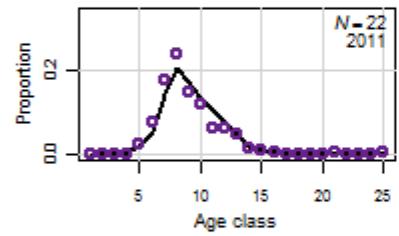
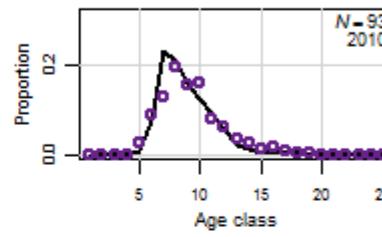
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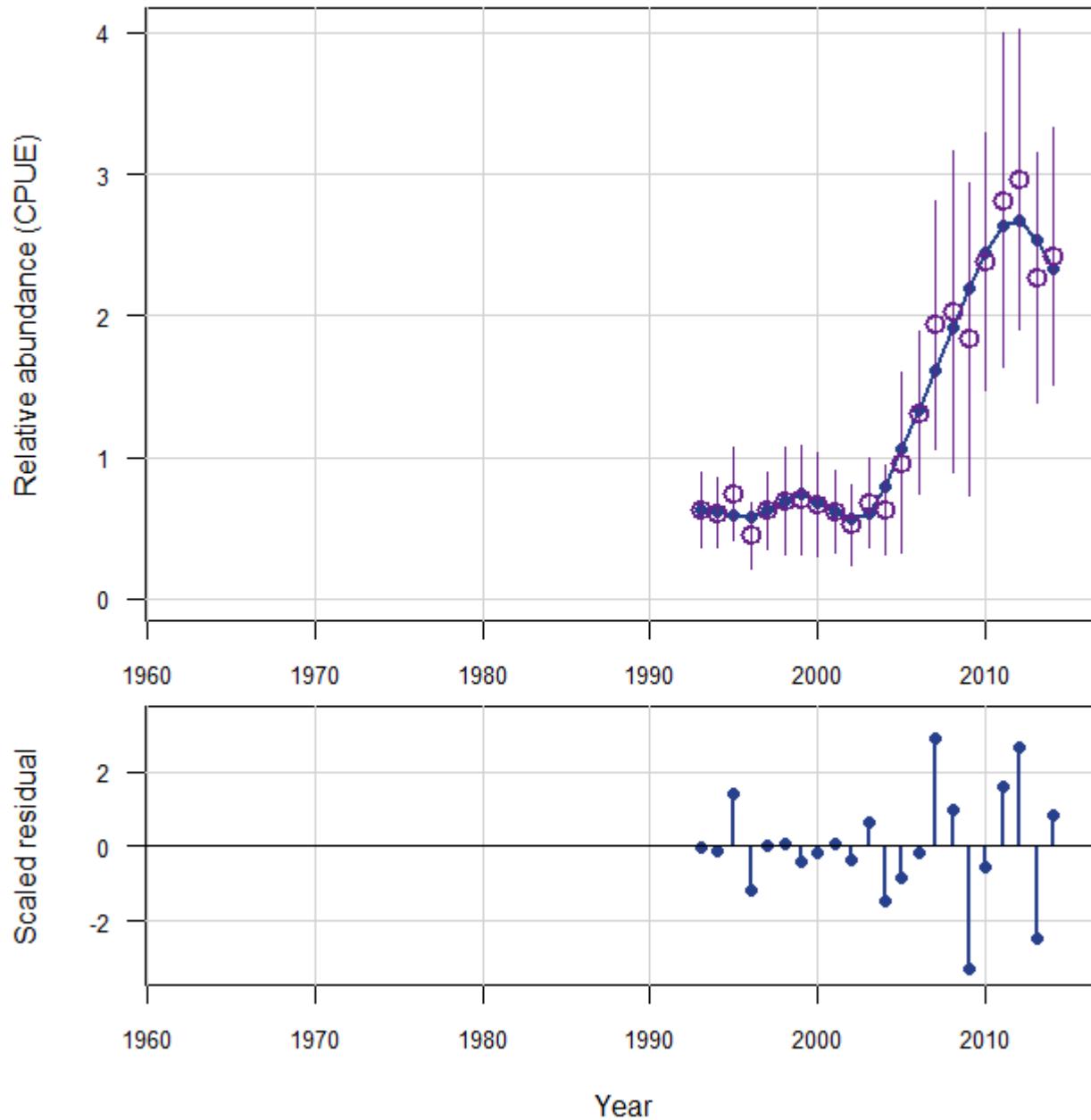
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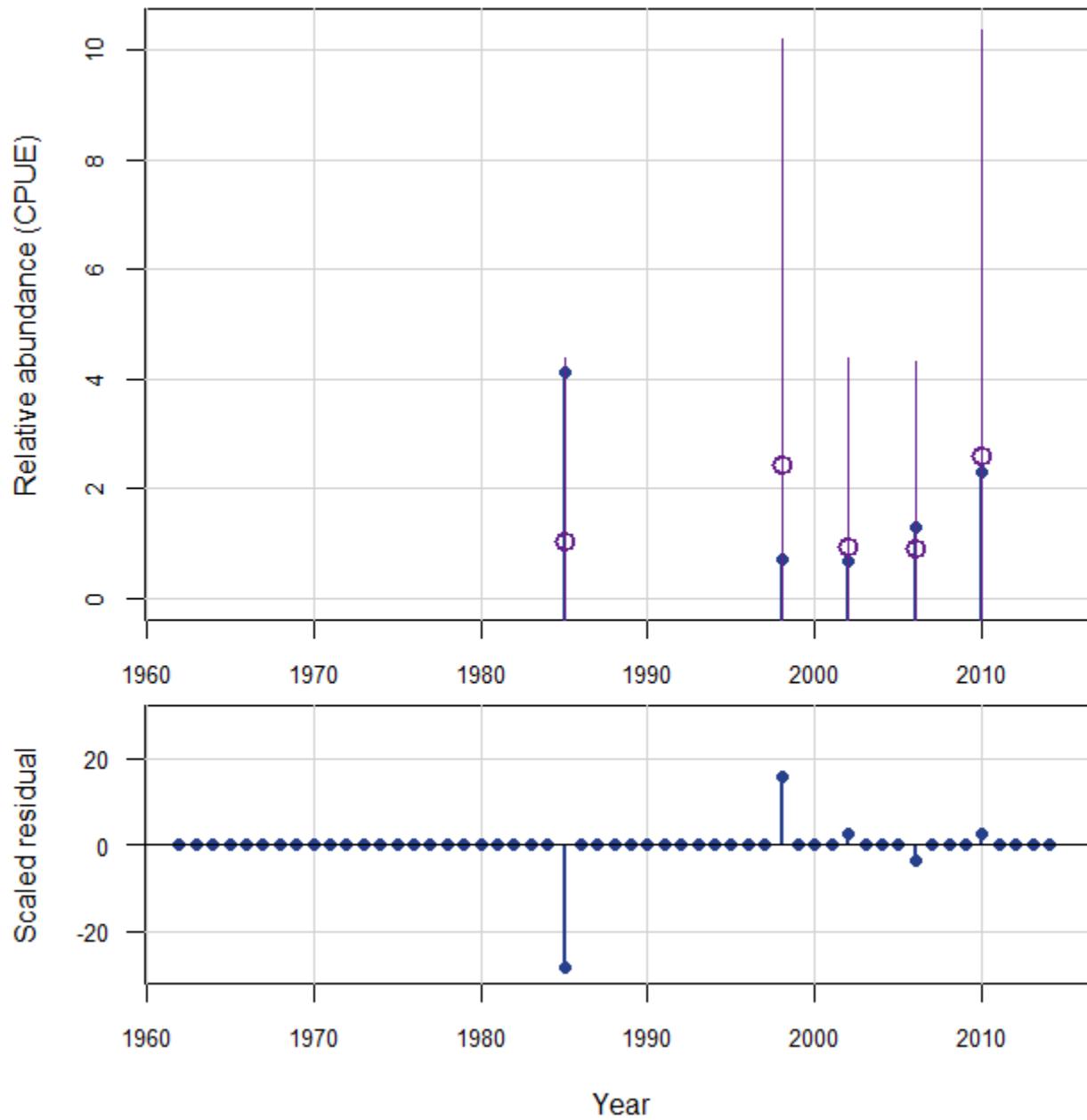
↓ accomp.mm ↓



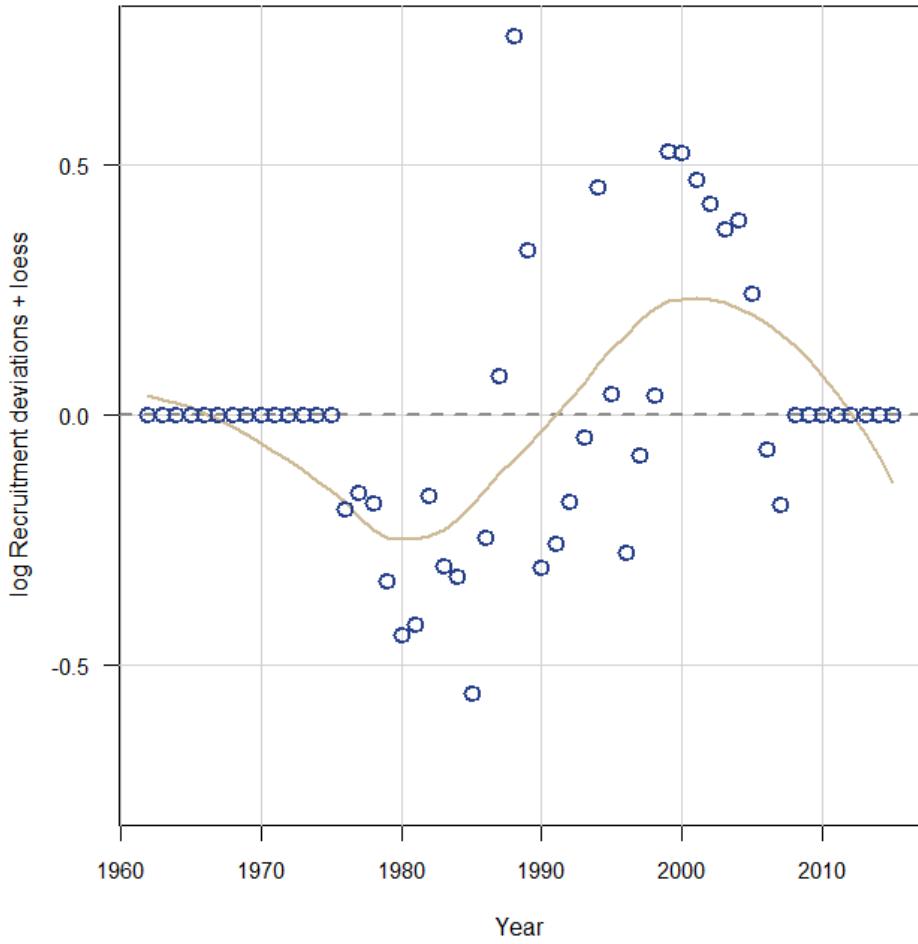
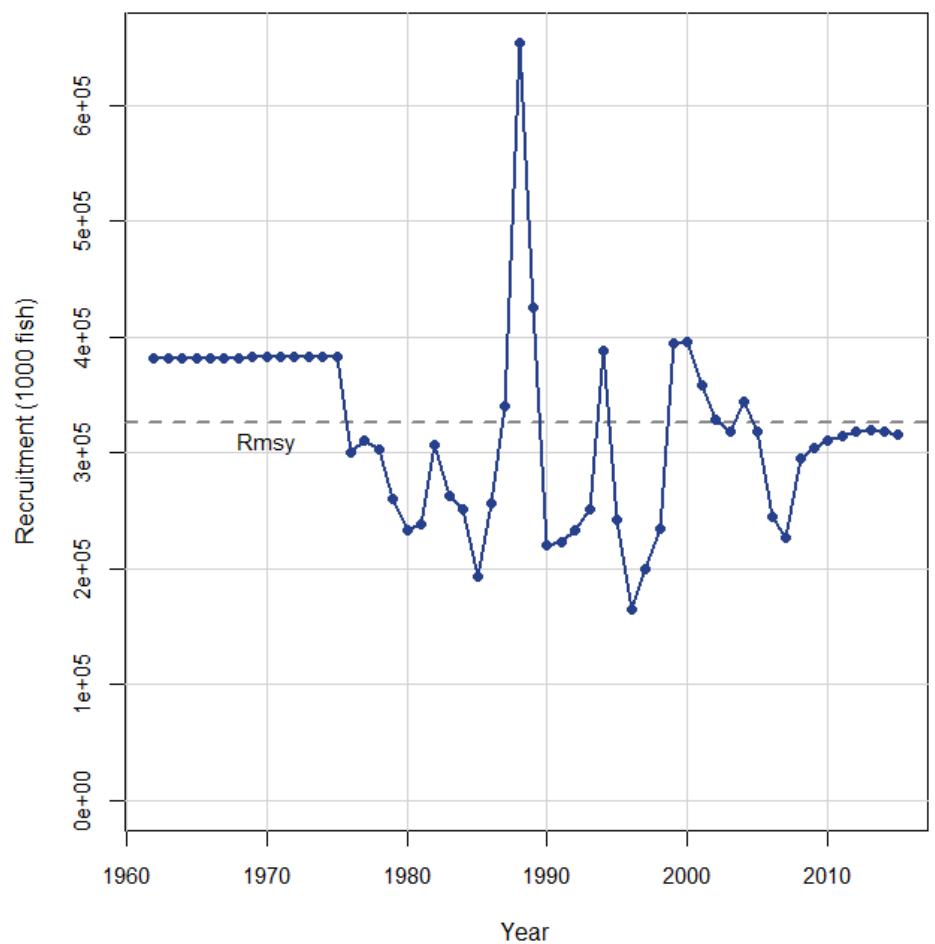
# Abundance indices



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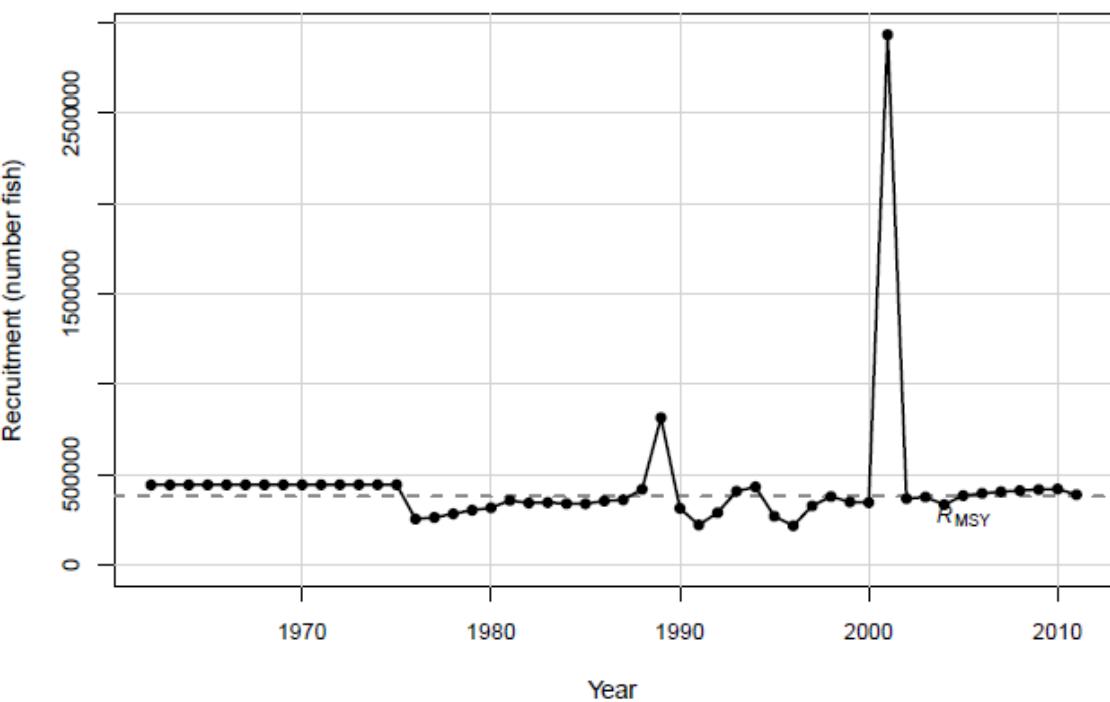
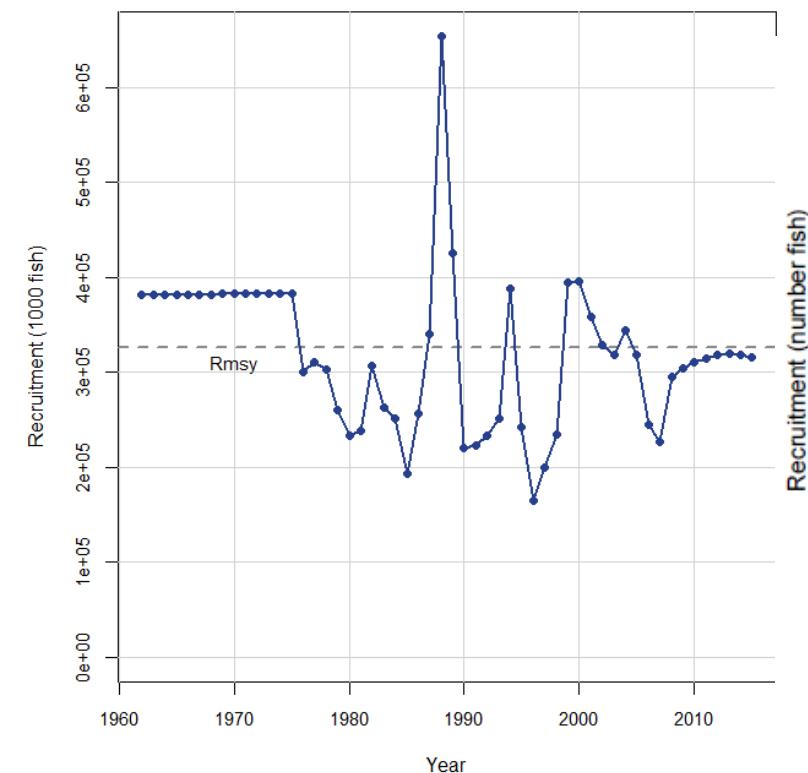
# Recruitment



