

Plots created using the 'r4ss' package in R

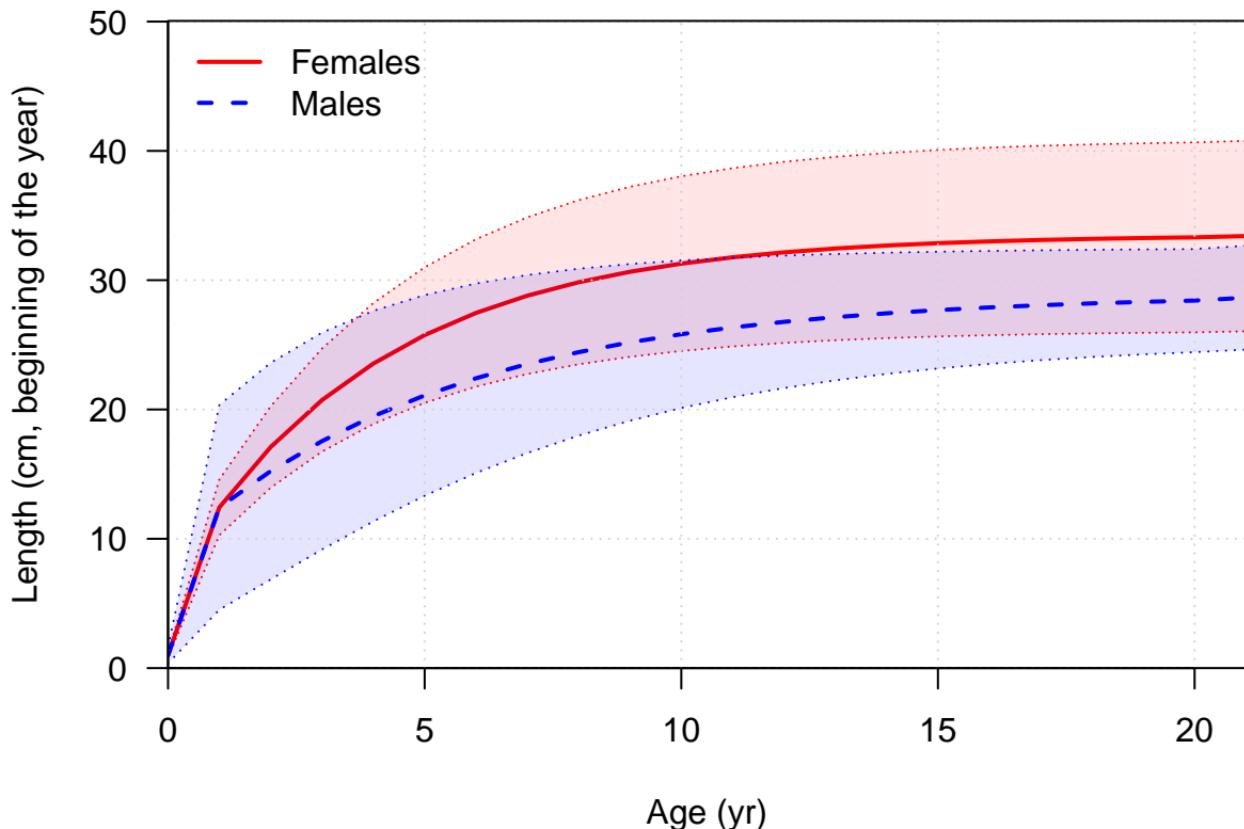
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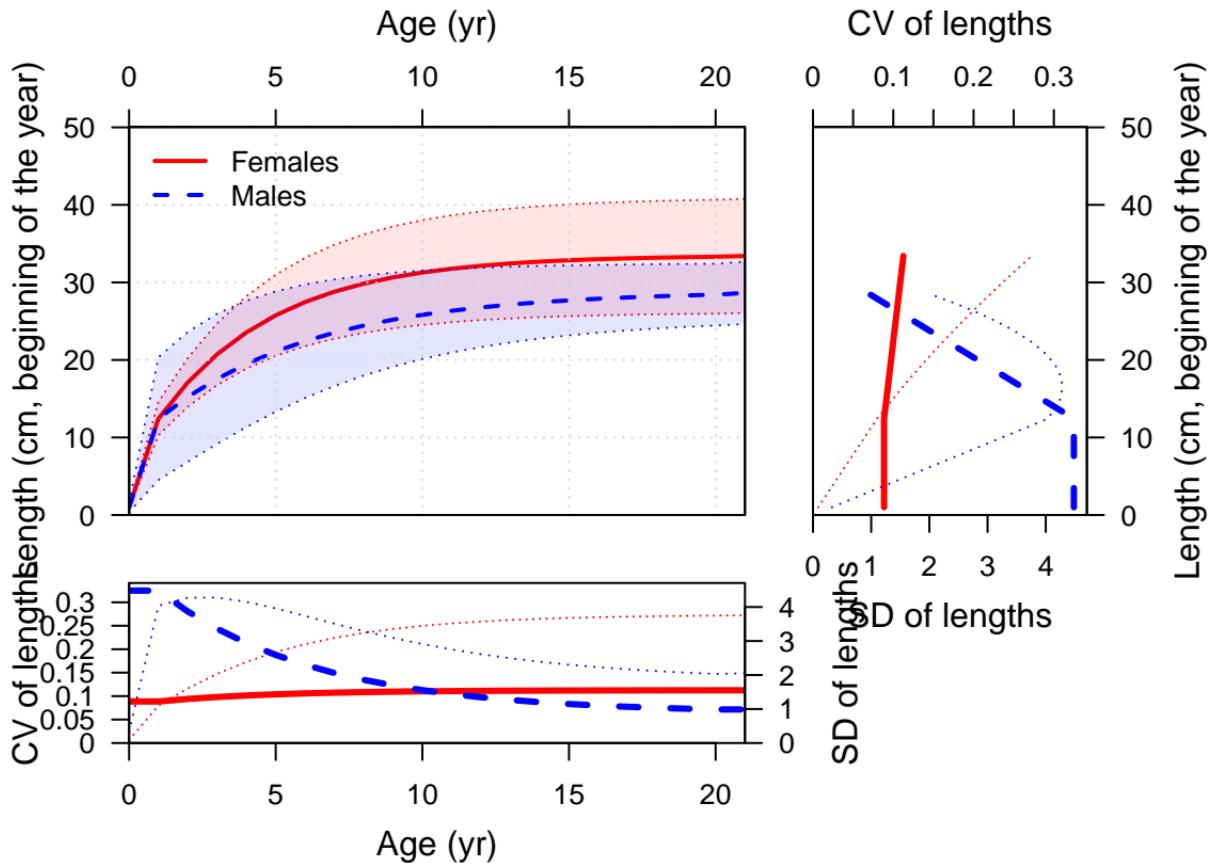
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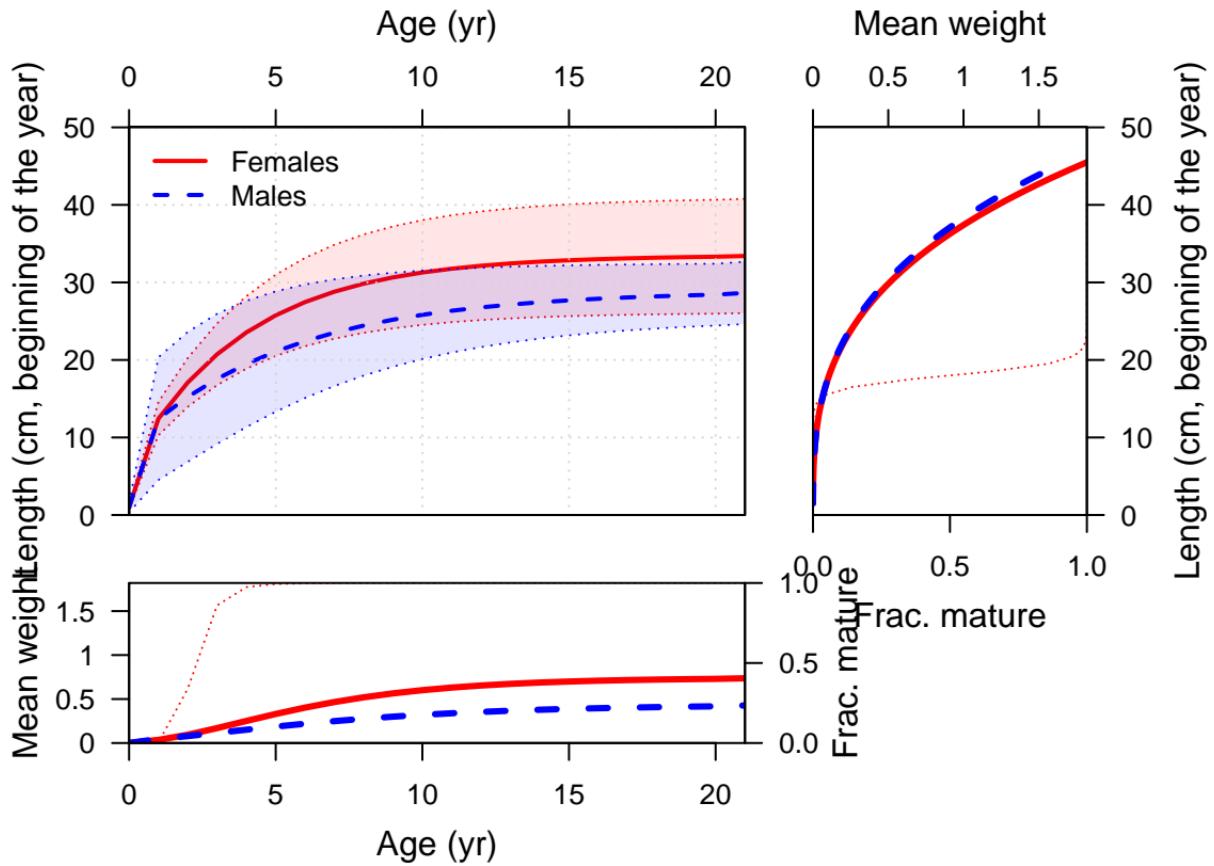