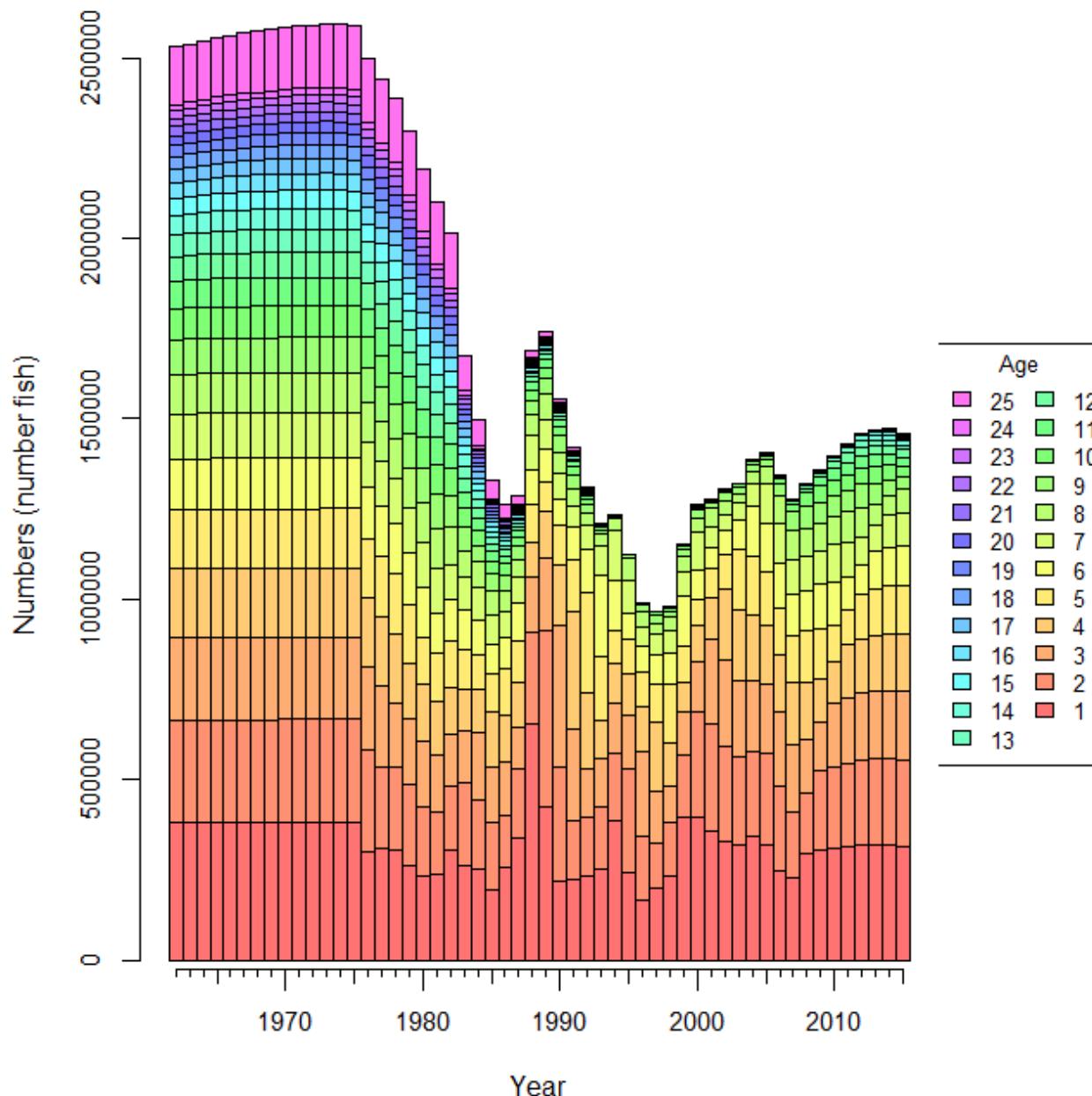
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**2016 Update**

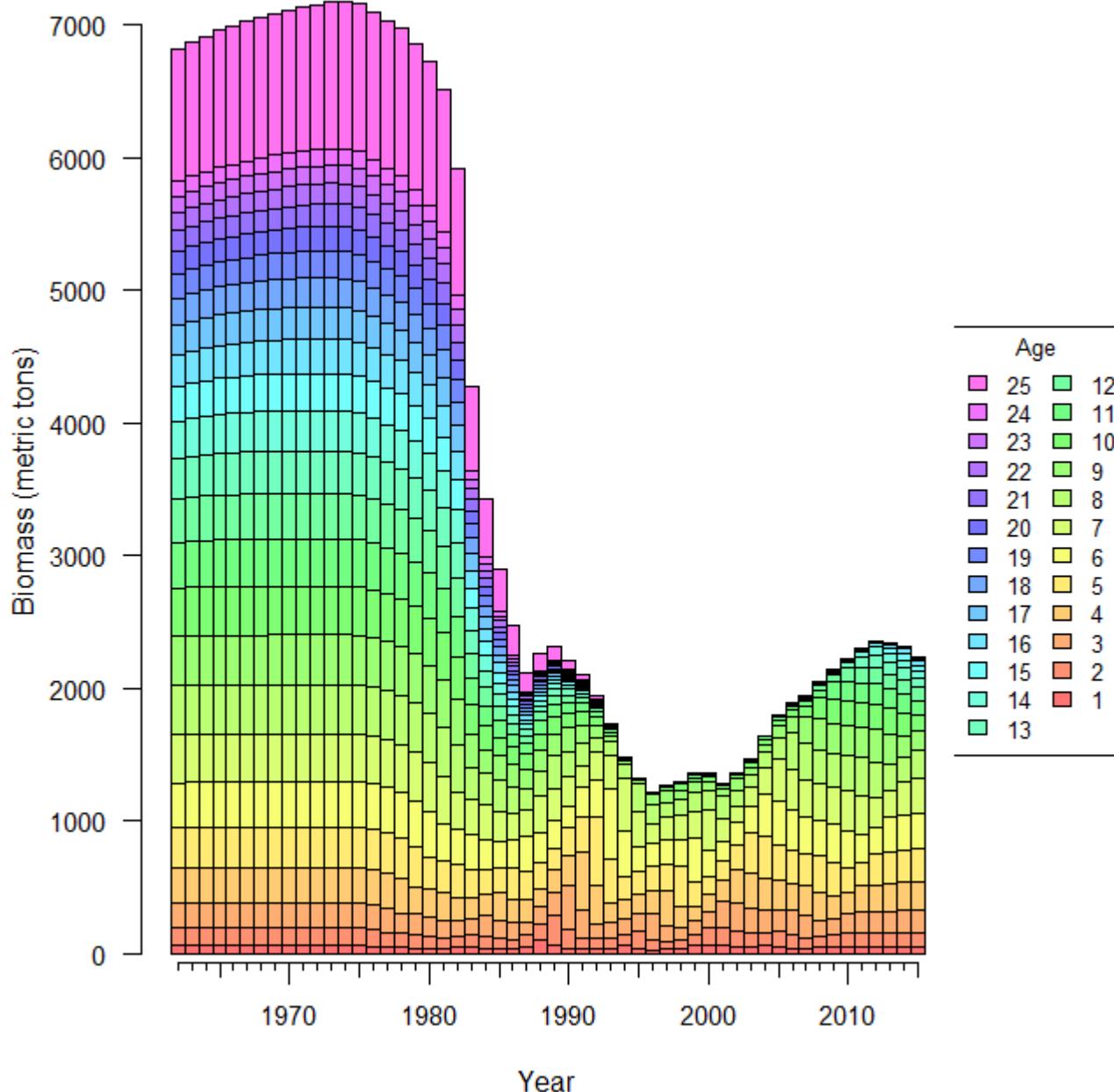
**SEDAR 25**



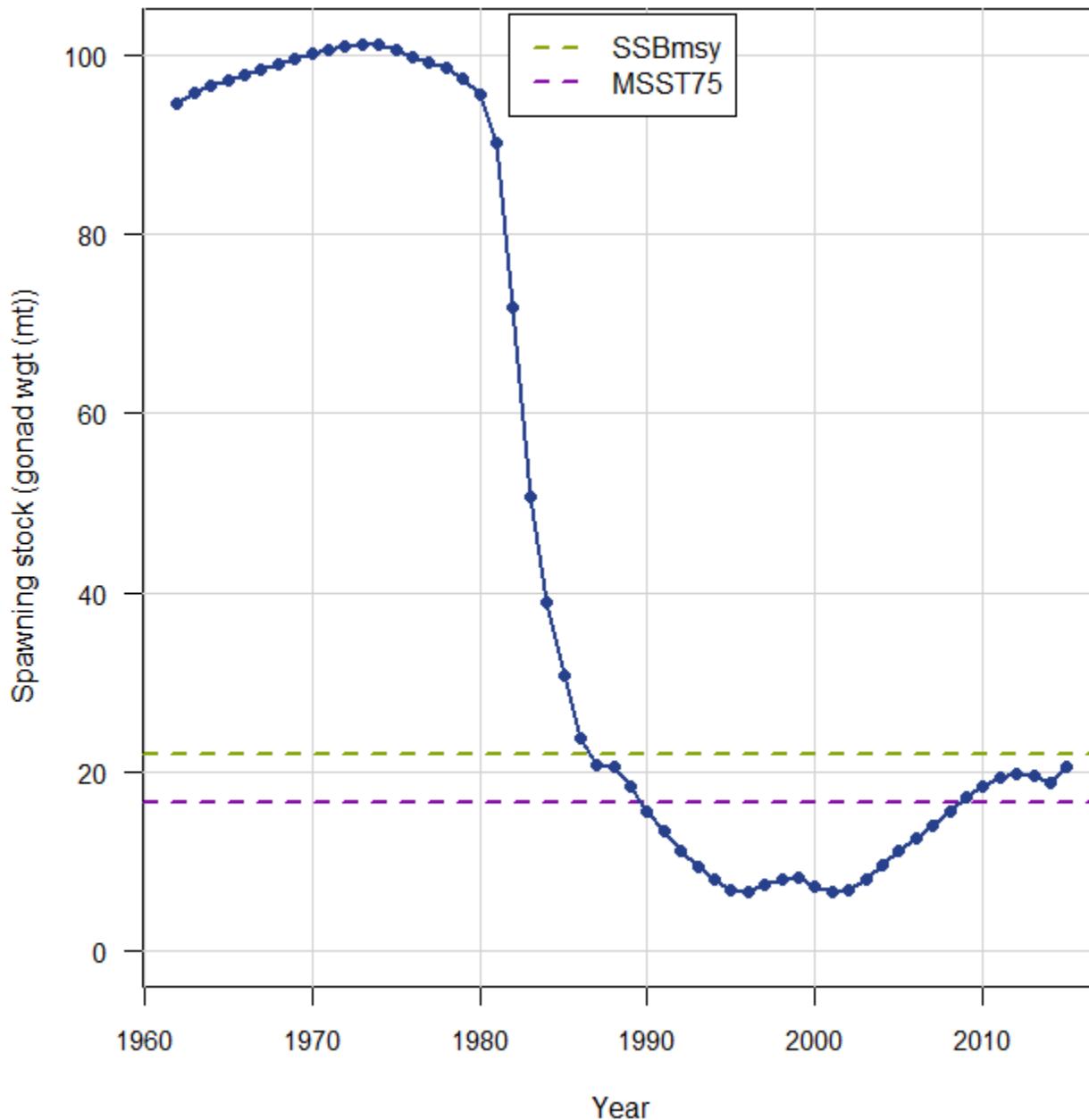
# Abundance at age



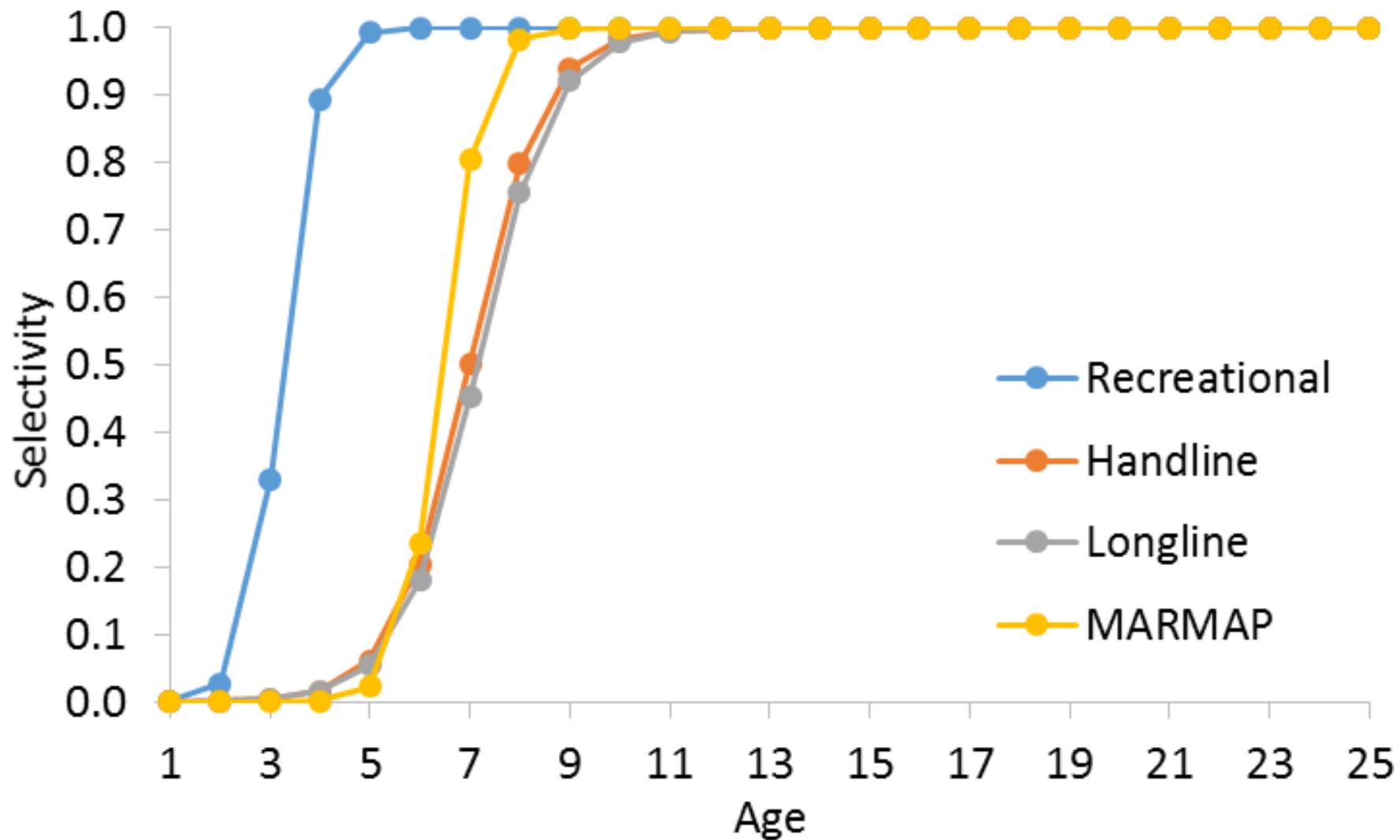
# Biomass at age



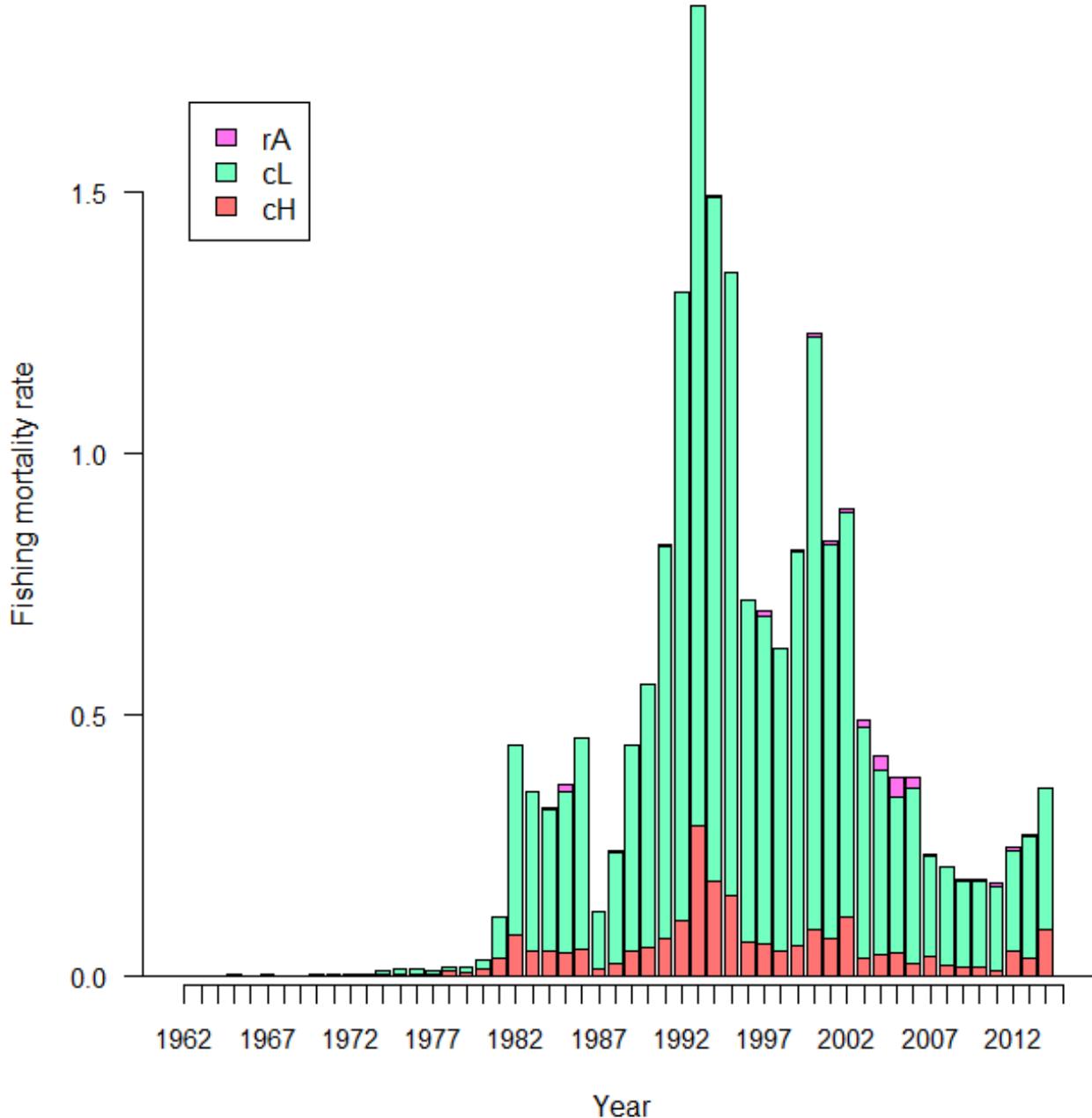
# Spawning stock biomass



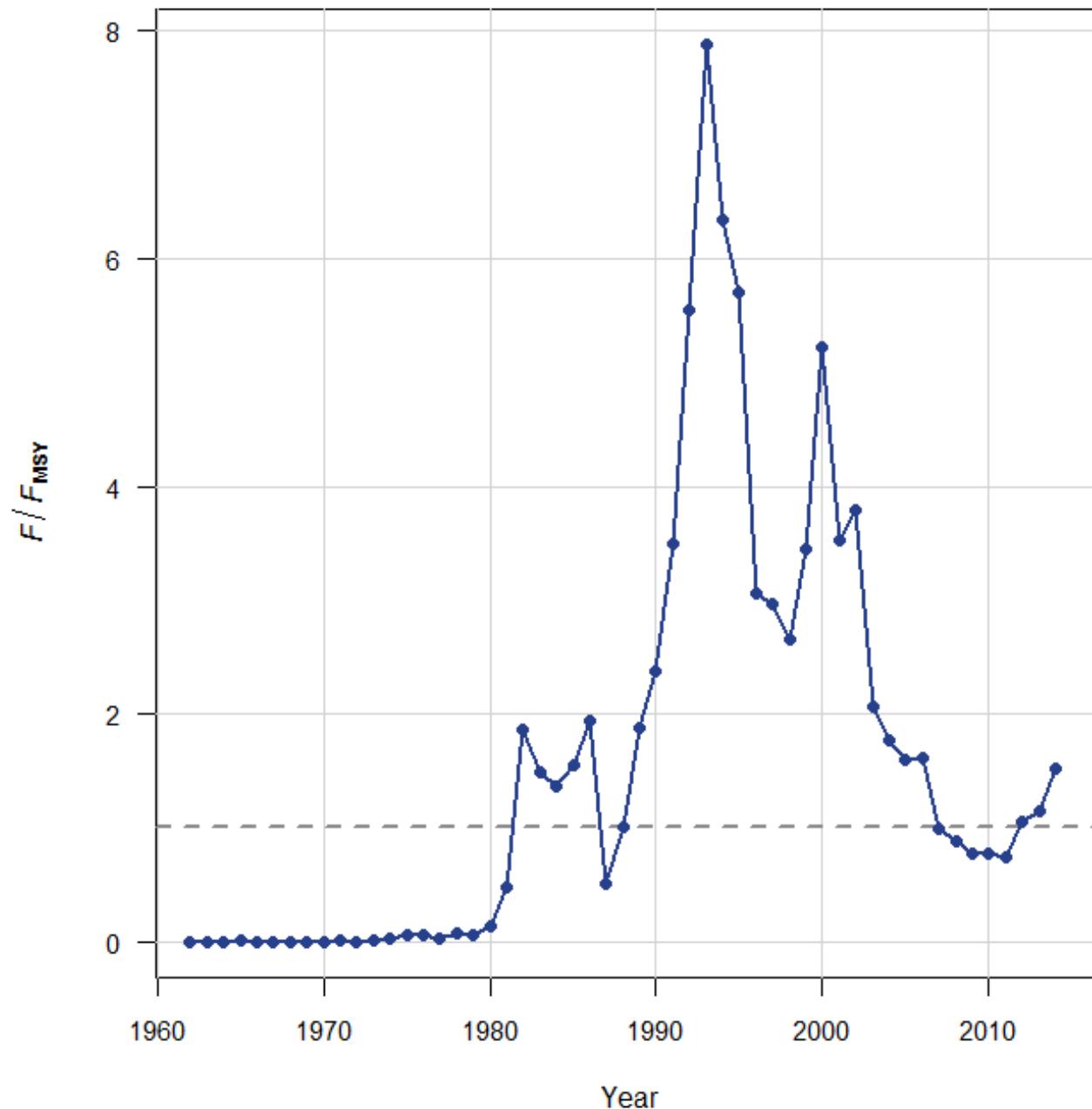
# Selectivities



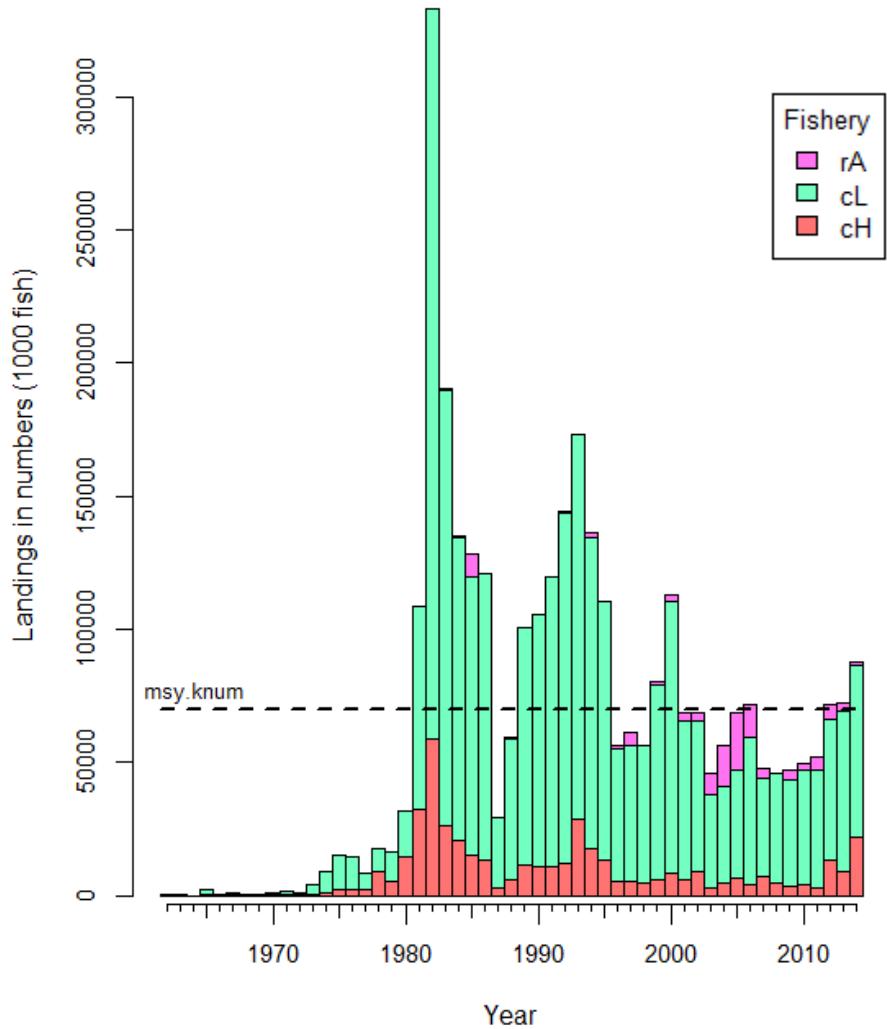
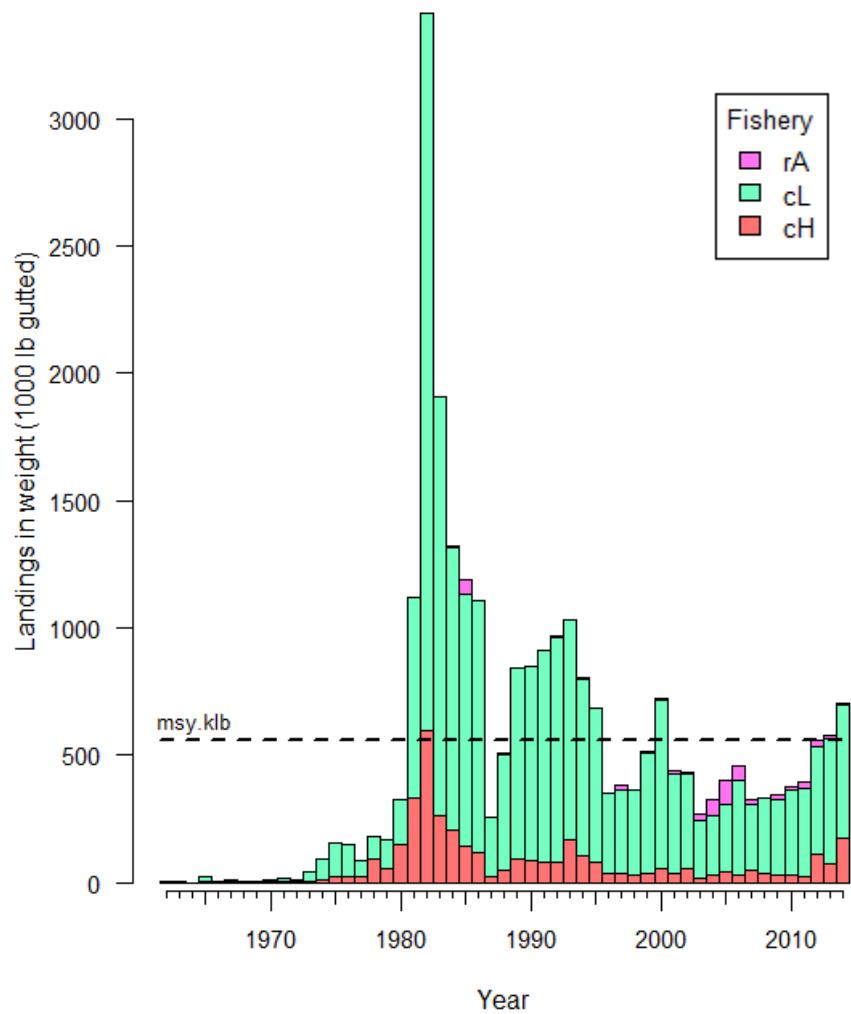
# Fishing mortality



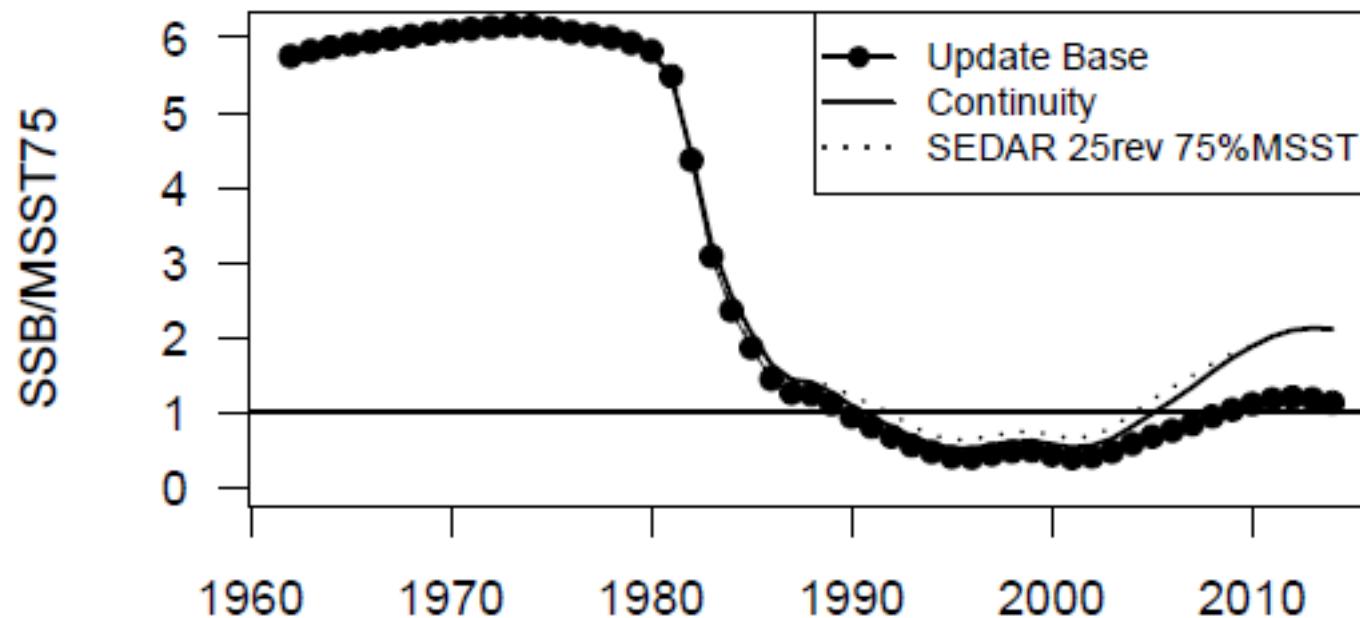
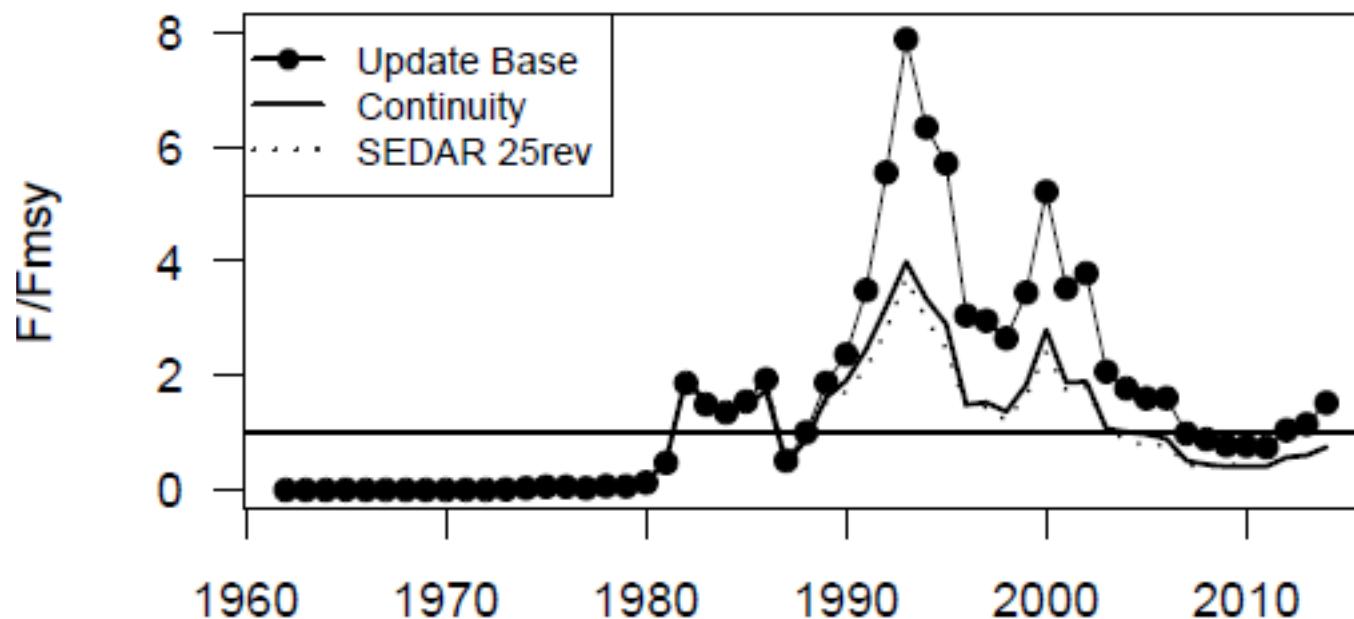
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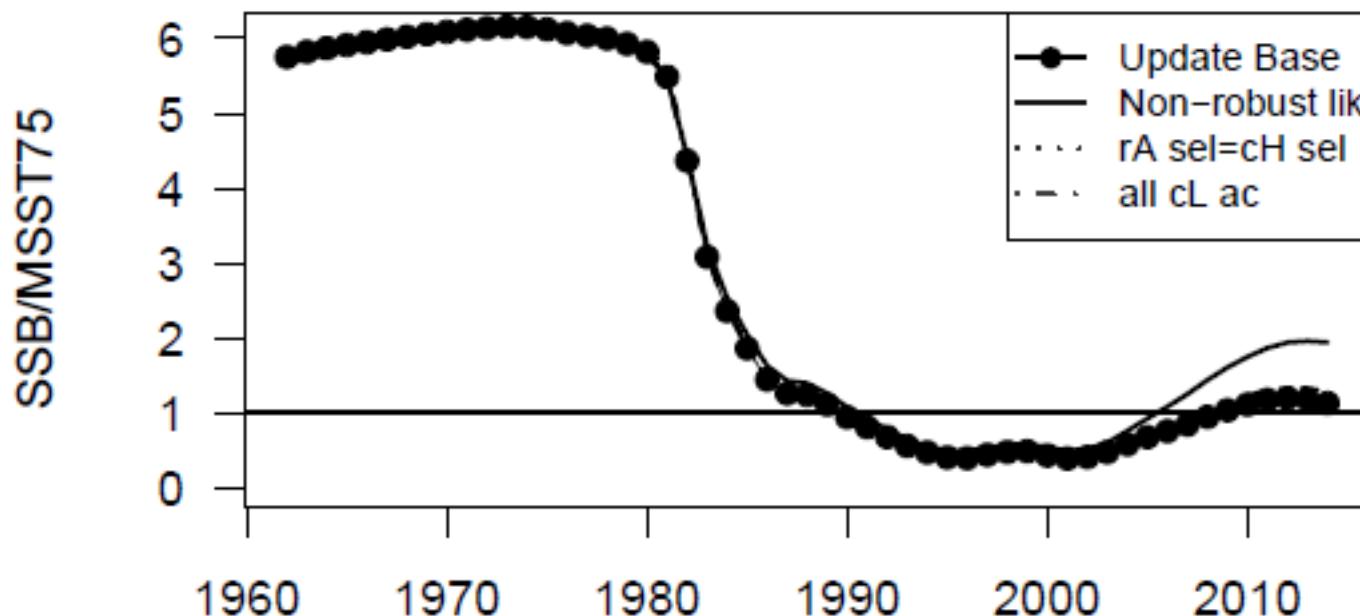
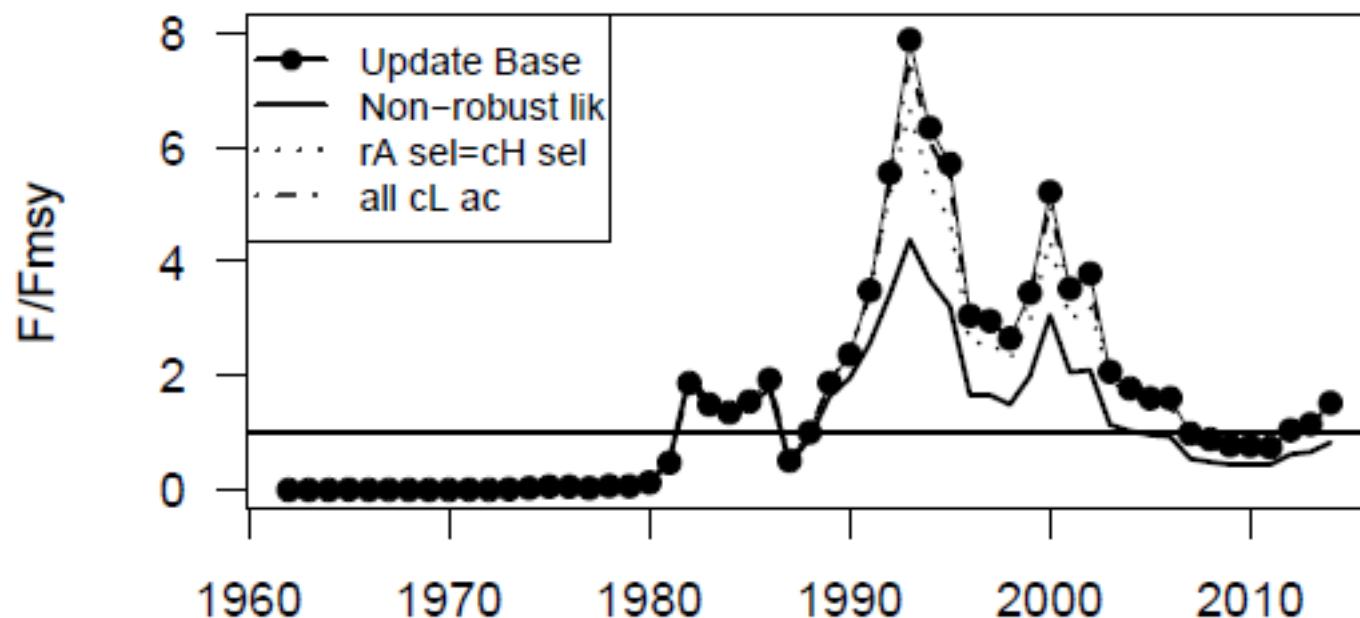
# Estimated landings