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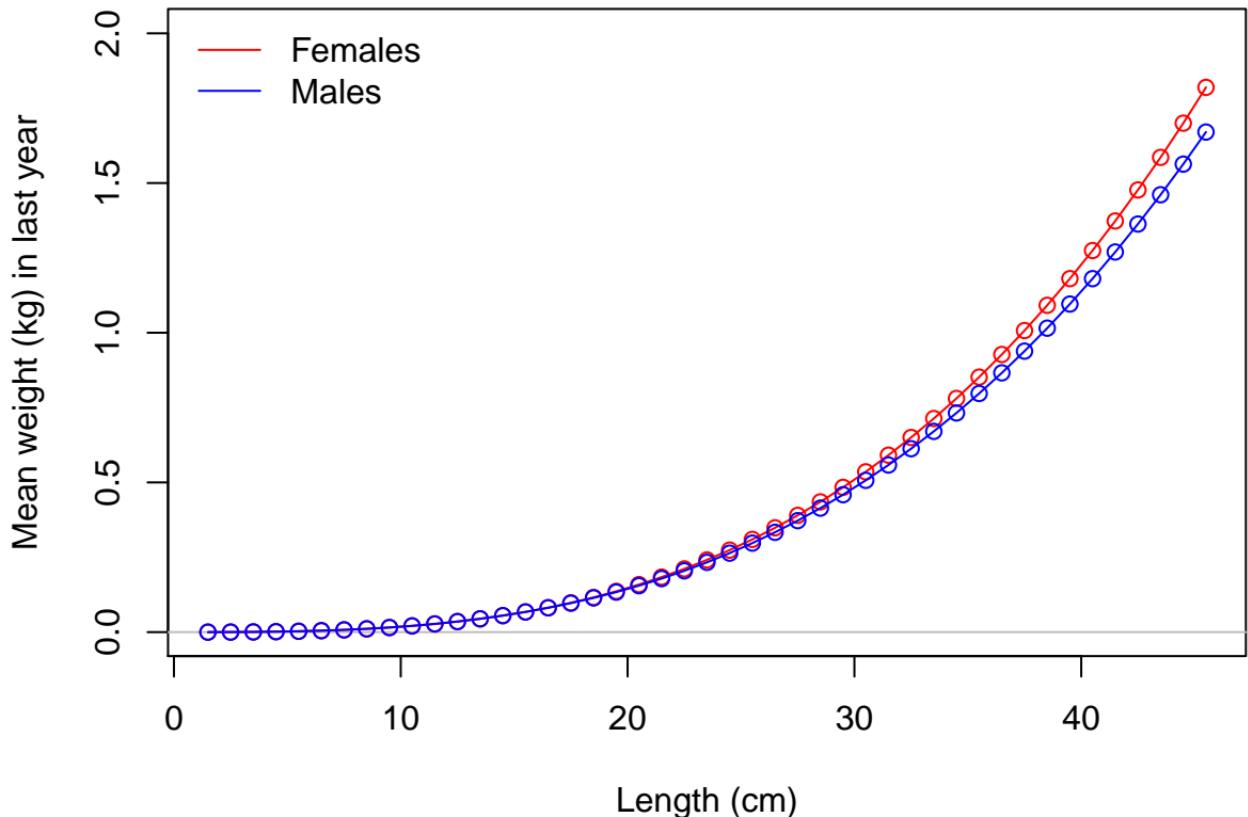
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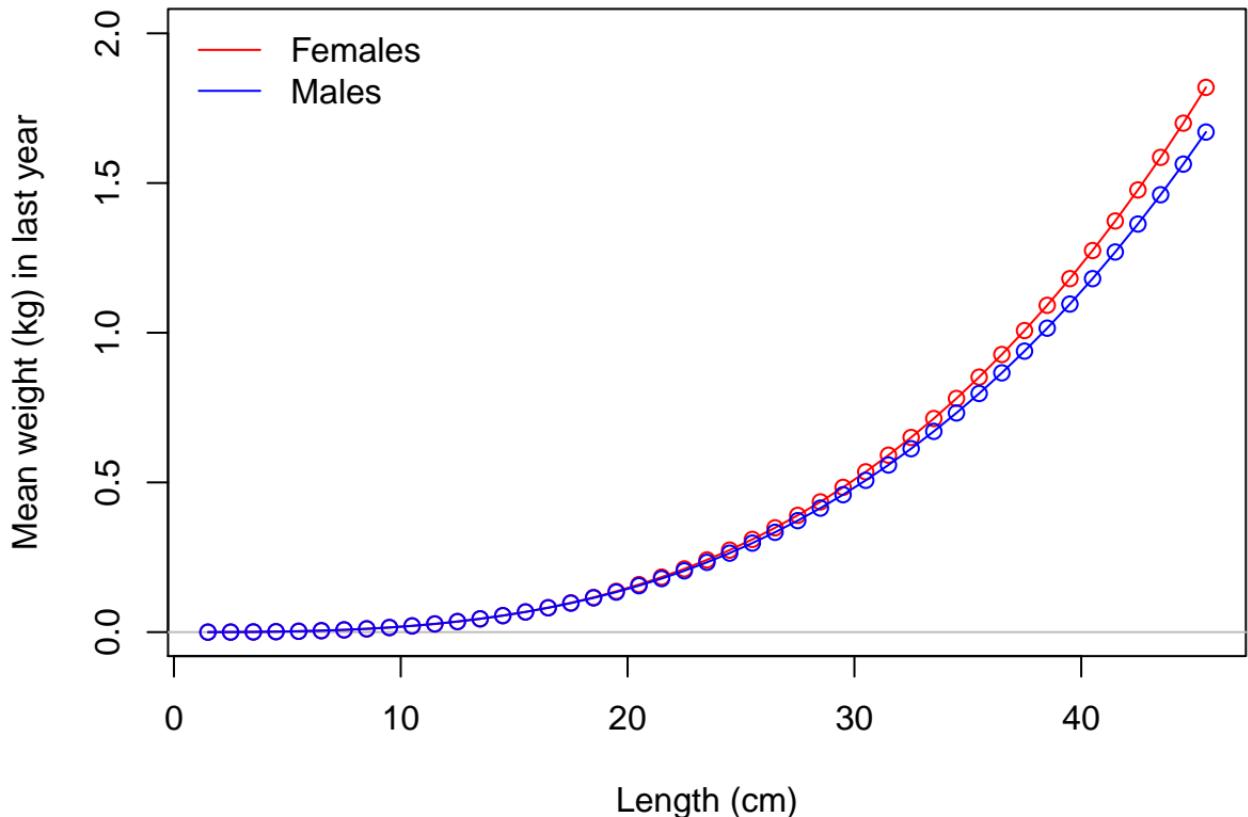
## Ending year expected growth (with 95% intervals)

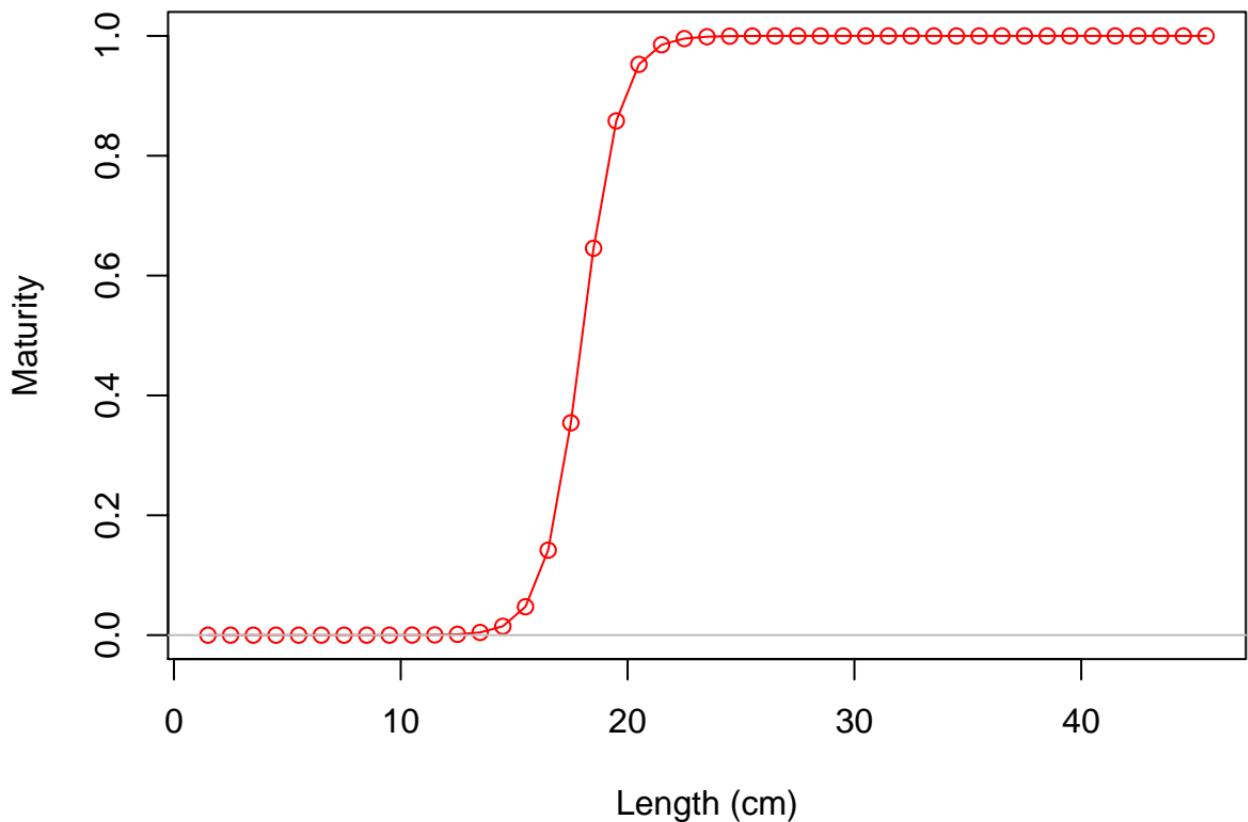


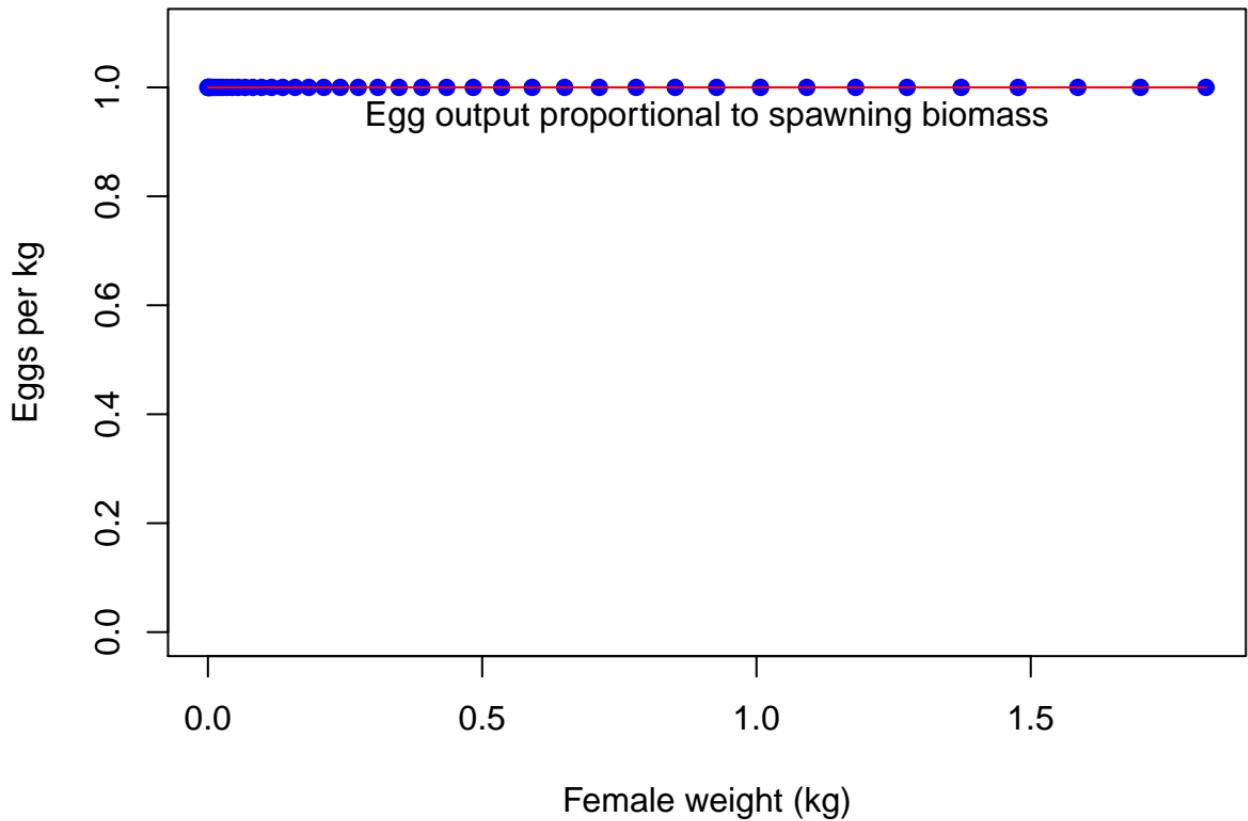


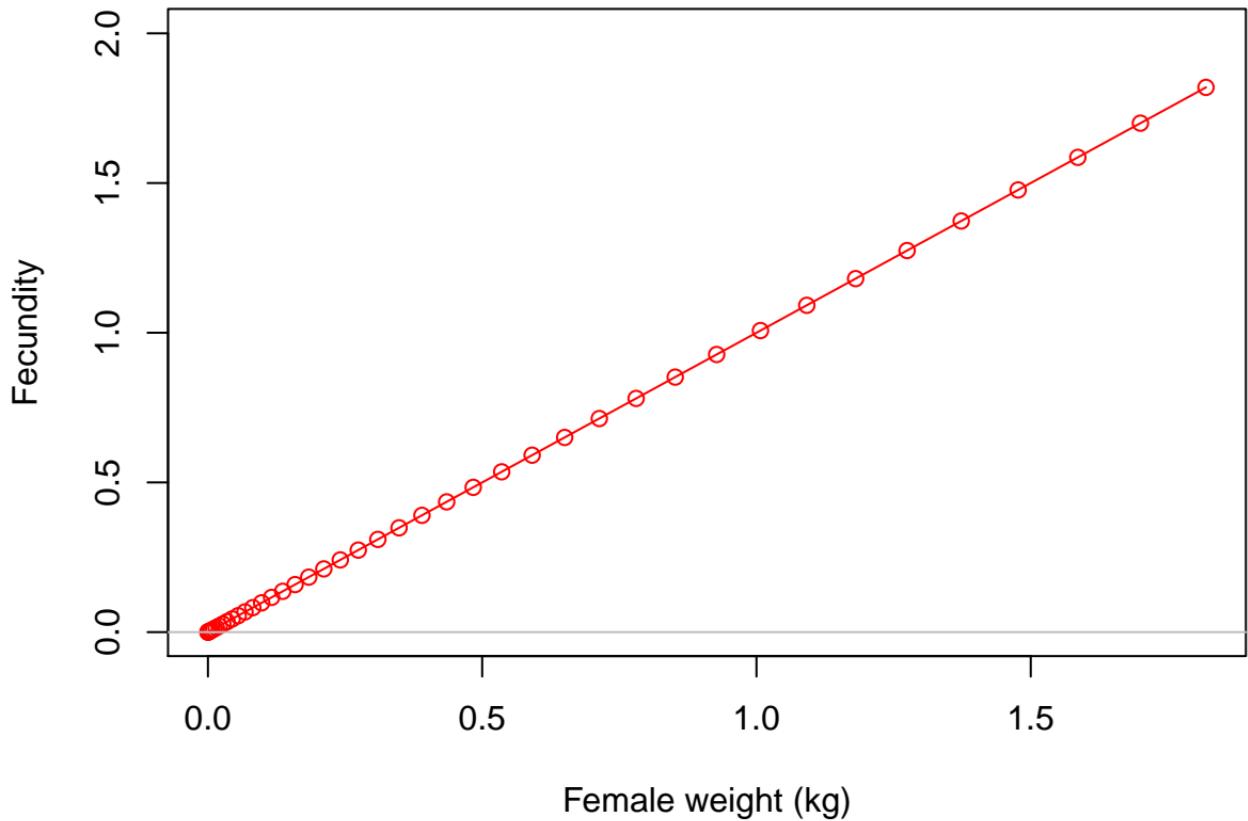


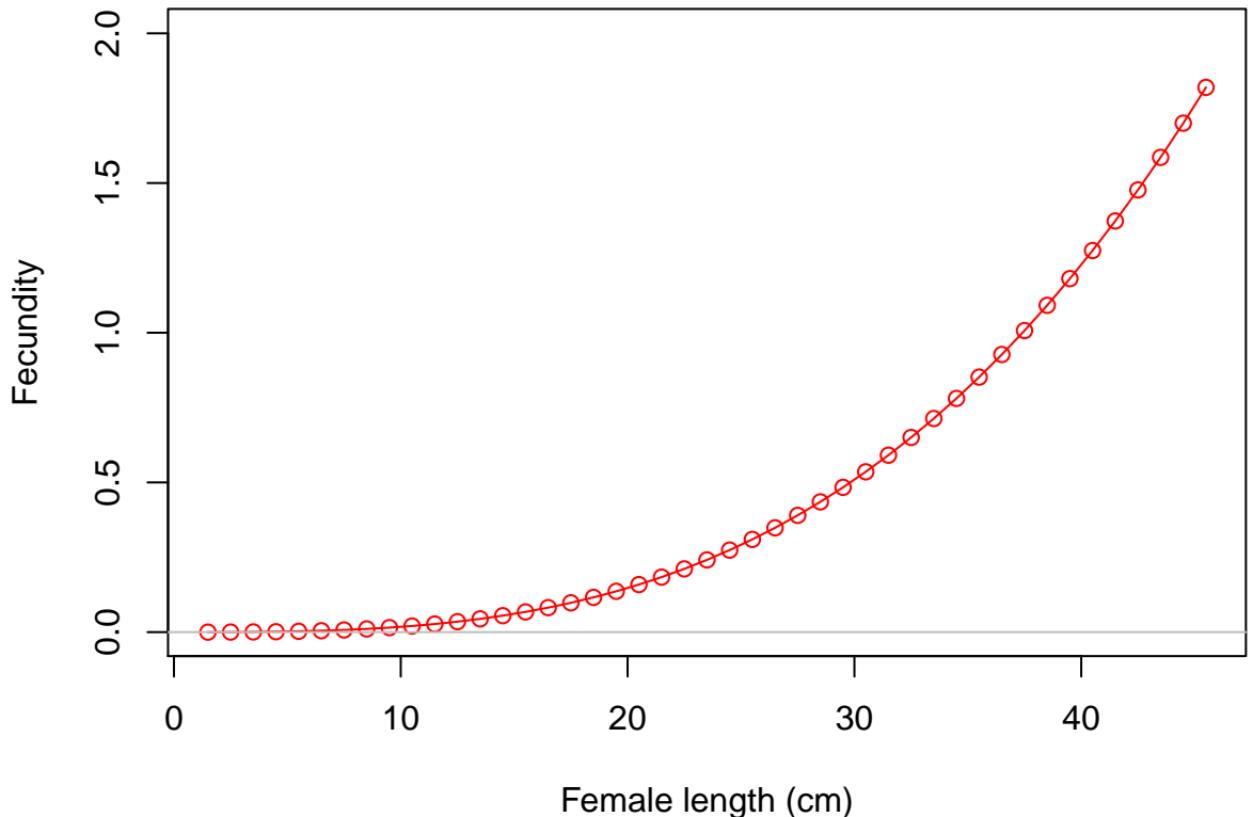


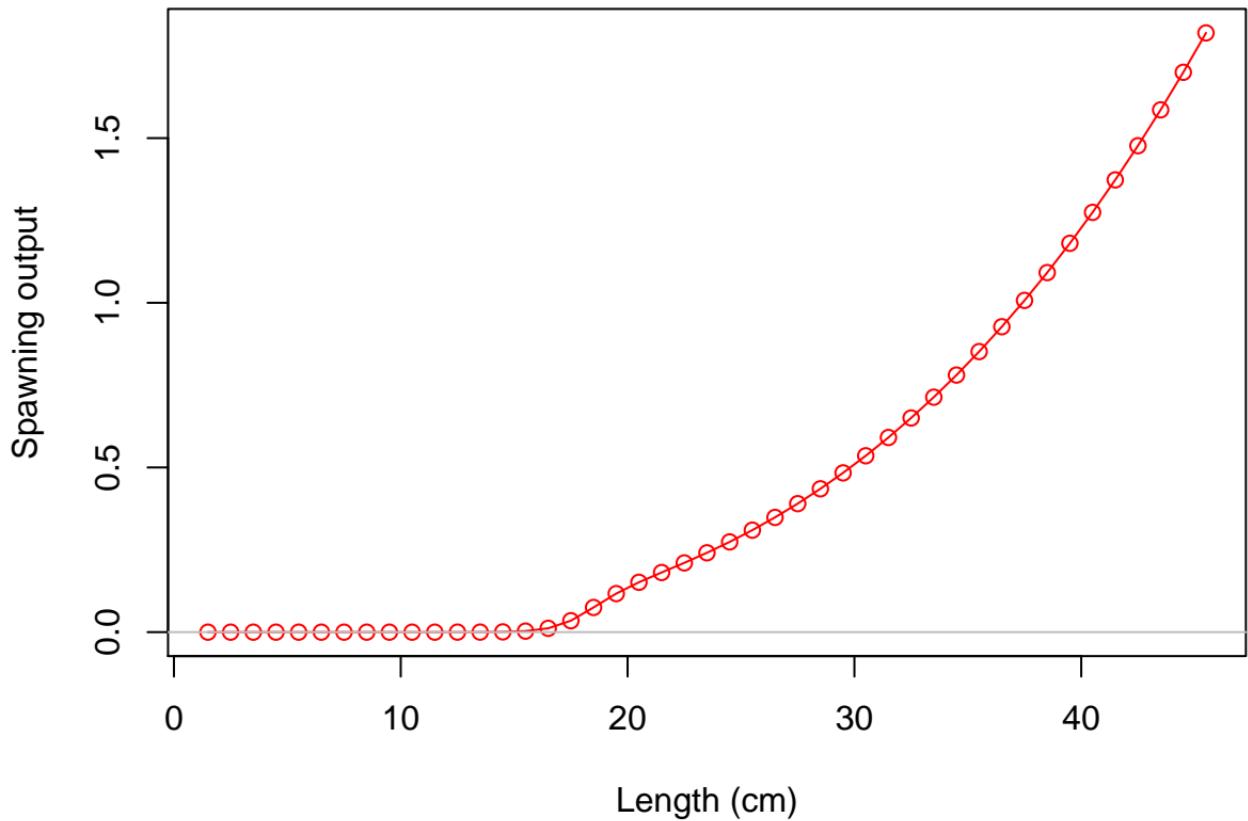