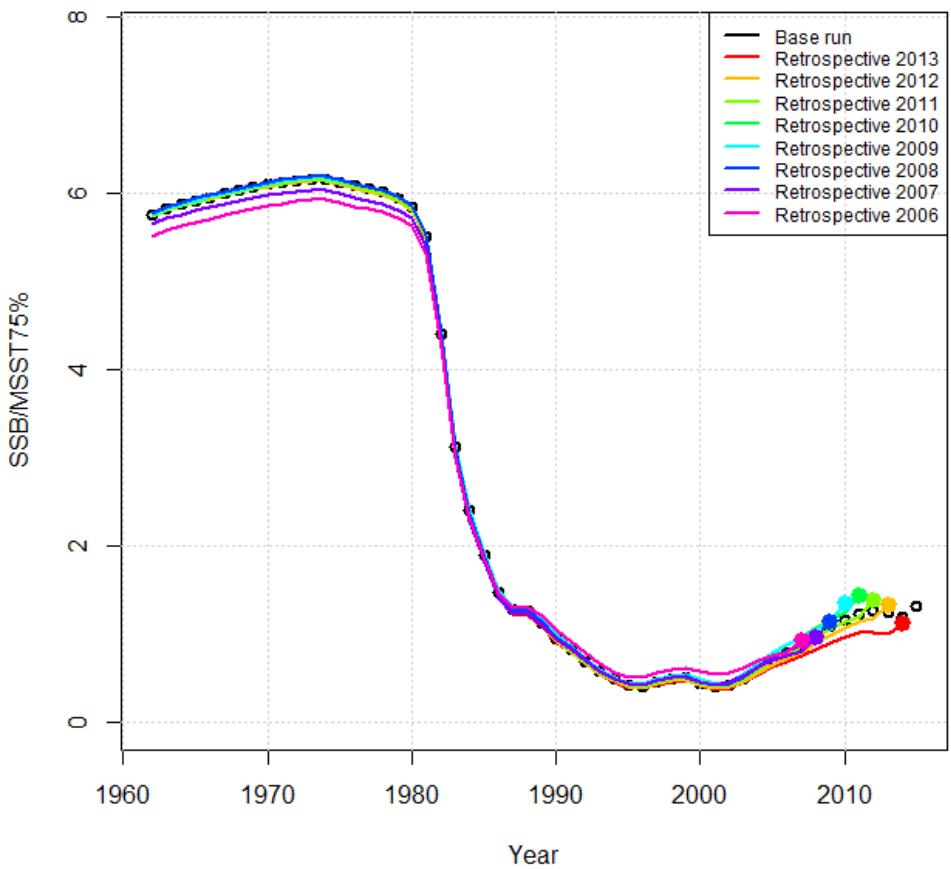
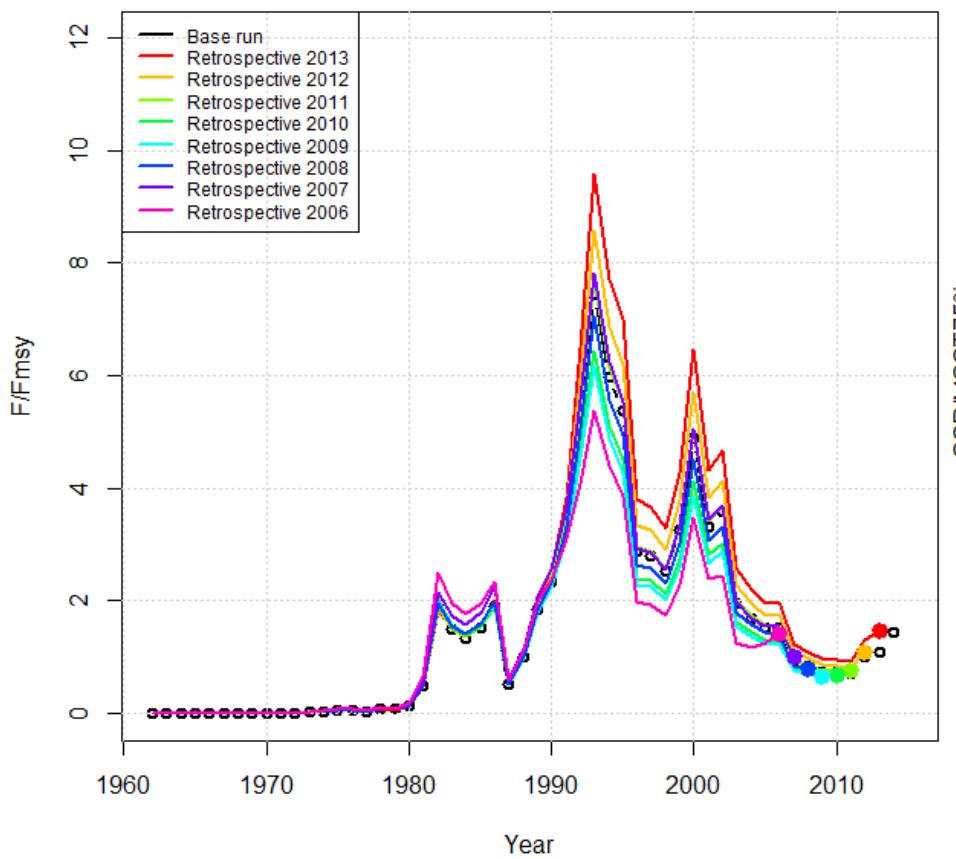
# Continuity



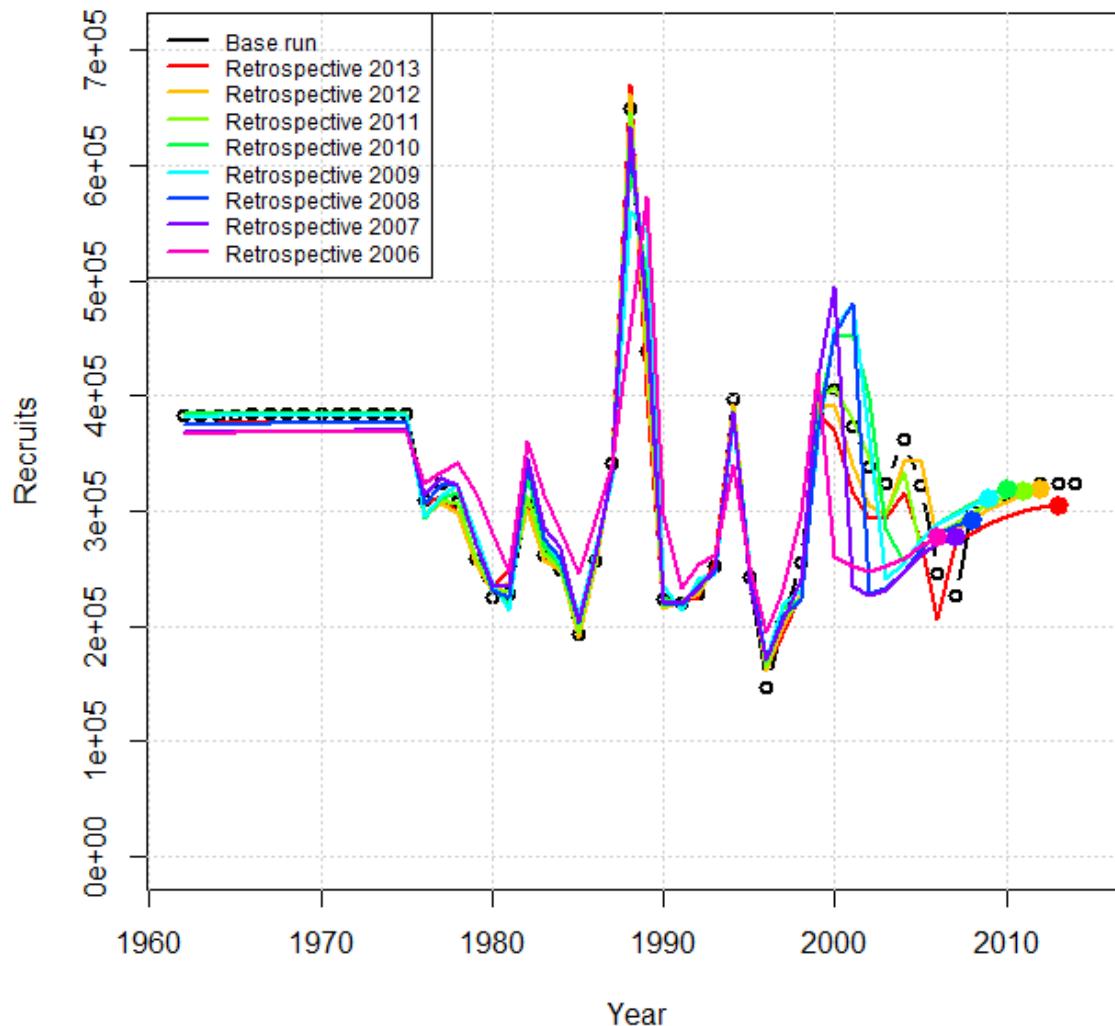
# Sensitivities



# Retrospective analysis



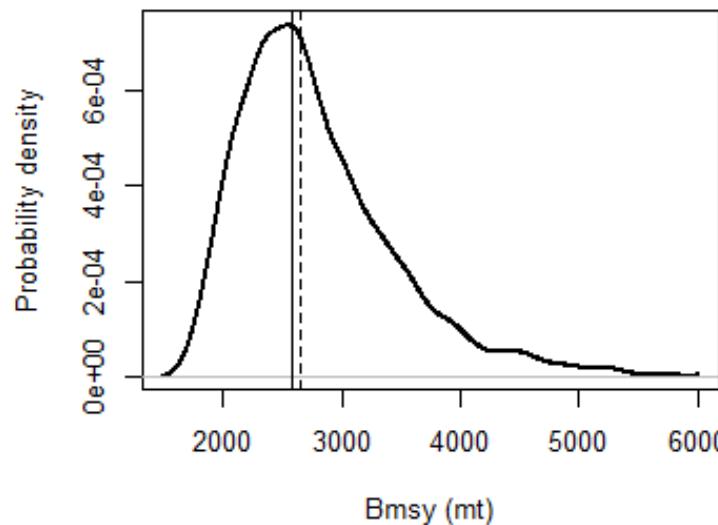
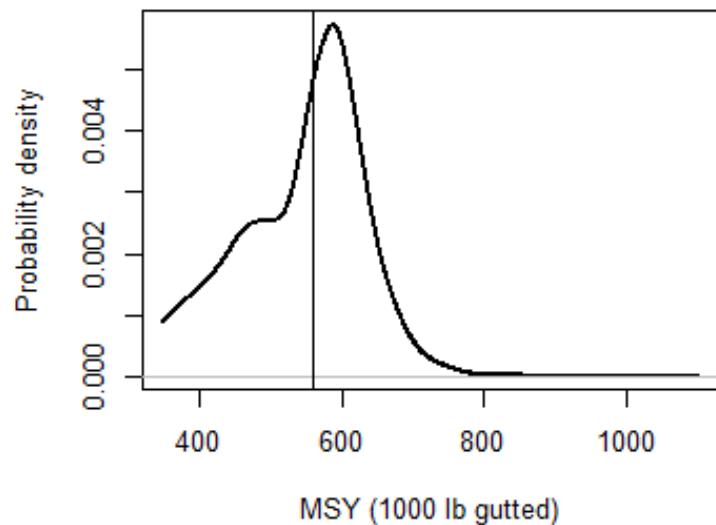
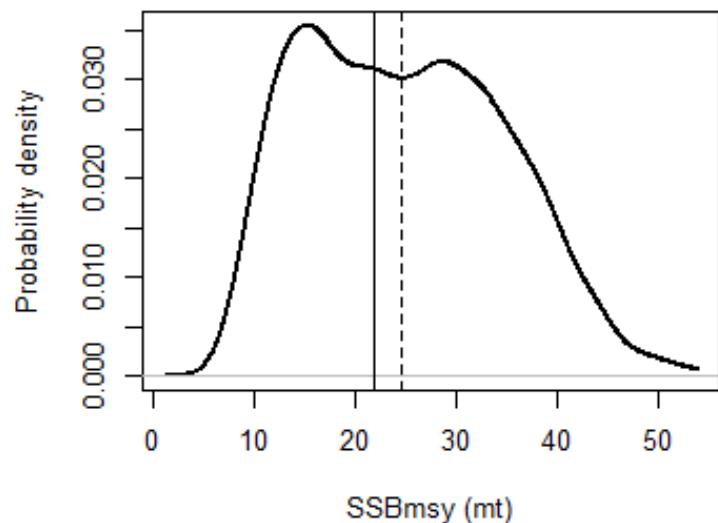
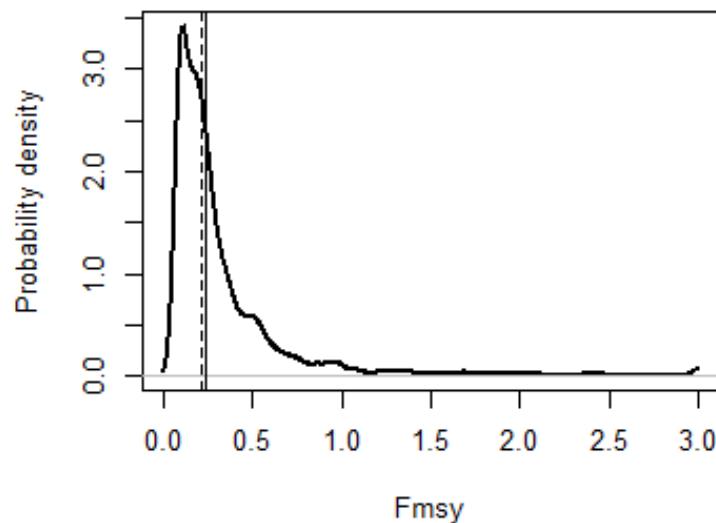
# Retrospective analysis



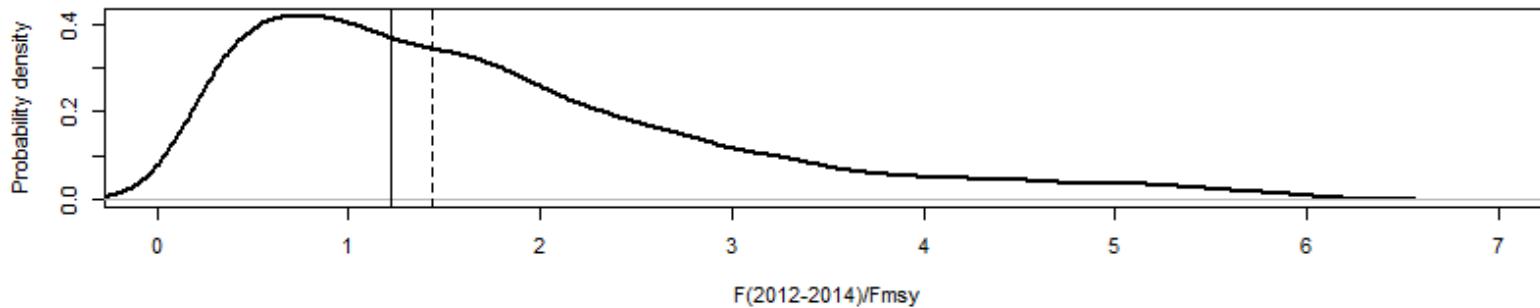
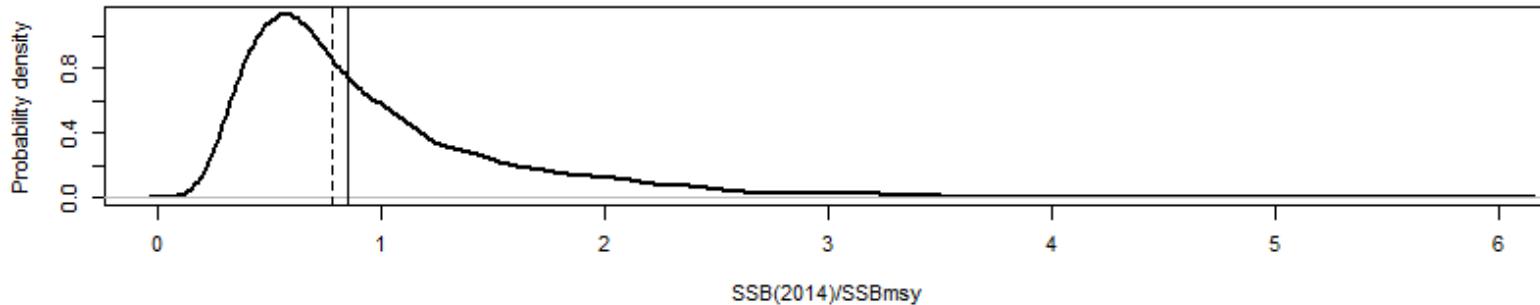
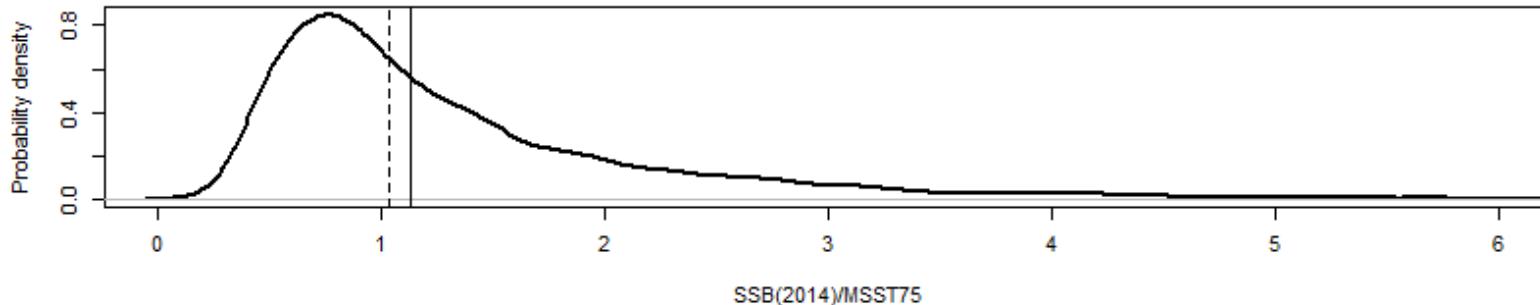
Dashed=medians of MCBs

Solid=Base run

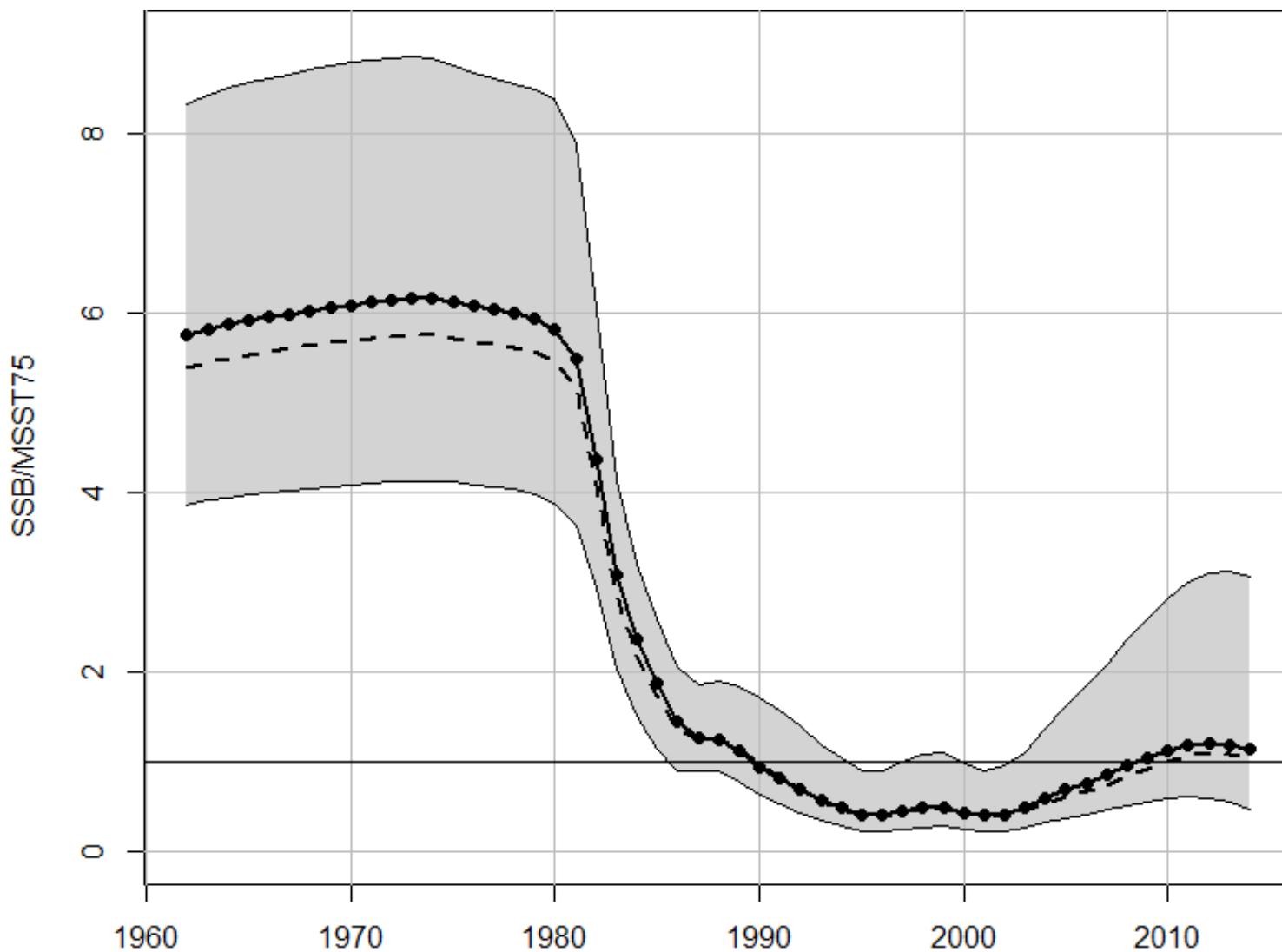
# Uncertainty



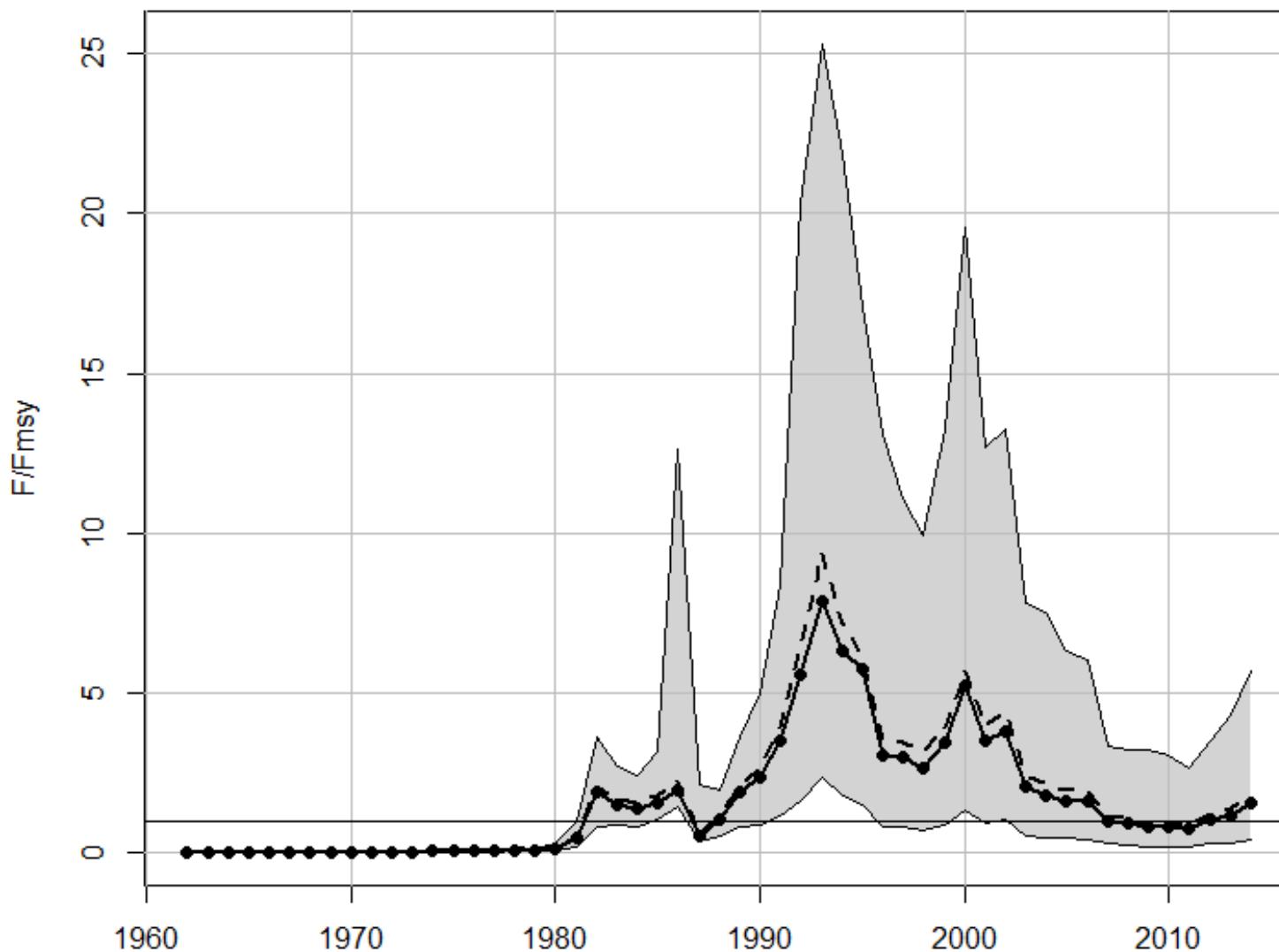
# Uncertainty – Stock status



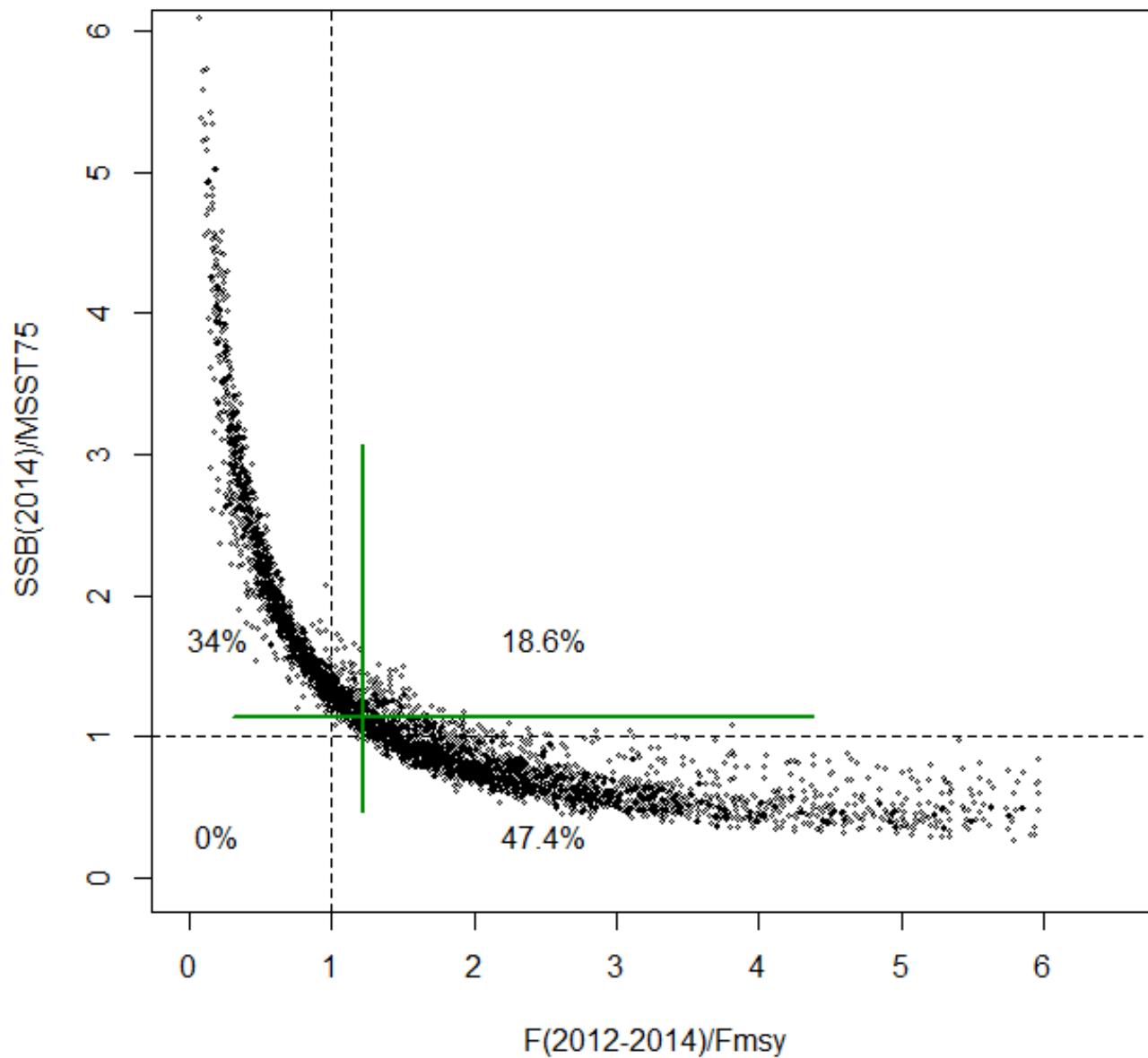
# Uncertainty – SSB/MSST



# Uncertainty – F/FMSY



# Uncertainty – Stock status



# Outline

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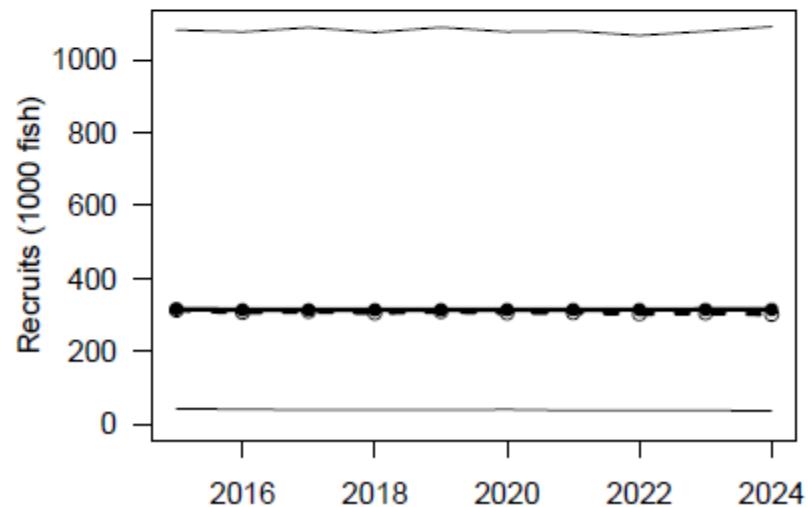
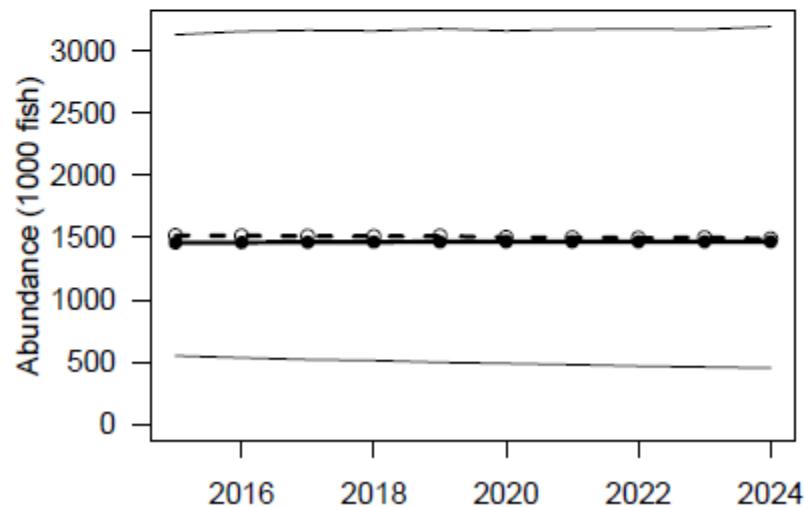
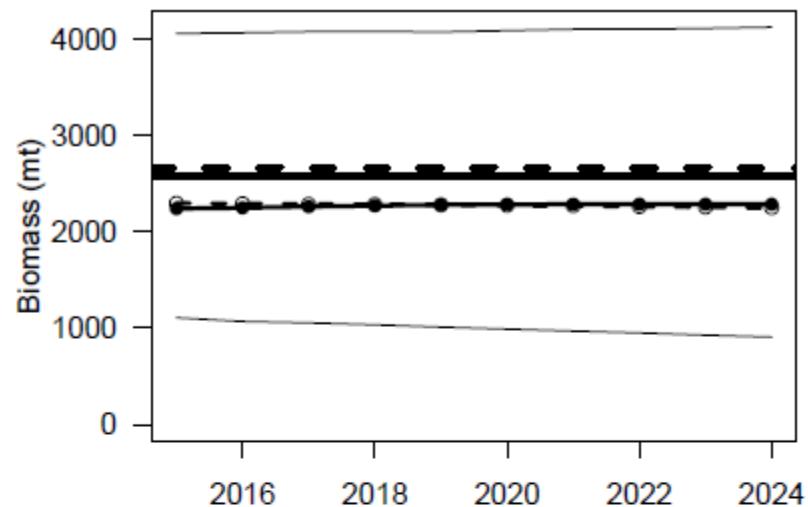
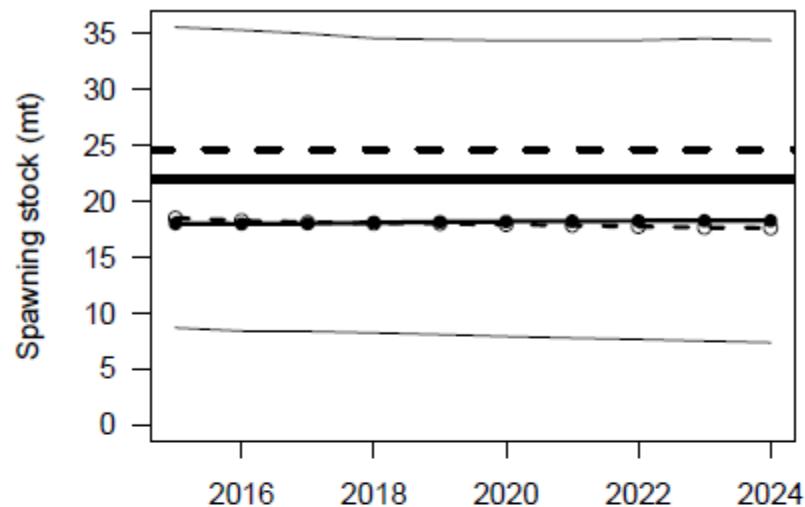
- Data update
  - Life history
  - Landings
  - Abundance indices
  - Samples
- Model update
  - Base run configuration
  - Changes since SEDAR 25 benchmark
  - Results
  - Continuity and sensitivities
  - Uncertainty
- Projections