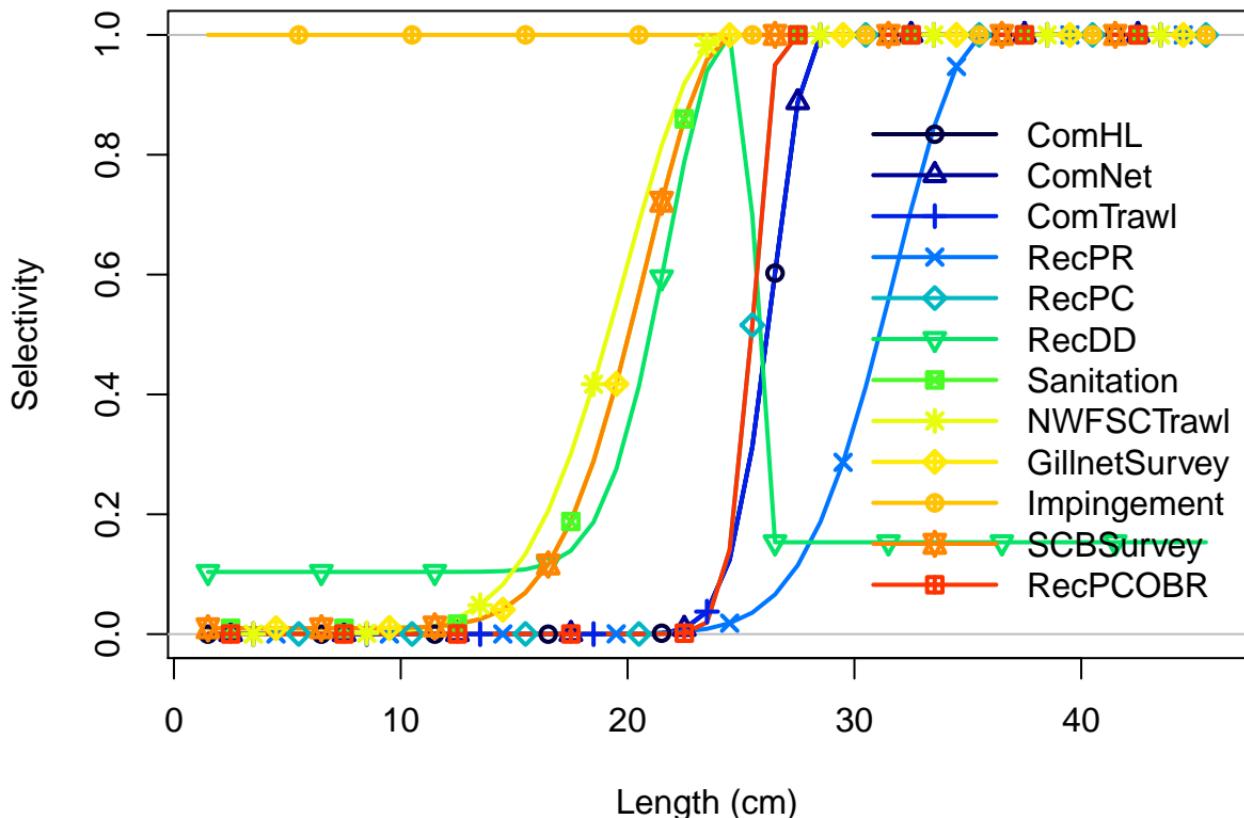




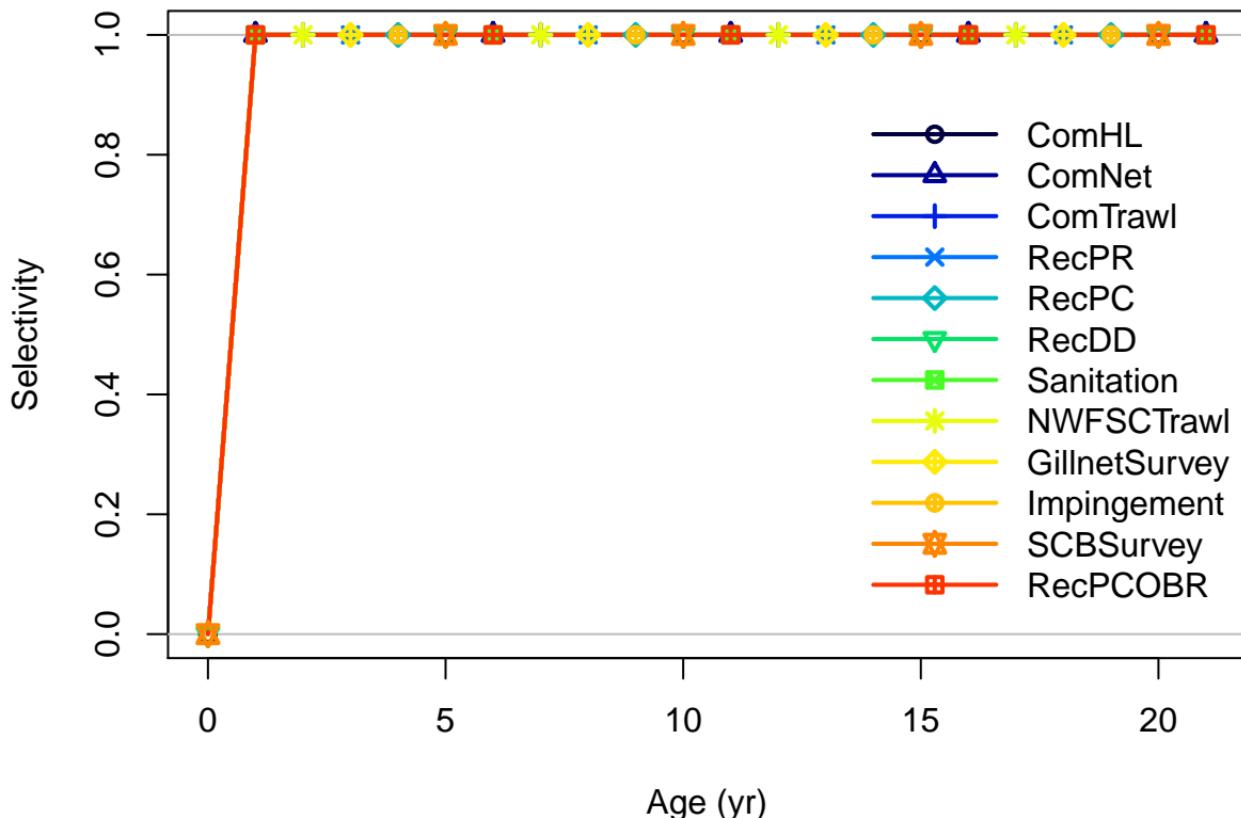




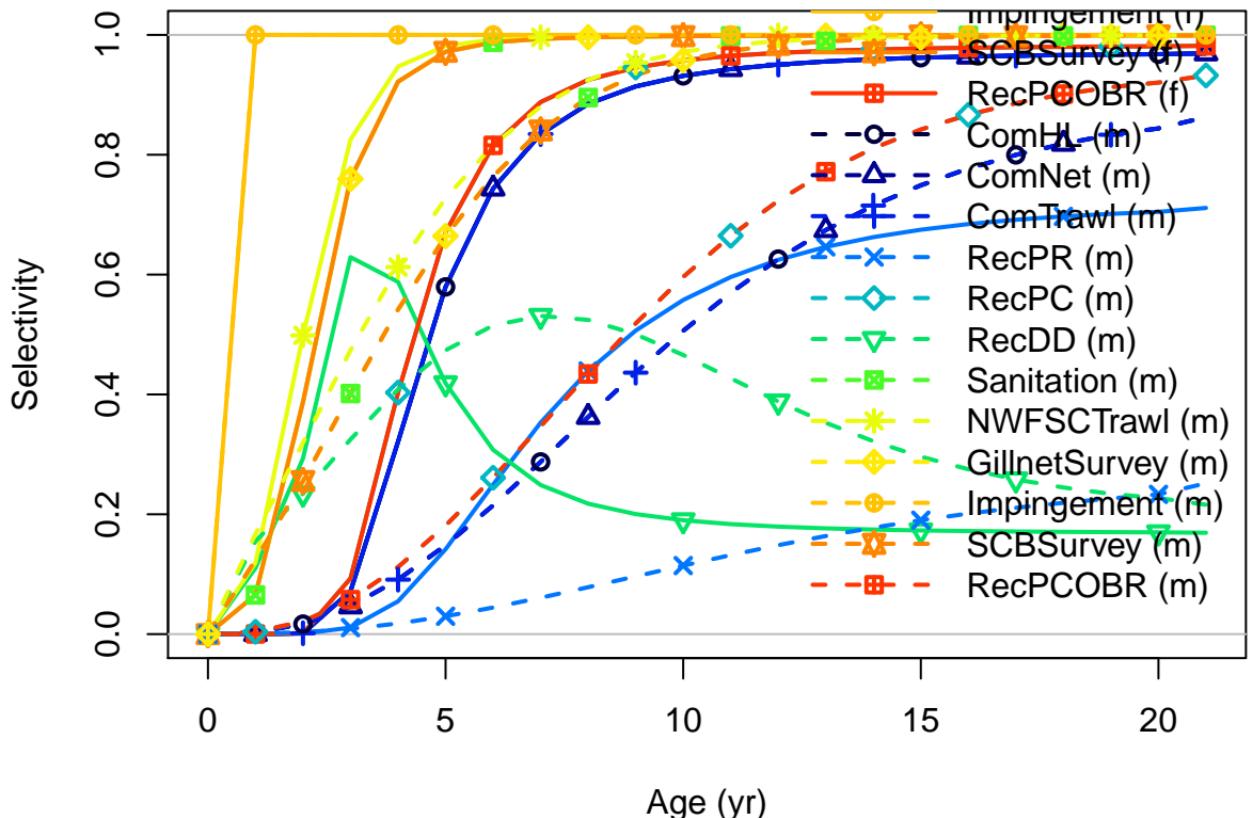
## Length-based selectivity by fleet in 2016