# Projections

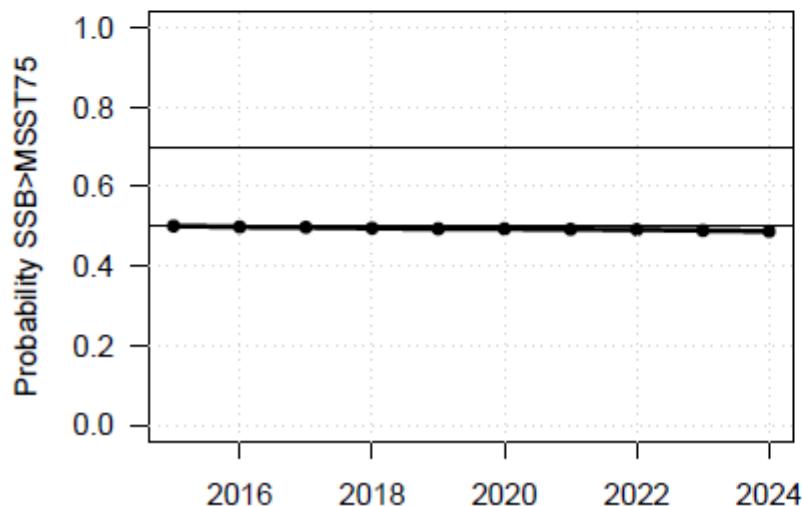
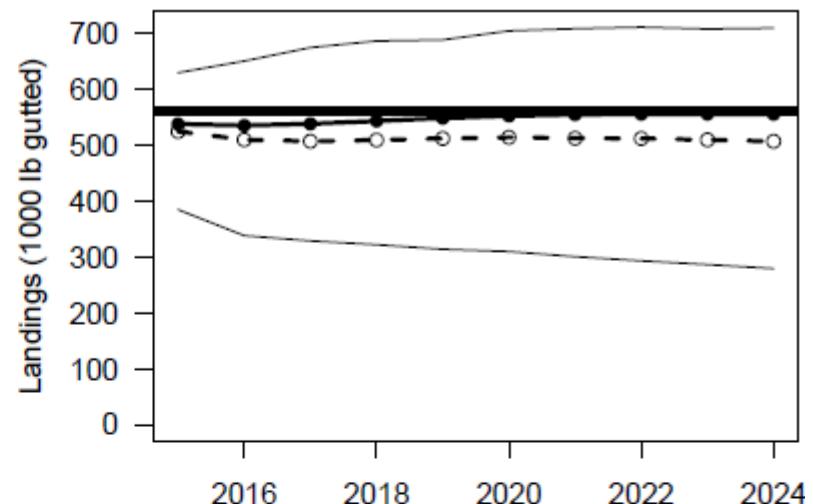
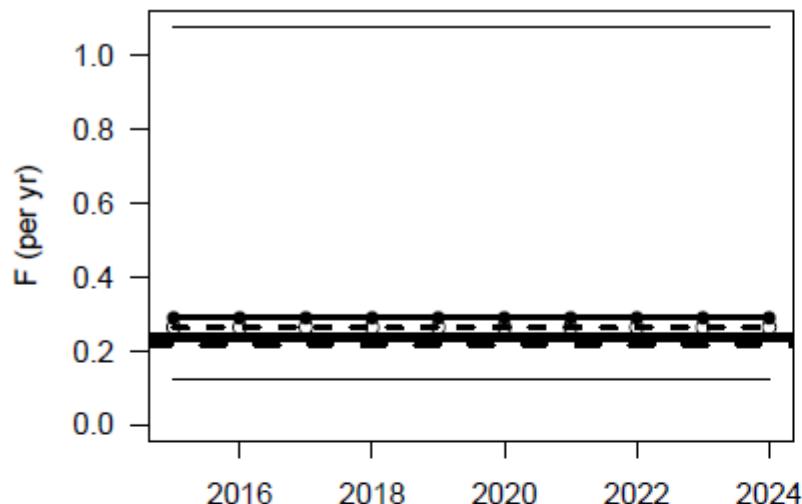
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- Stochastic projections using MCBs
- 10 years past terminal year (2014)
- Management begins in 2017
- Scenarios
  - $F_{current}$
  - $F_{MSY}$
  - $75\%F_{MSY}$
  - $P^*=0.35$
  - $P^*=0.50$

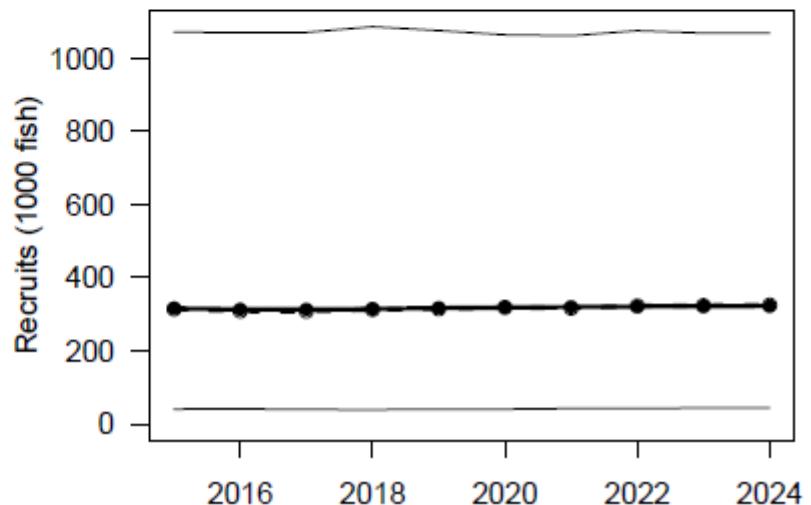
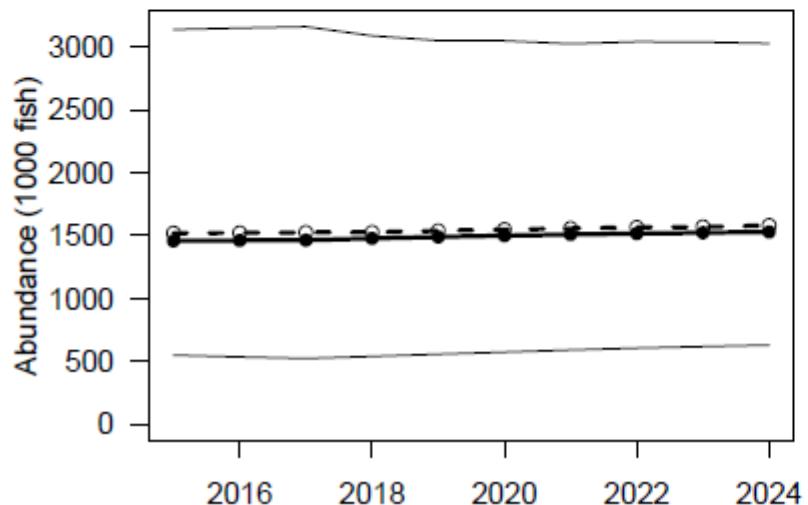
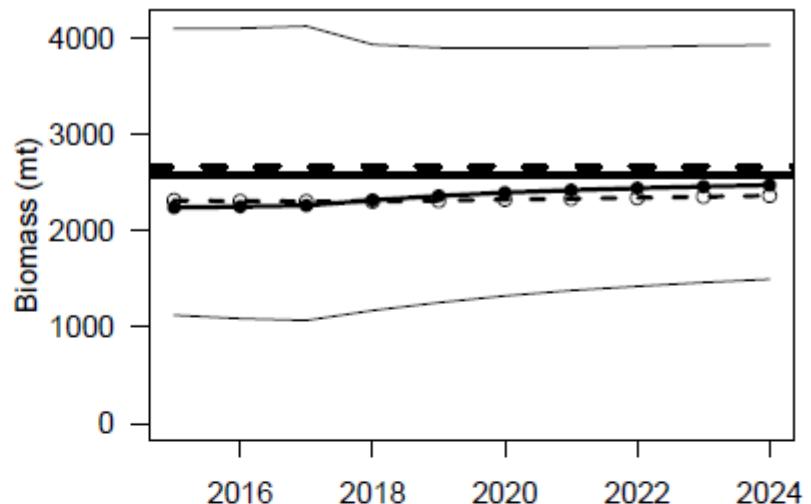
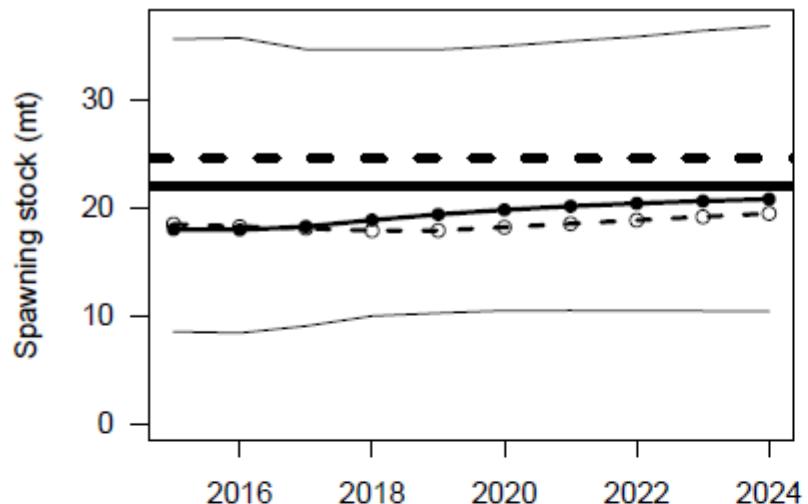
# Projections – $F_{\text{current}}$



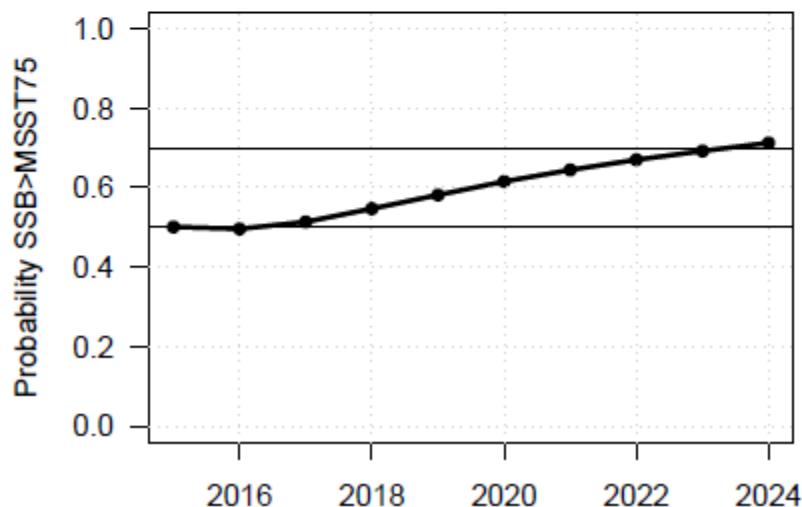
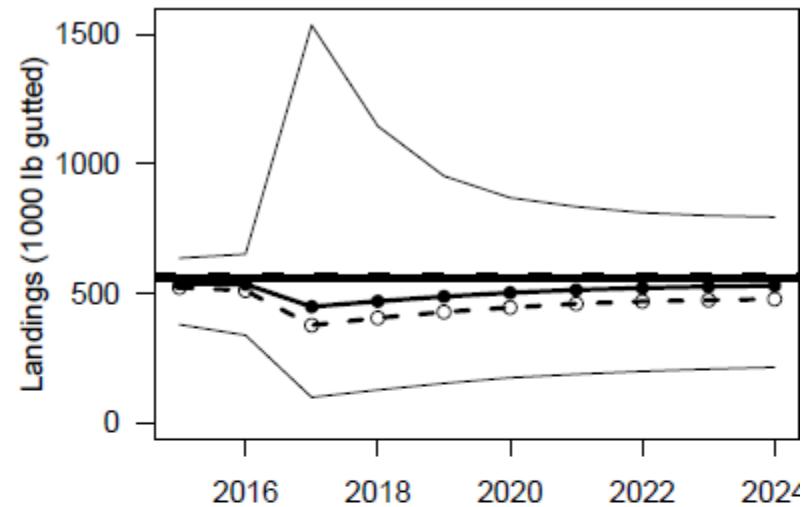
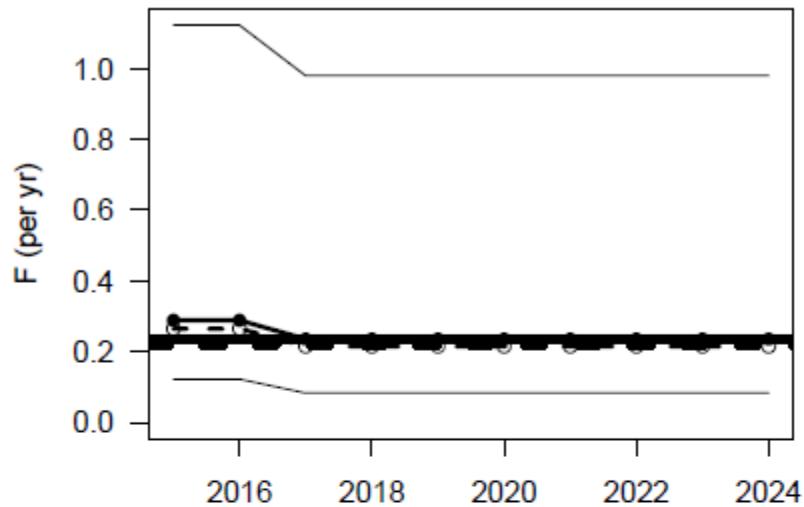
# Projections – $F_{\text{current}}$



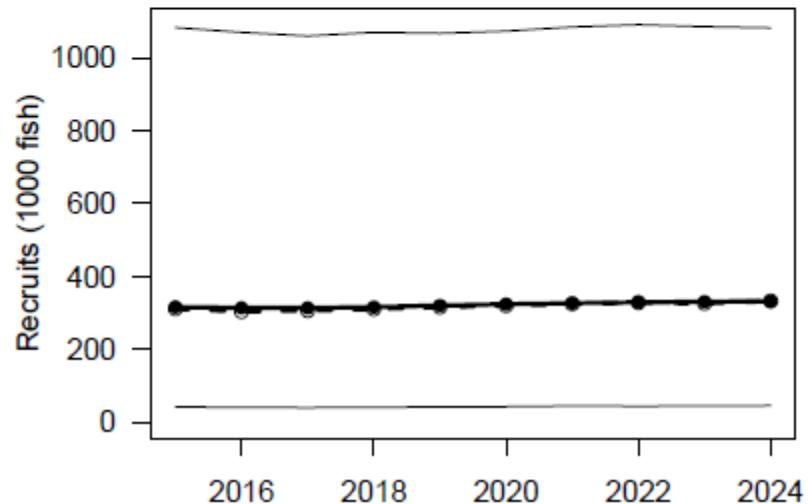
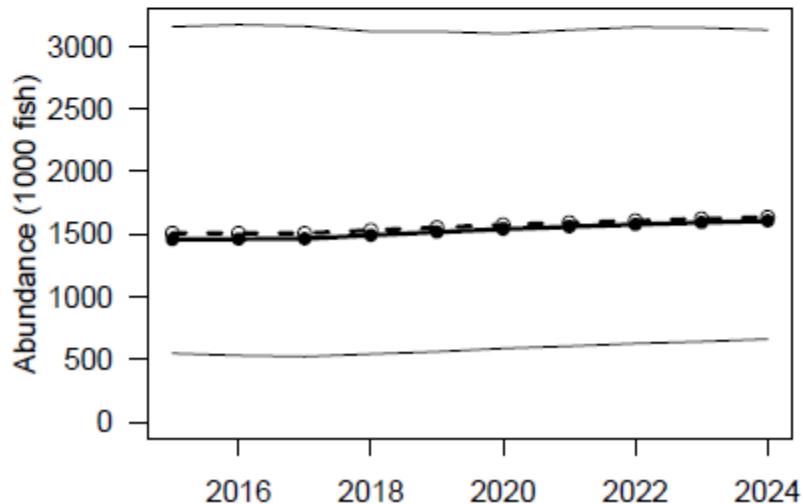
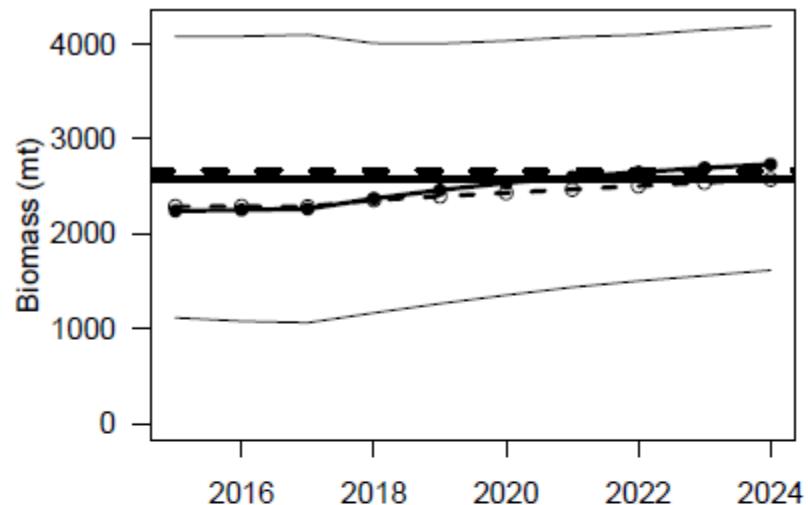
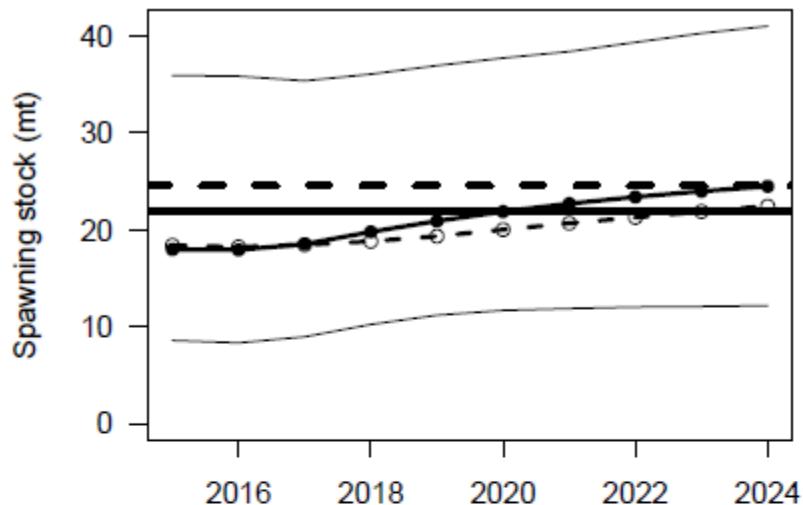
# Projections – $F_{MSY}$