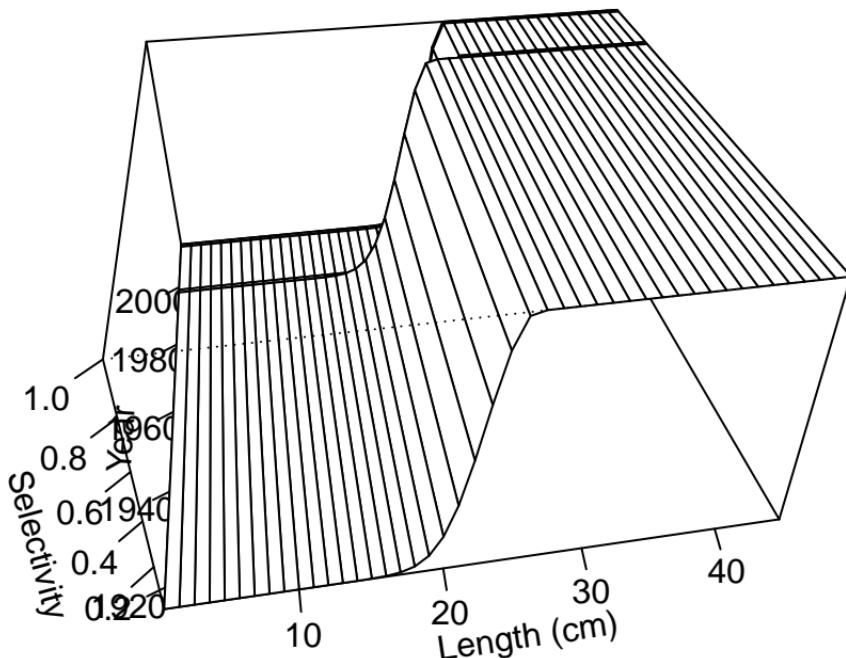
## Age-based selectivity by fleet in 2016



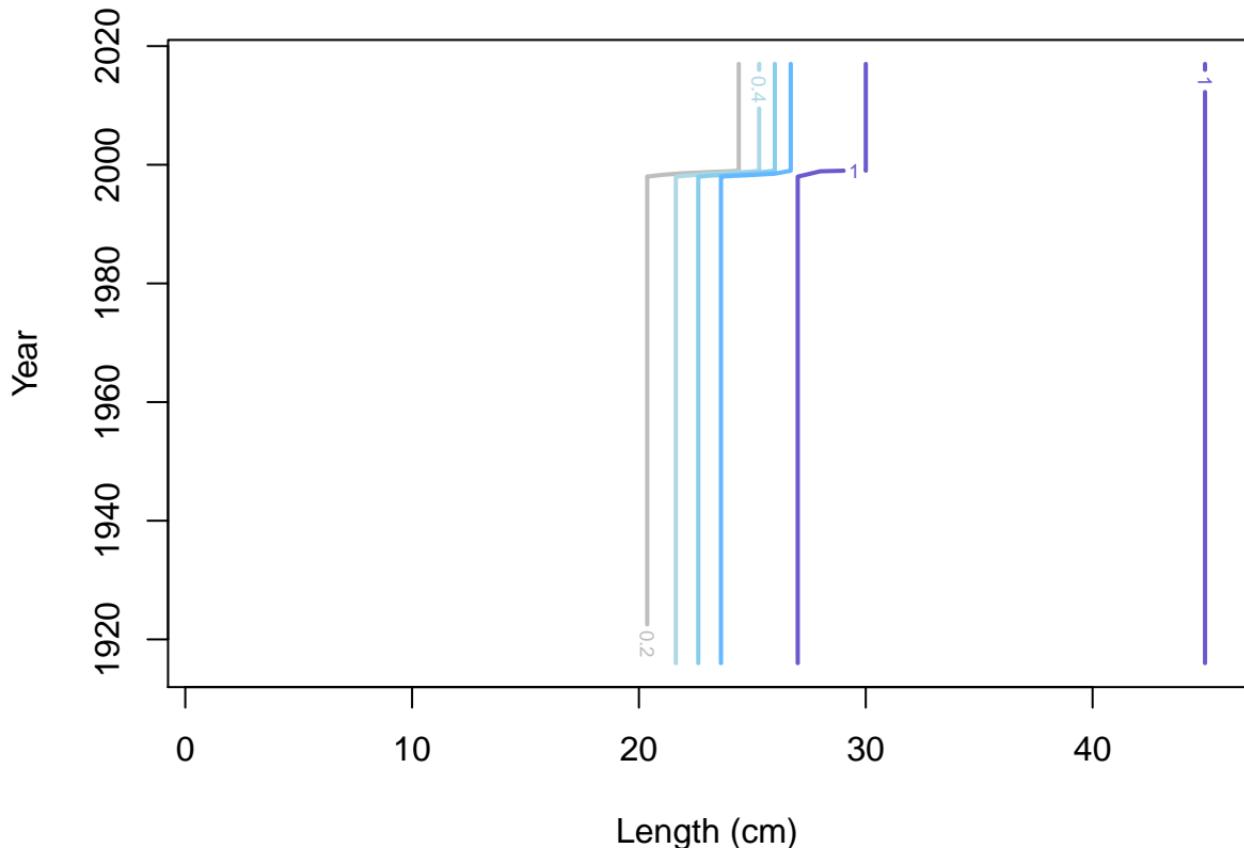
## Derived age-based from length-based selectivity by fleet in 2016