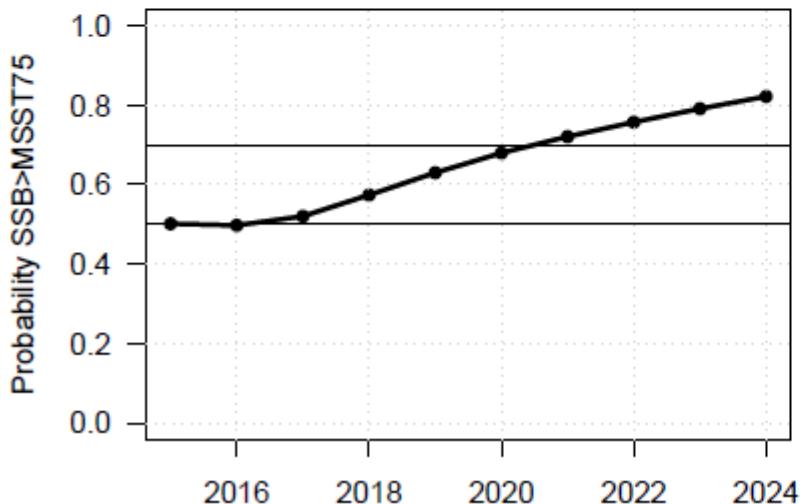
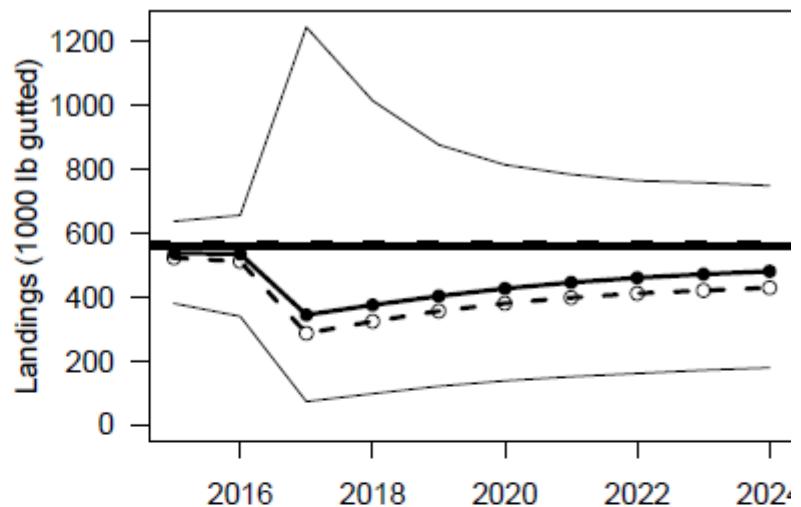
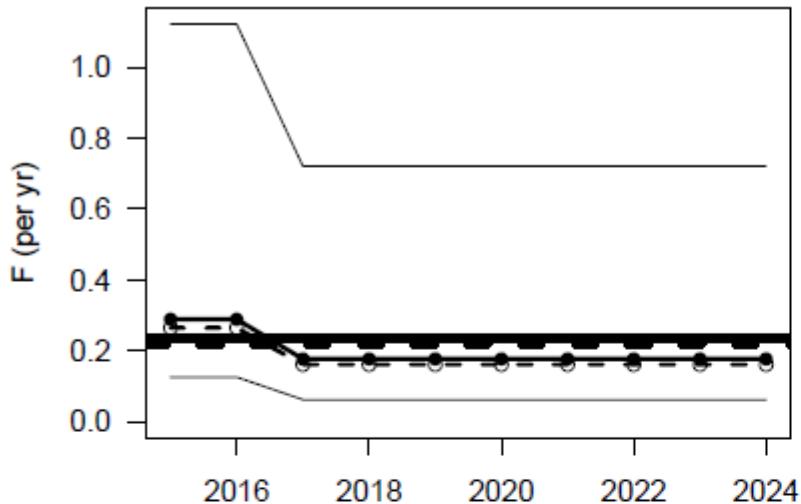
# Projections – $F_{MSY}$



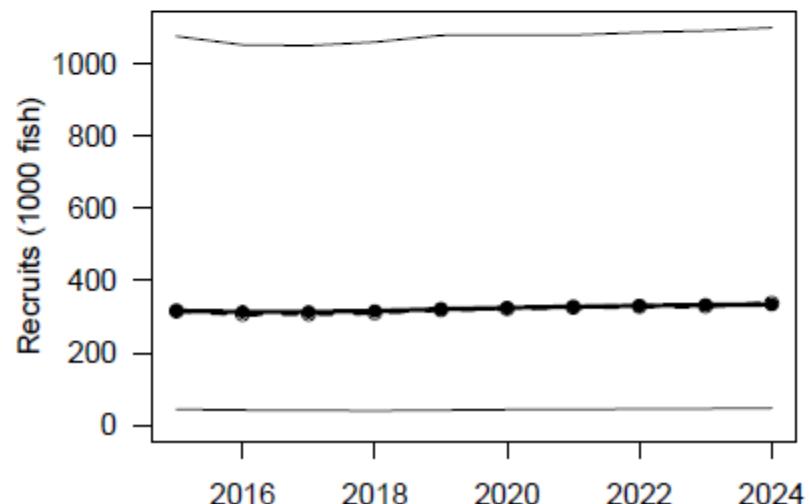
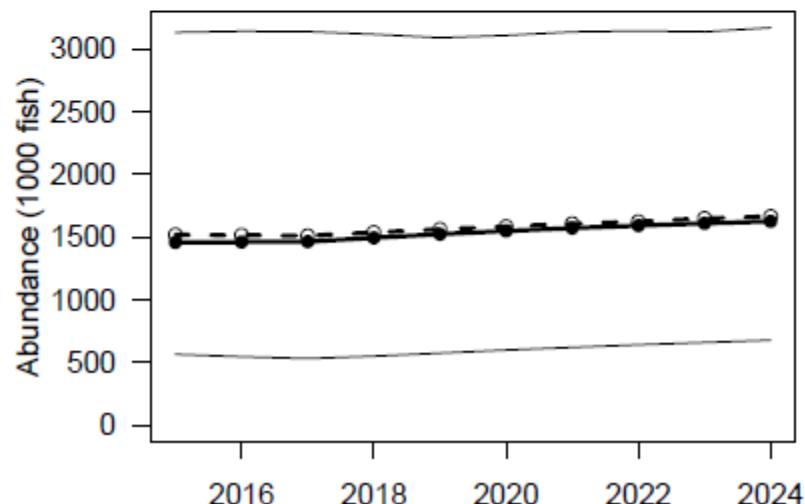
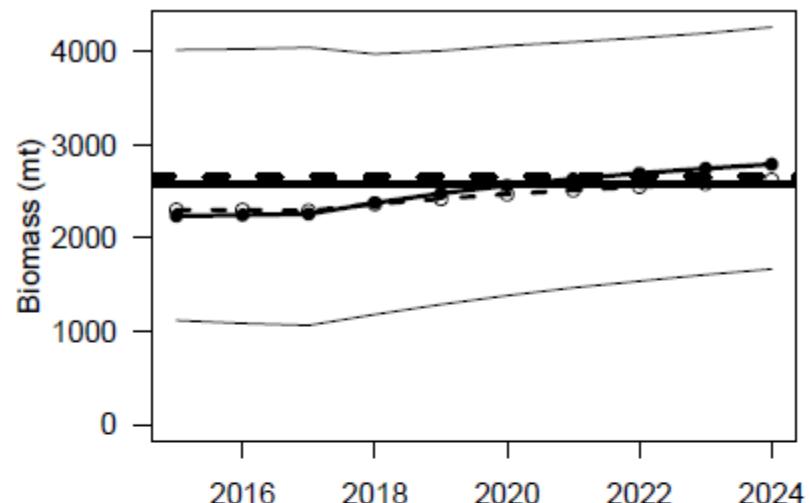
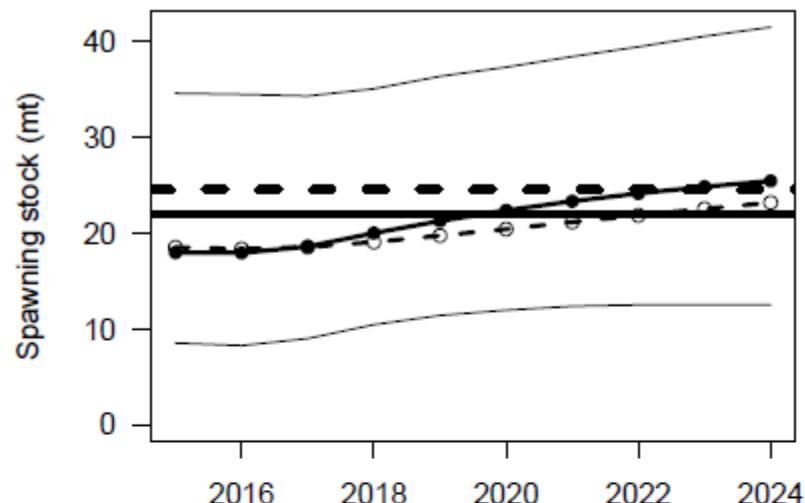
# Projections – 75% $F_{MSY}$



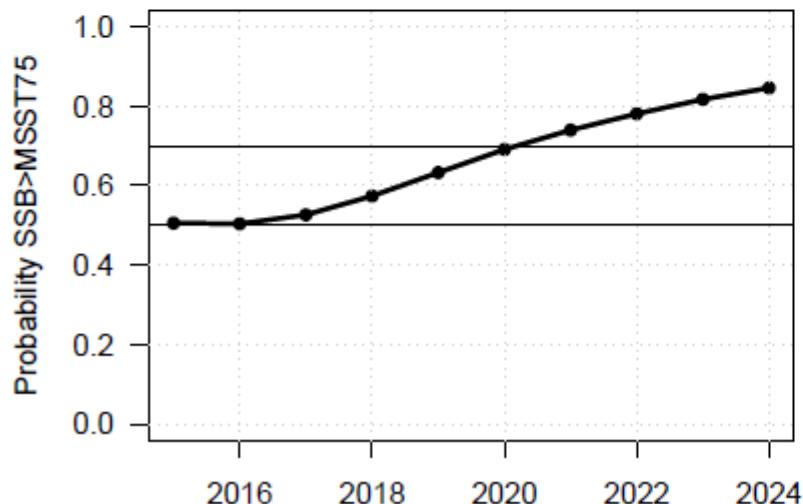
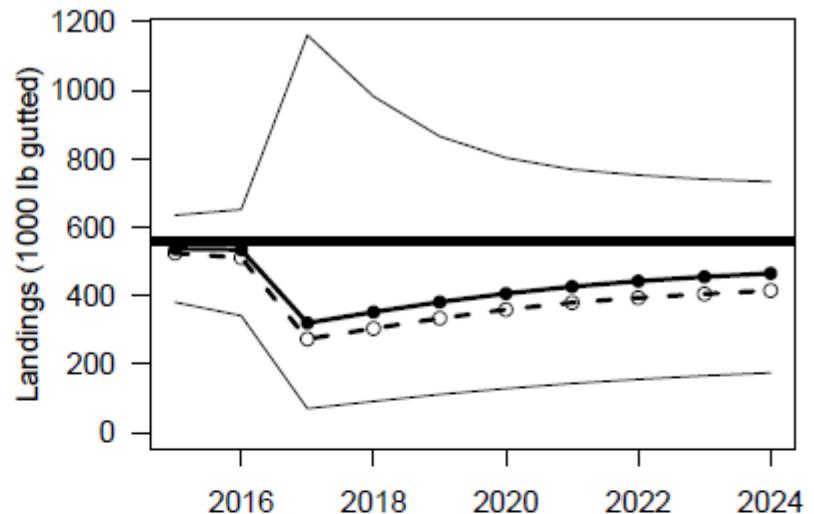
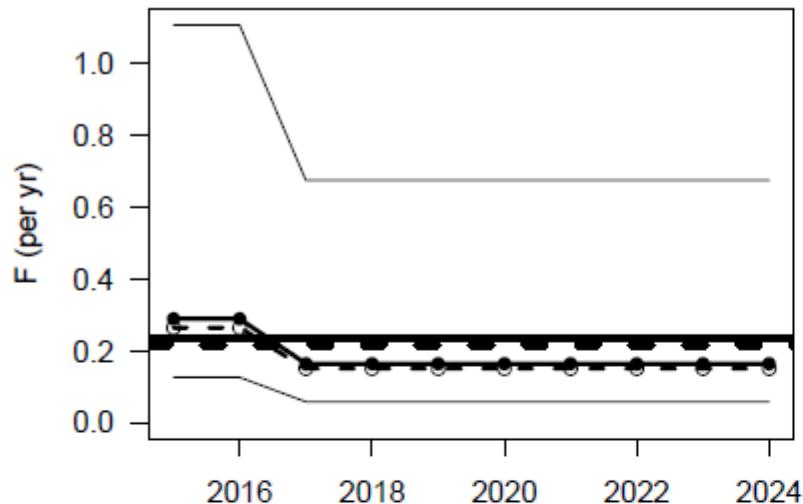
# Projections – 75%F<sub>MSY</sub>



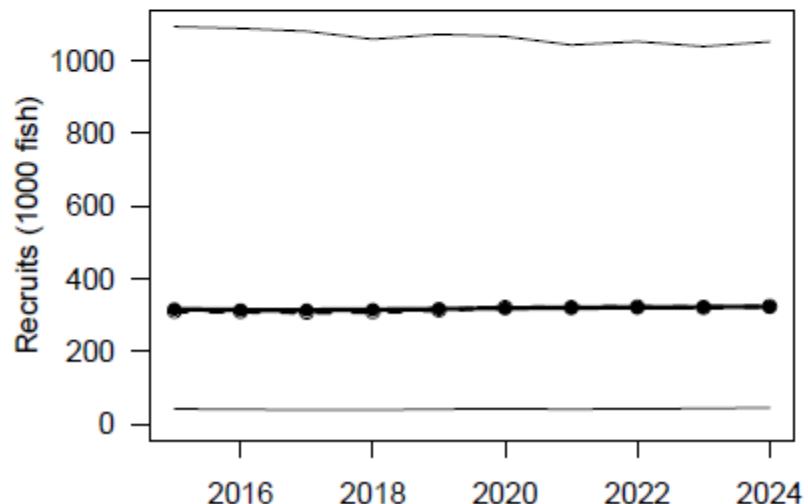
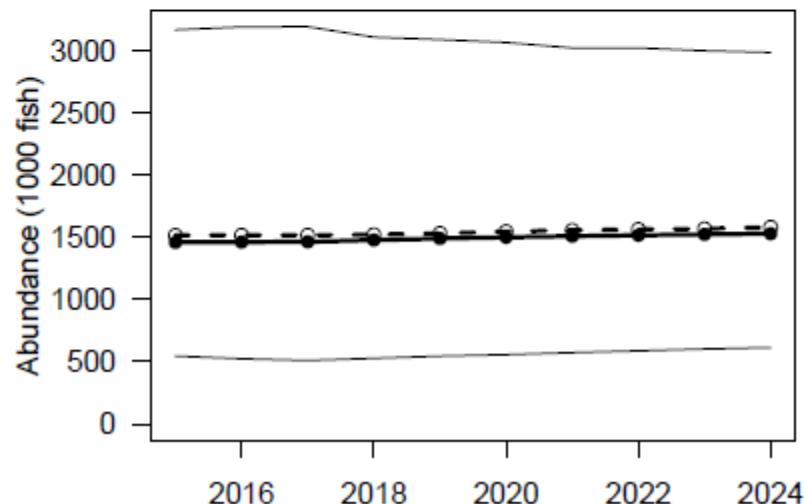
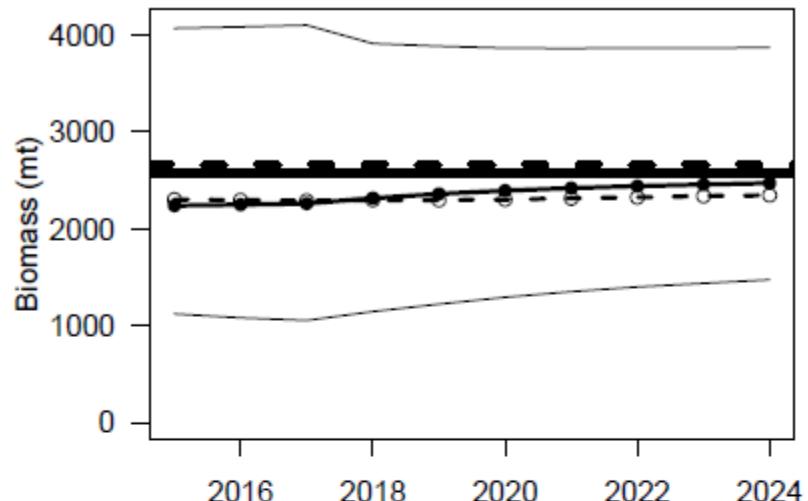
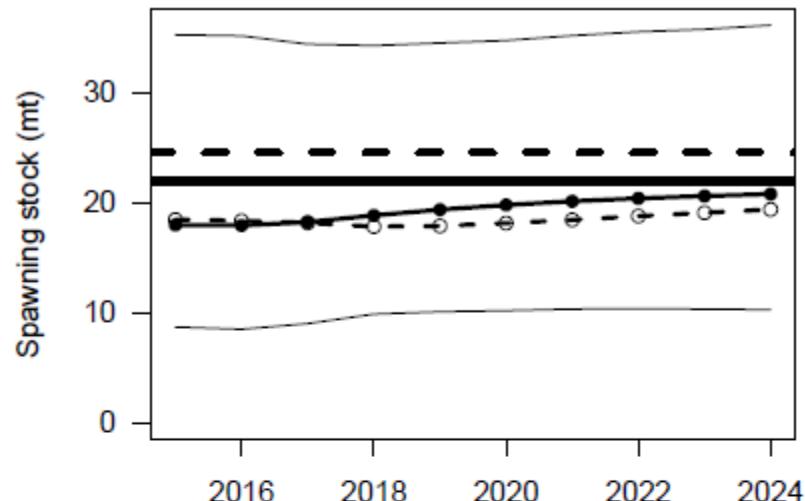
# Projections – $P^*=0.35$