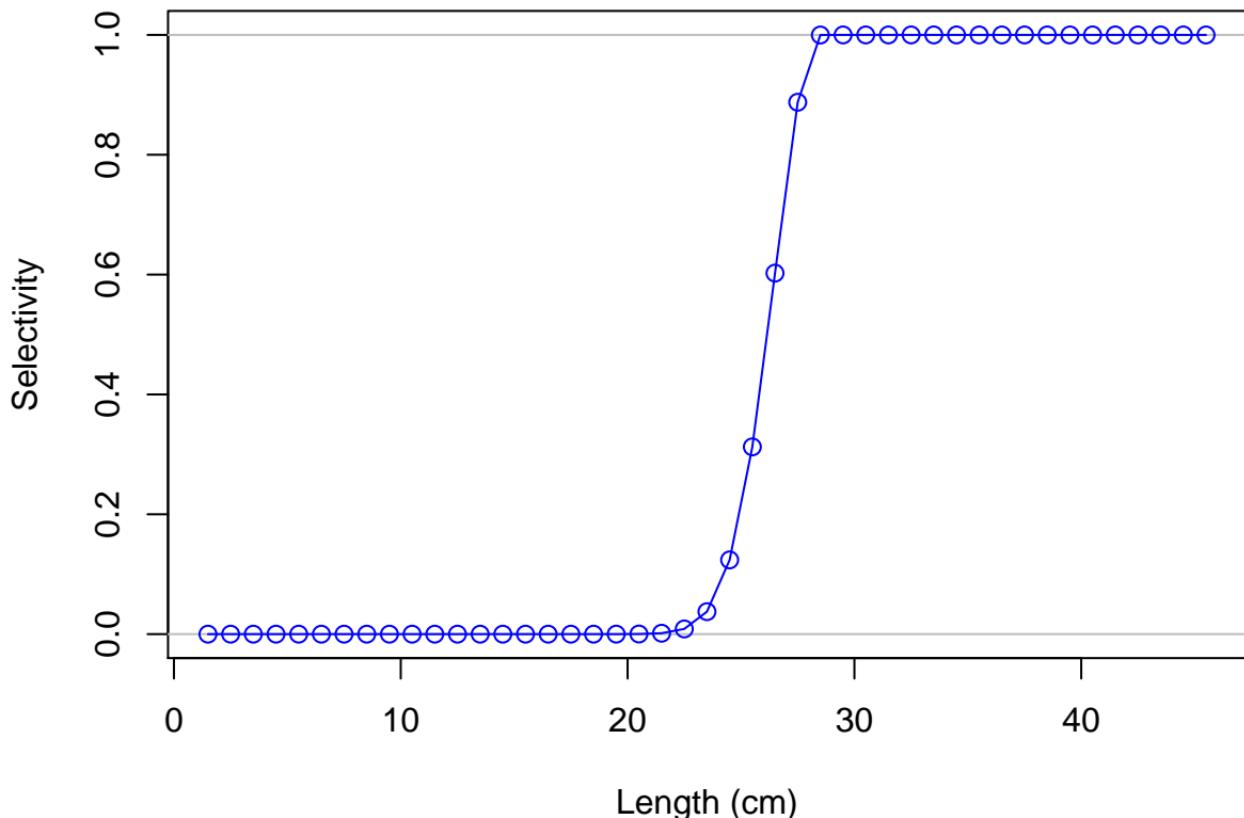
## Female time-varying selectivity for ComHL



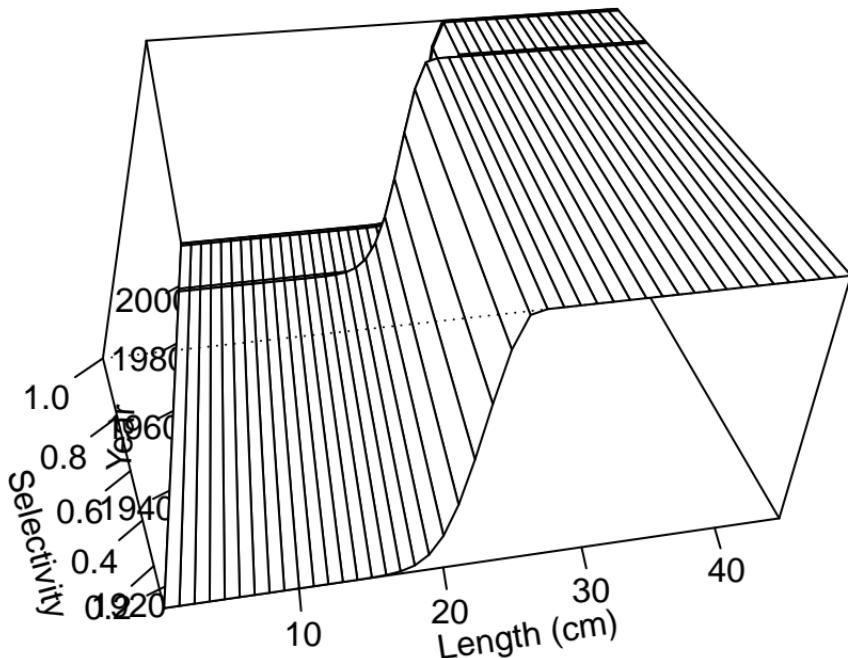
## Female time-varying selectivity for ComHL



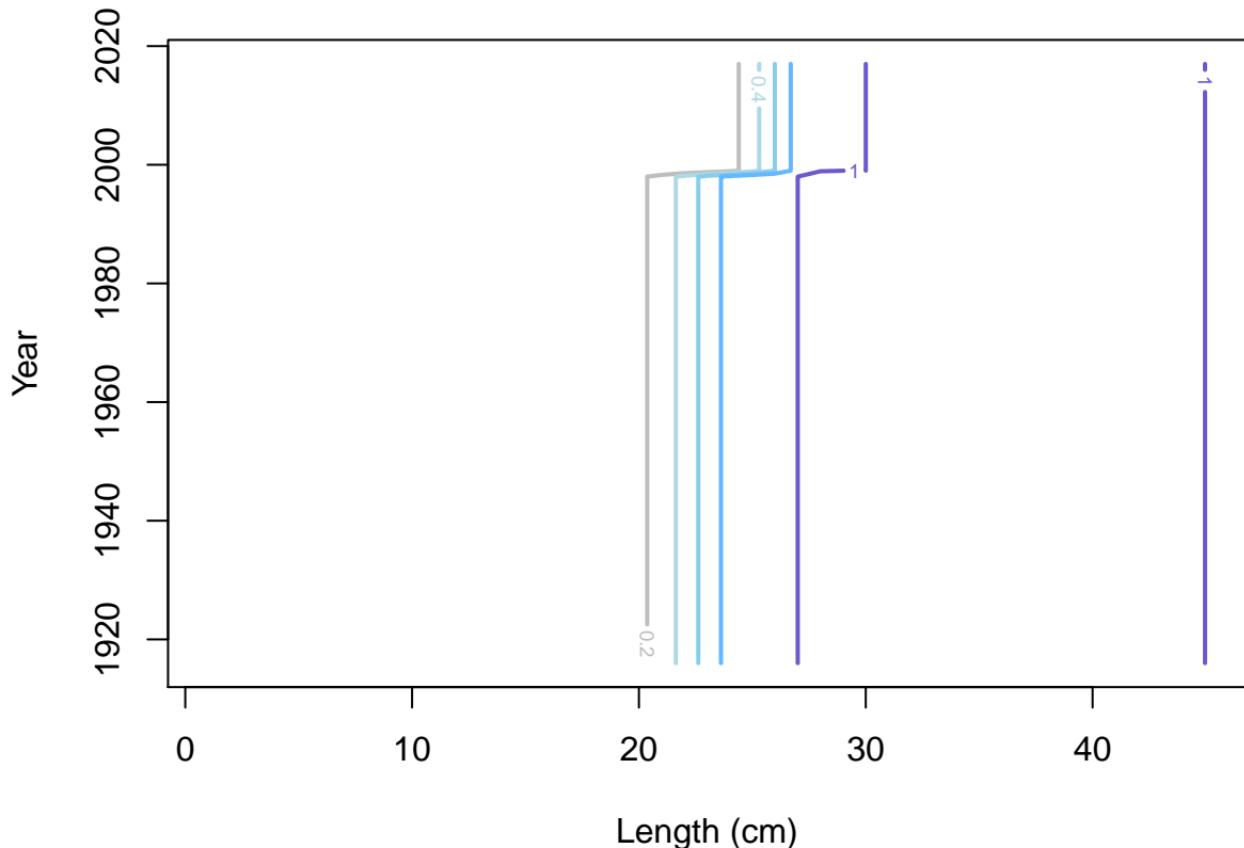
## Female ending year selectivity for ComHL



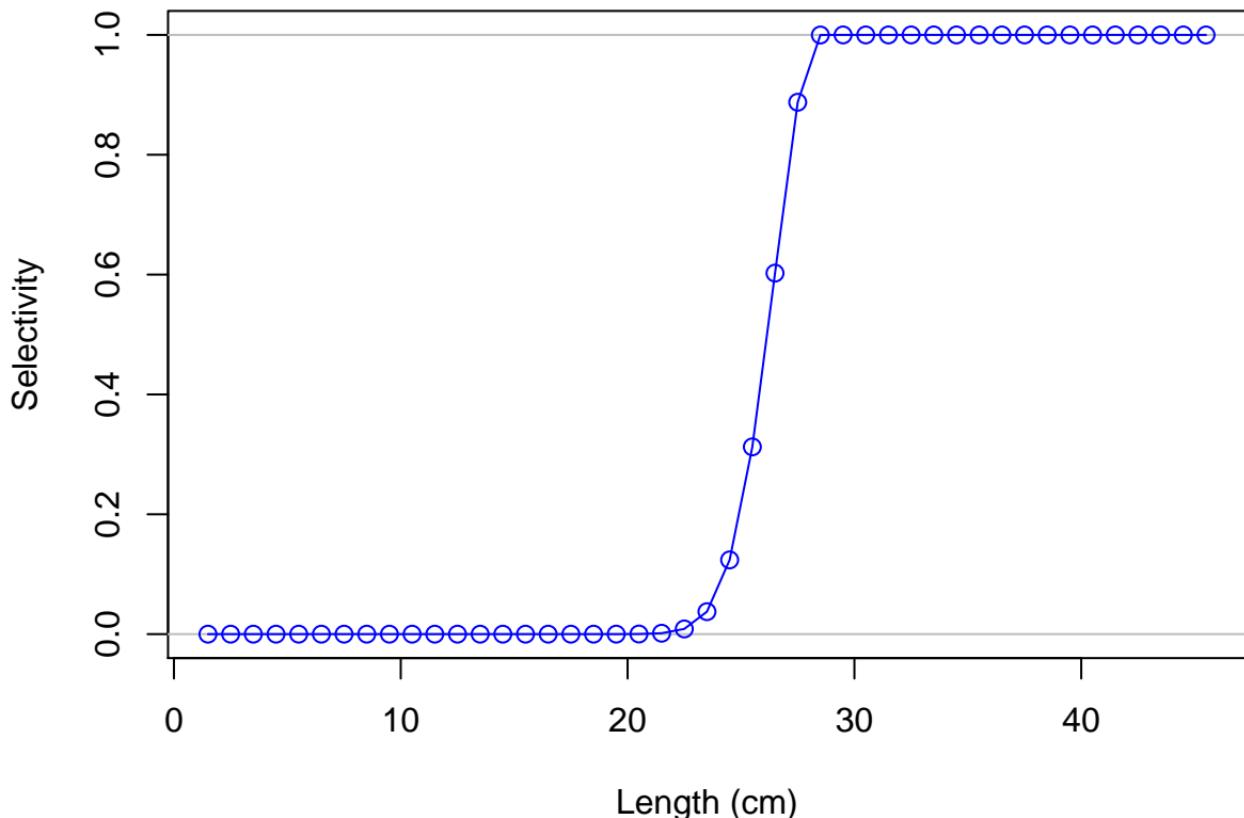
## Male time-varying selectivity for ComHL



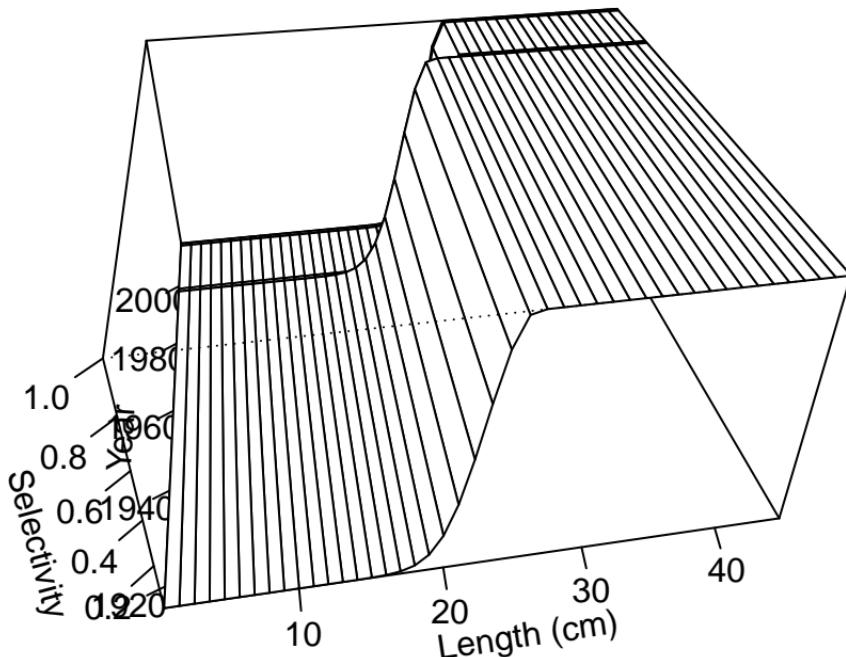
## Male time-varying selectivity for ComHL



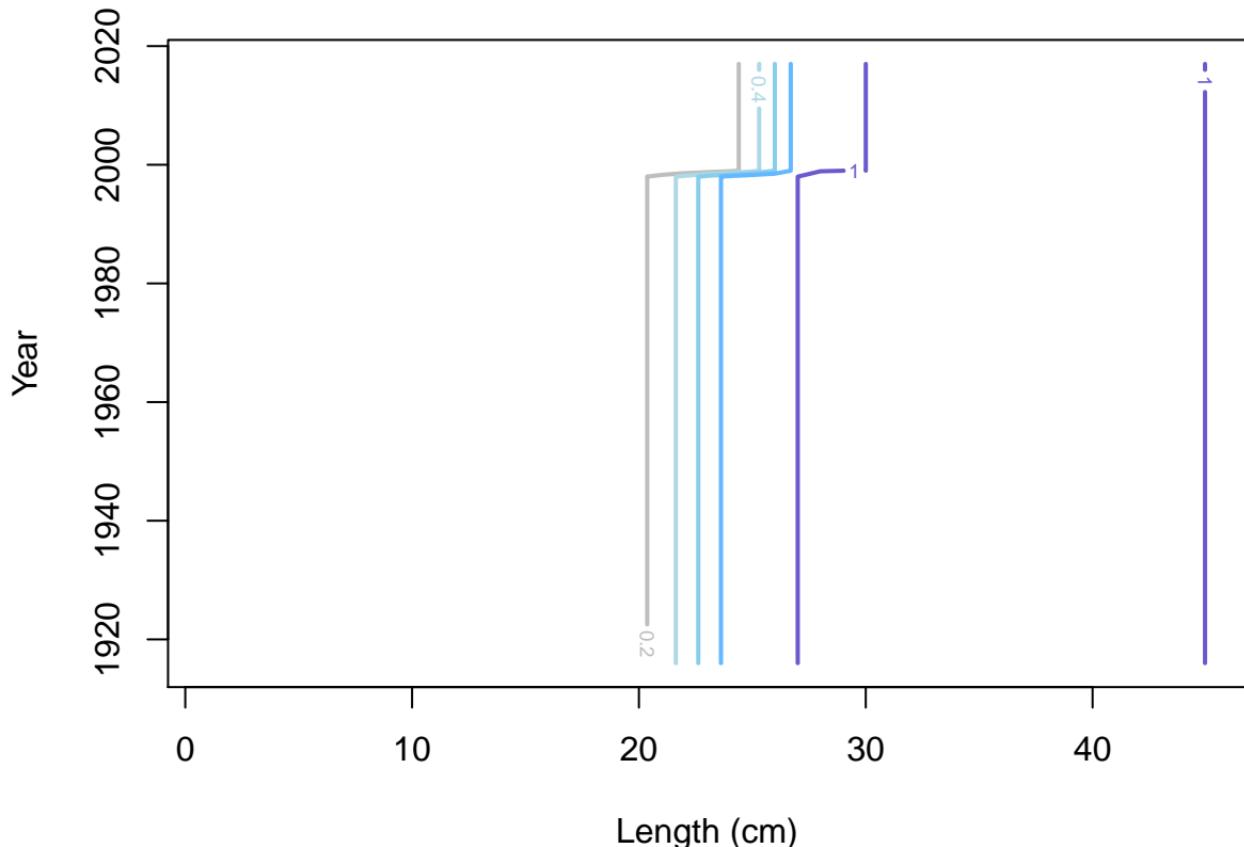
## Male ending year selectivity for ComHL



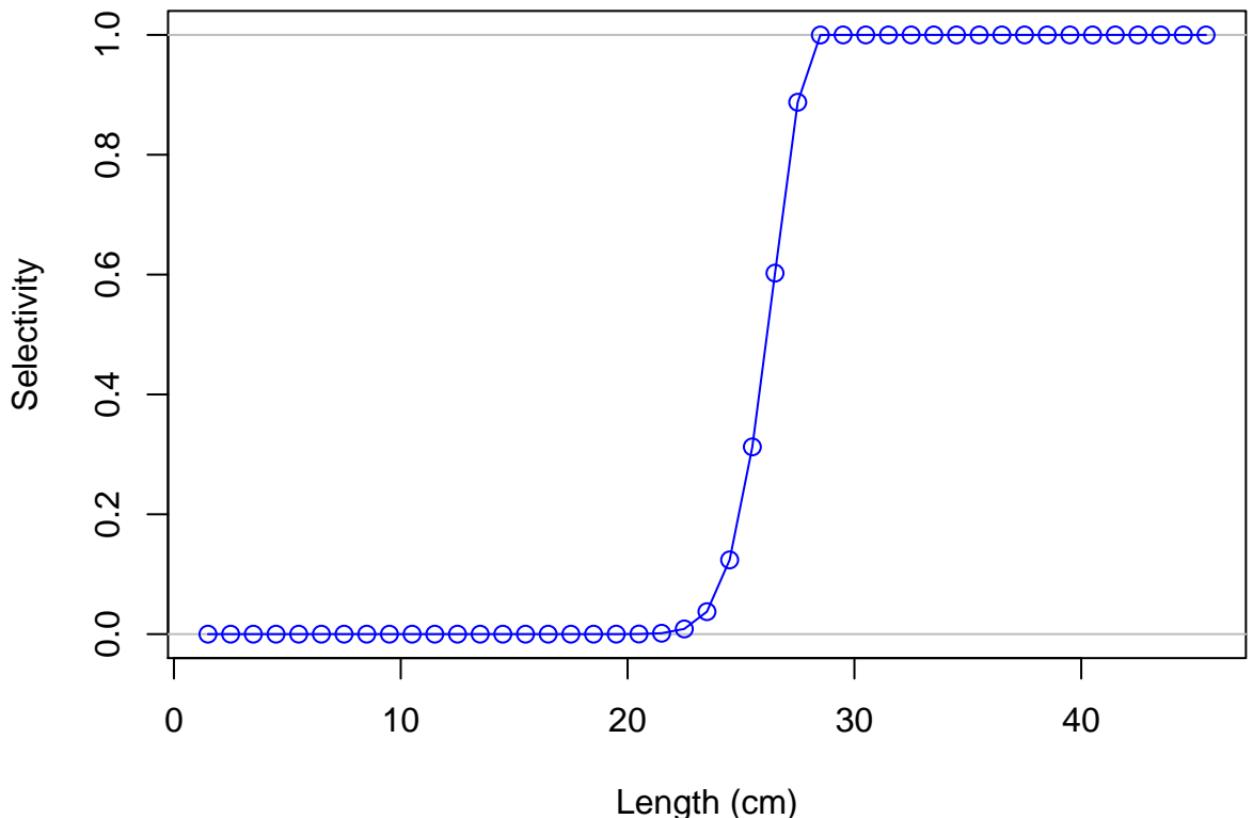
## Female time-varying selectivity for ComNet