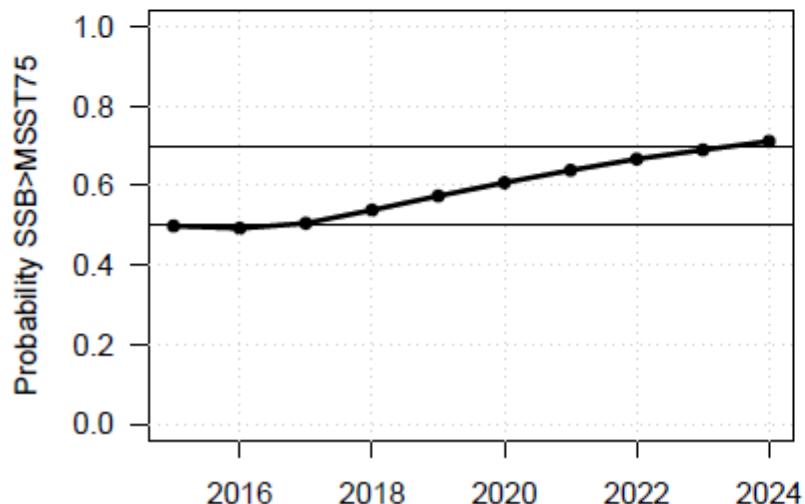
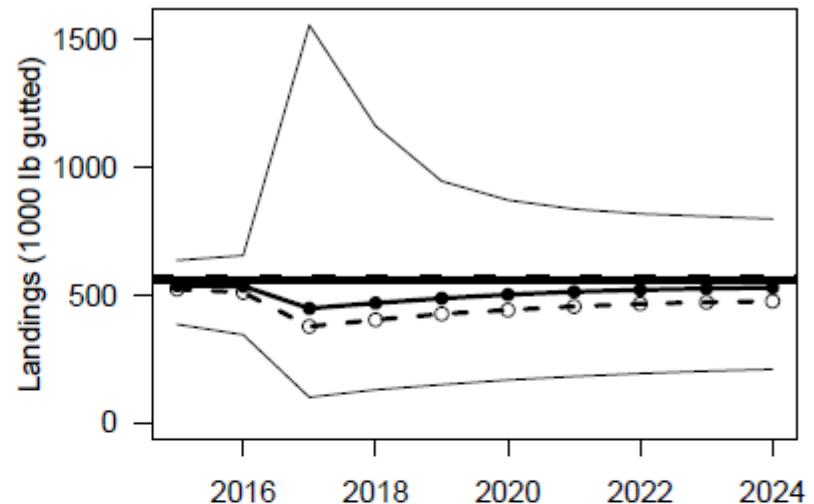
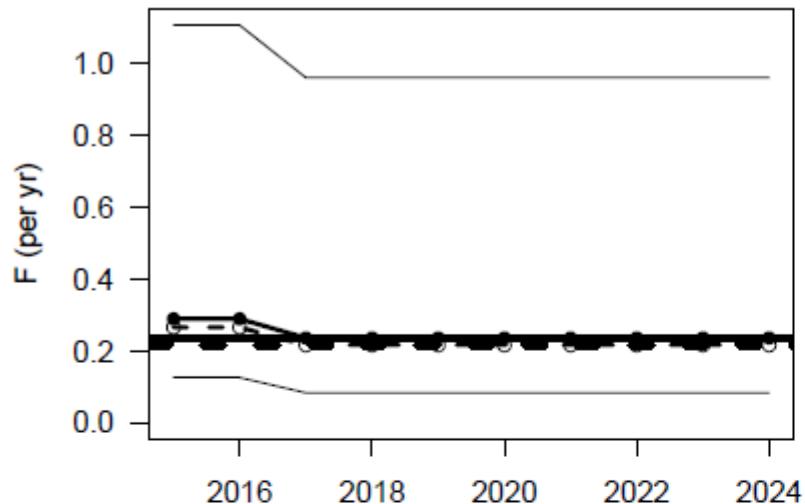
# Projections – $P^*=0.35$



# Projections – $P^*=0.50$

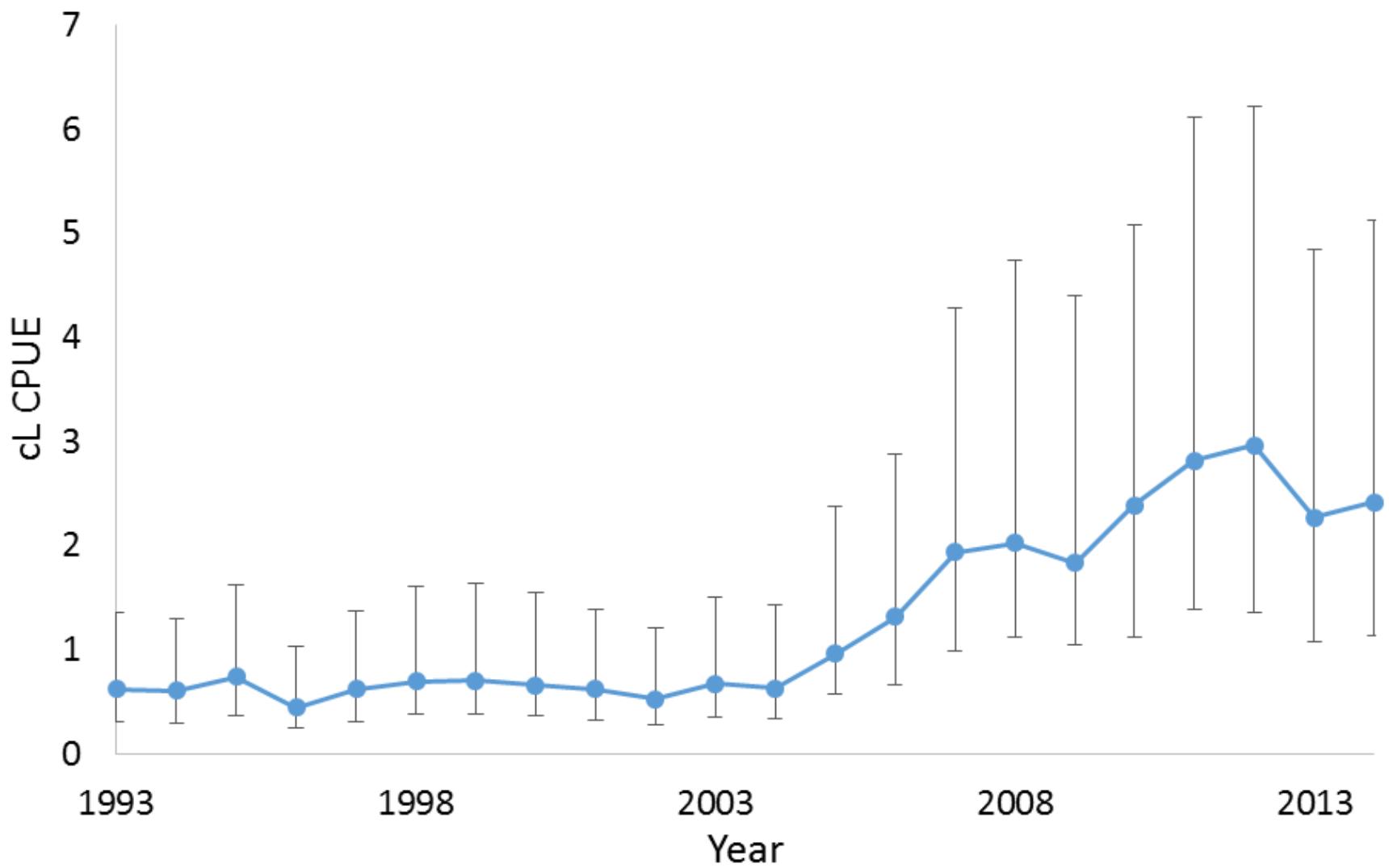


# Projections – $P^*=0.50$

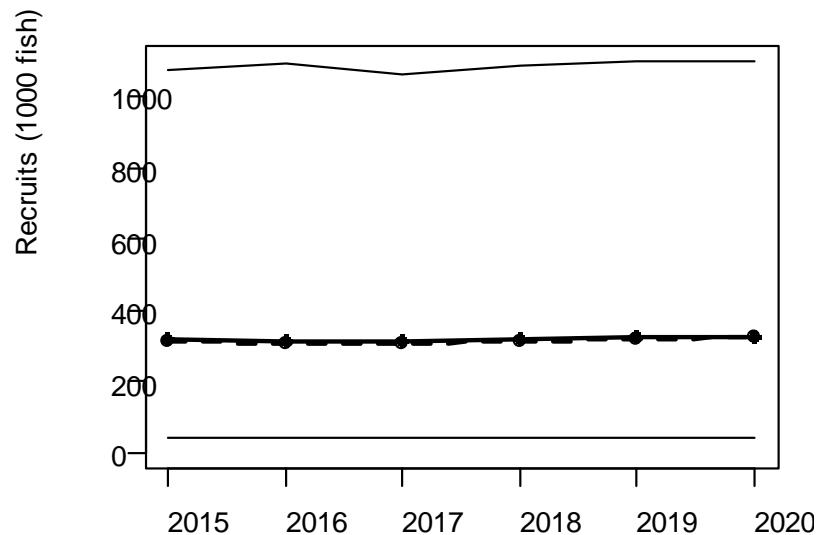
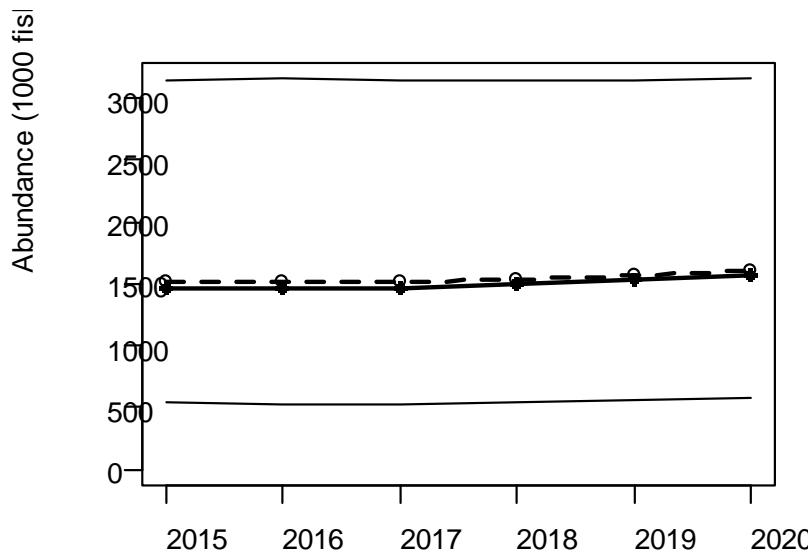
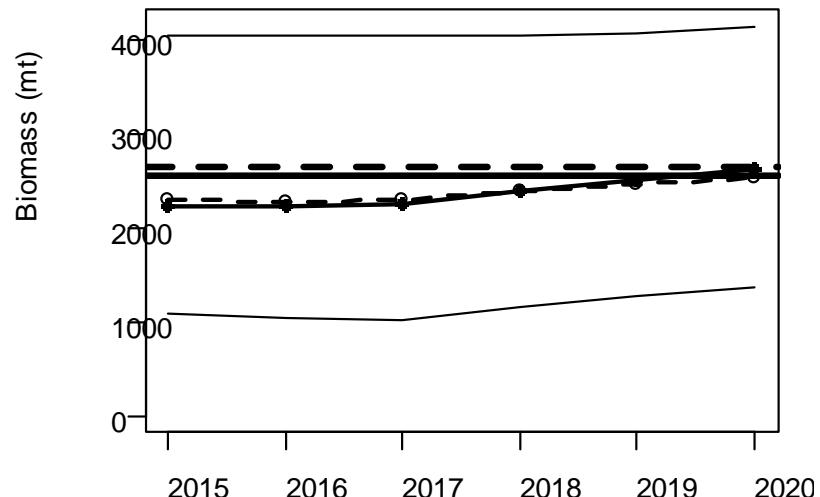
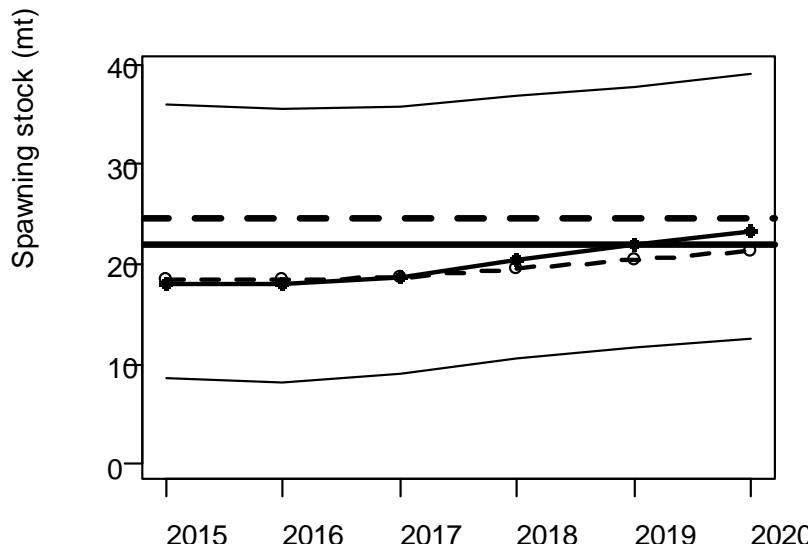


# Questions?

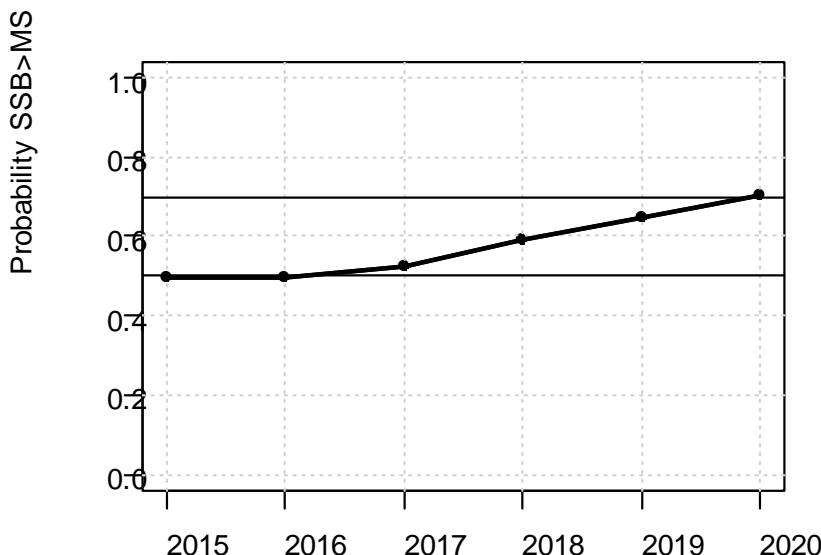
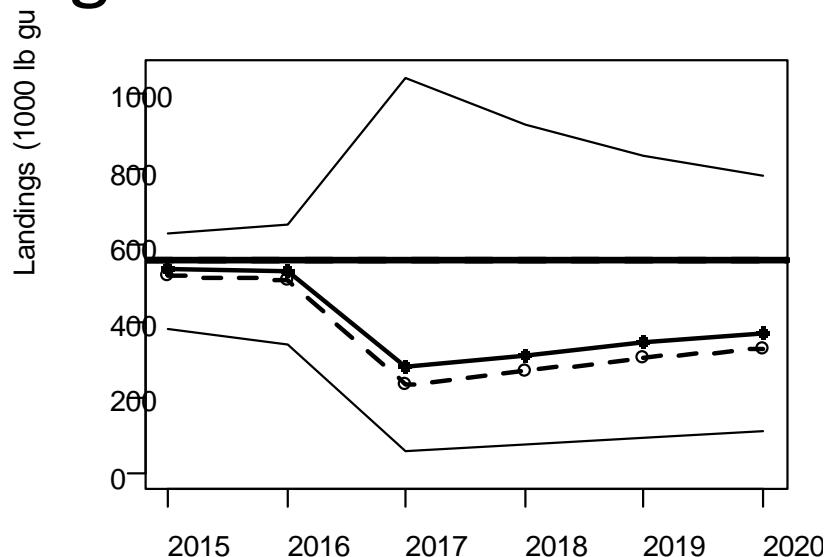
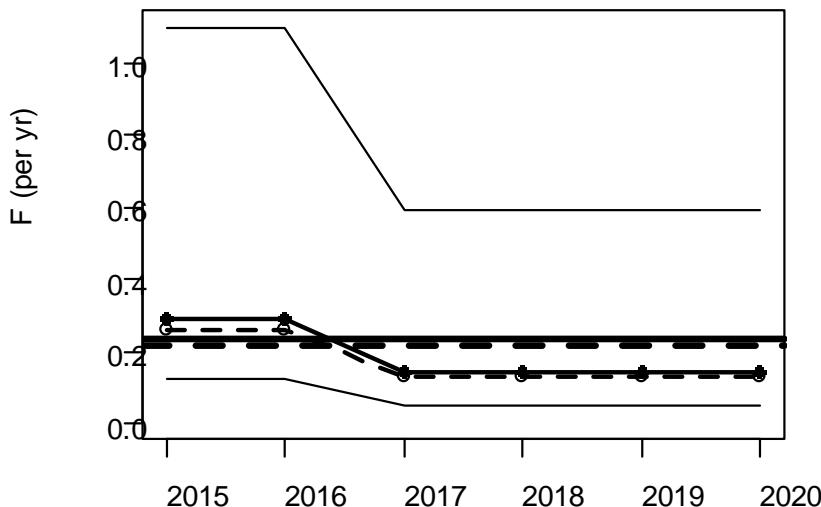
Genny Nesslage  
[genny.nesslage@noaa.gov](mailto:genny.nesslage@noaa.gov)



# Projections – $P^*=0.30$ Mgnt effective 2017



# Projections – $P^*=0.30$ Mgnt effective 2017



# Projections – P\*=0.30 Mgnt effective 2017

Year	R	F	S(mt)	B(mt)	L(n)	L(w)	pr.75	Year
2015	312	1518	0.2621	18	2296	66	522	0.4958
2016	306	1519	0.2621	18	2296	65	509	0.4964
2017	307	1515	0.1286	19	2296	30	233	0.5231
2018	312	1540	0.1286	20	2395	34	267	0.5898
2019	318	1578	0.1286	20	2468	38	302	0.6493
2020	323	1611	0.1286	21	2532	41	327	0.7061