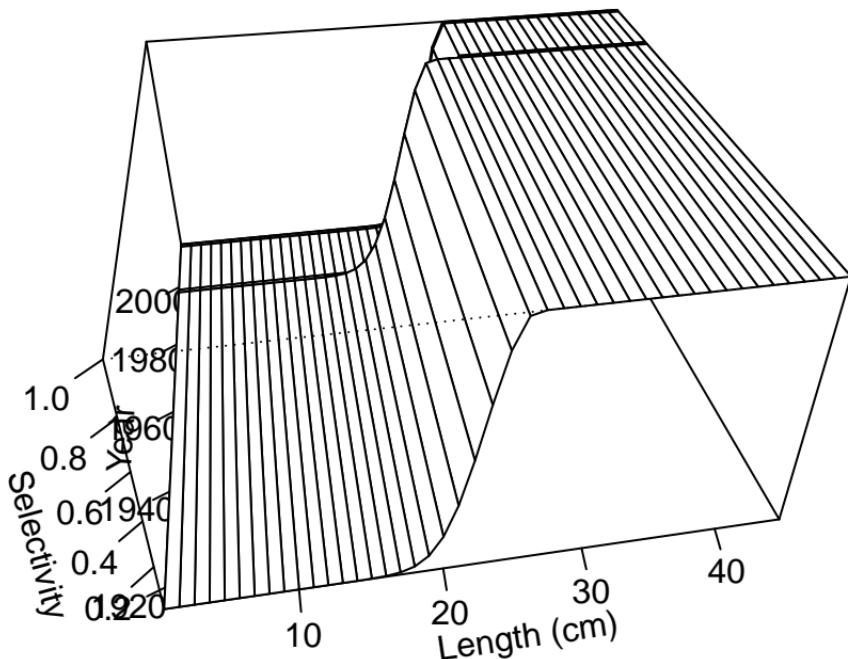
## Female time-varying selectivity for ComNet



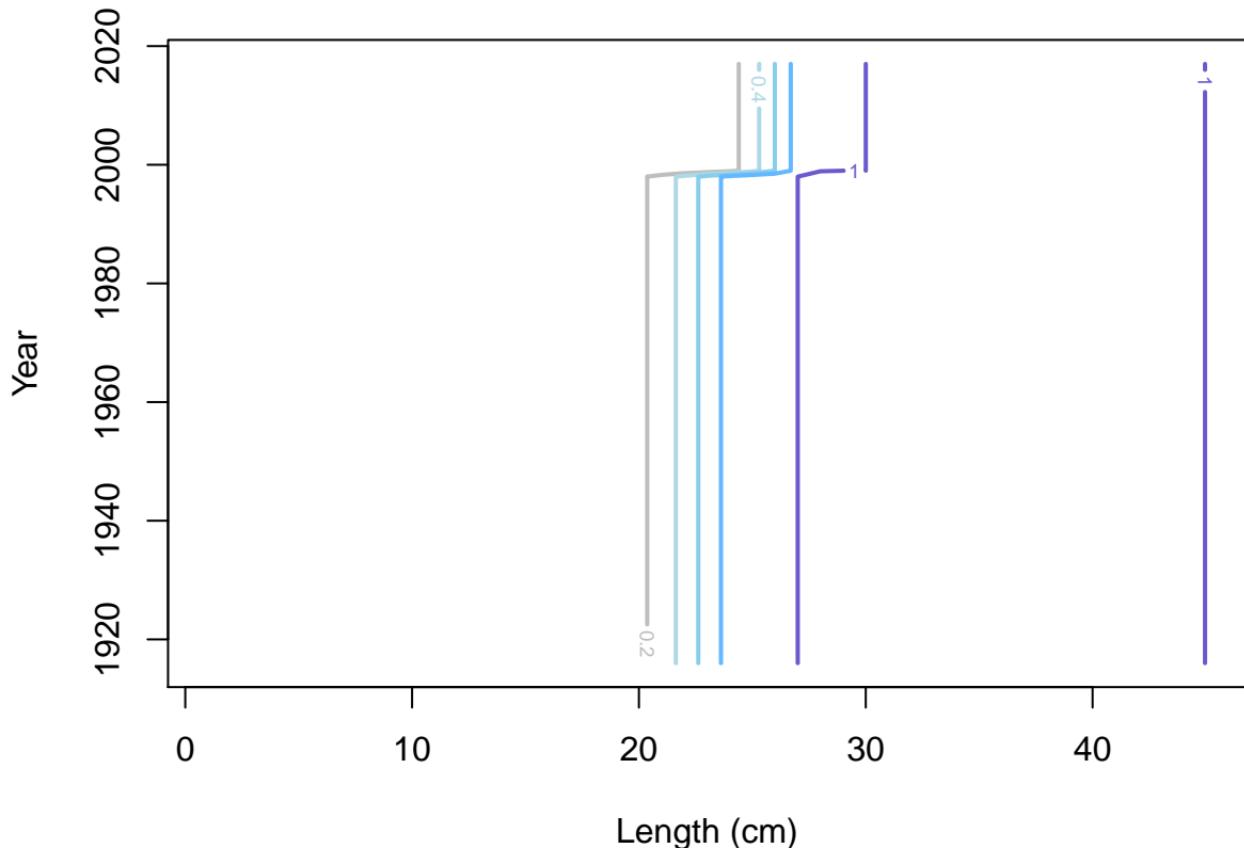
## Female ending year selectivity for ComNet



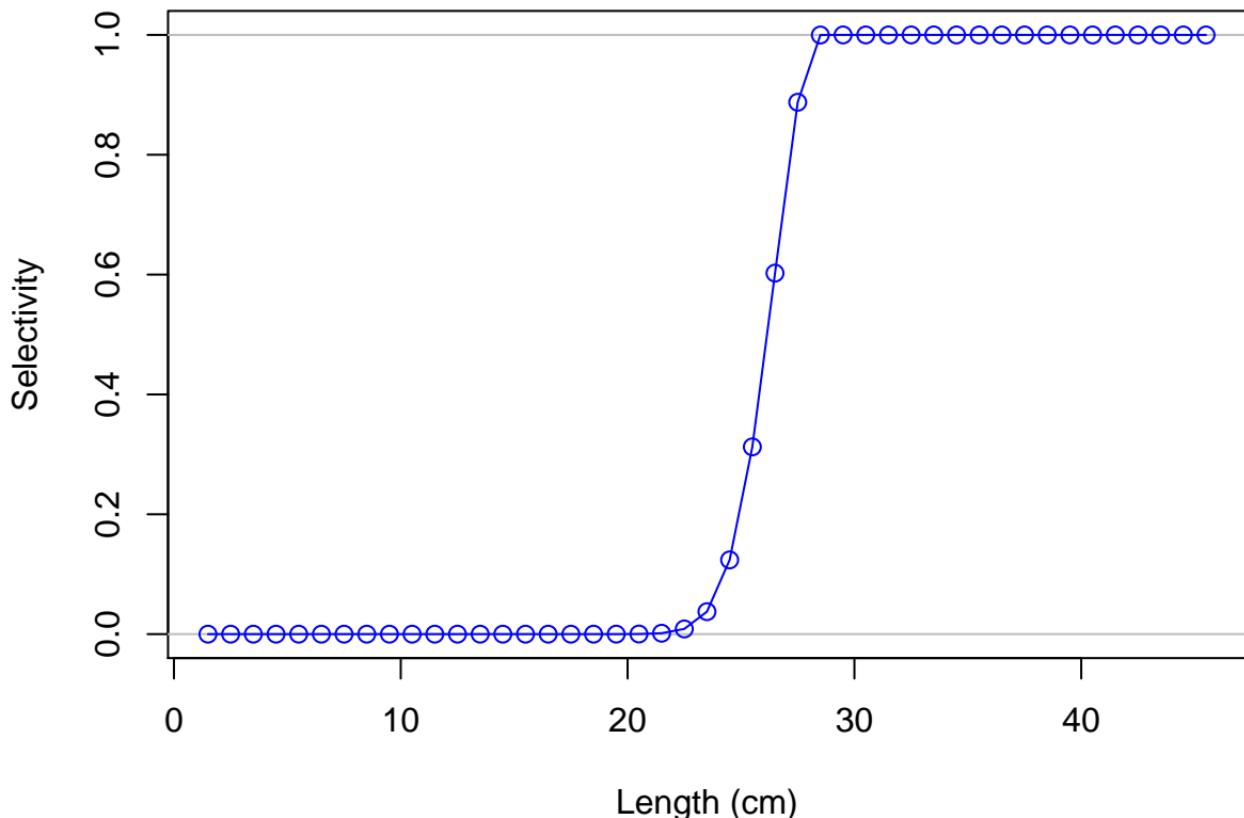
## Male time-varying selectivity for ComNet



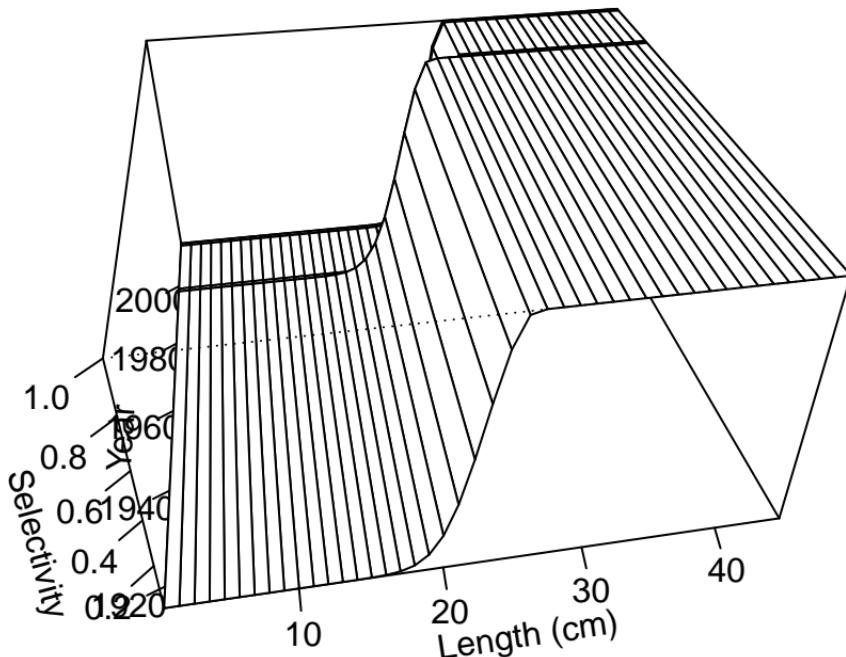
## Male time-varying selectivity for ComNet



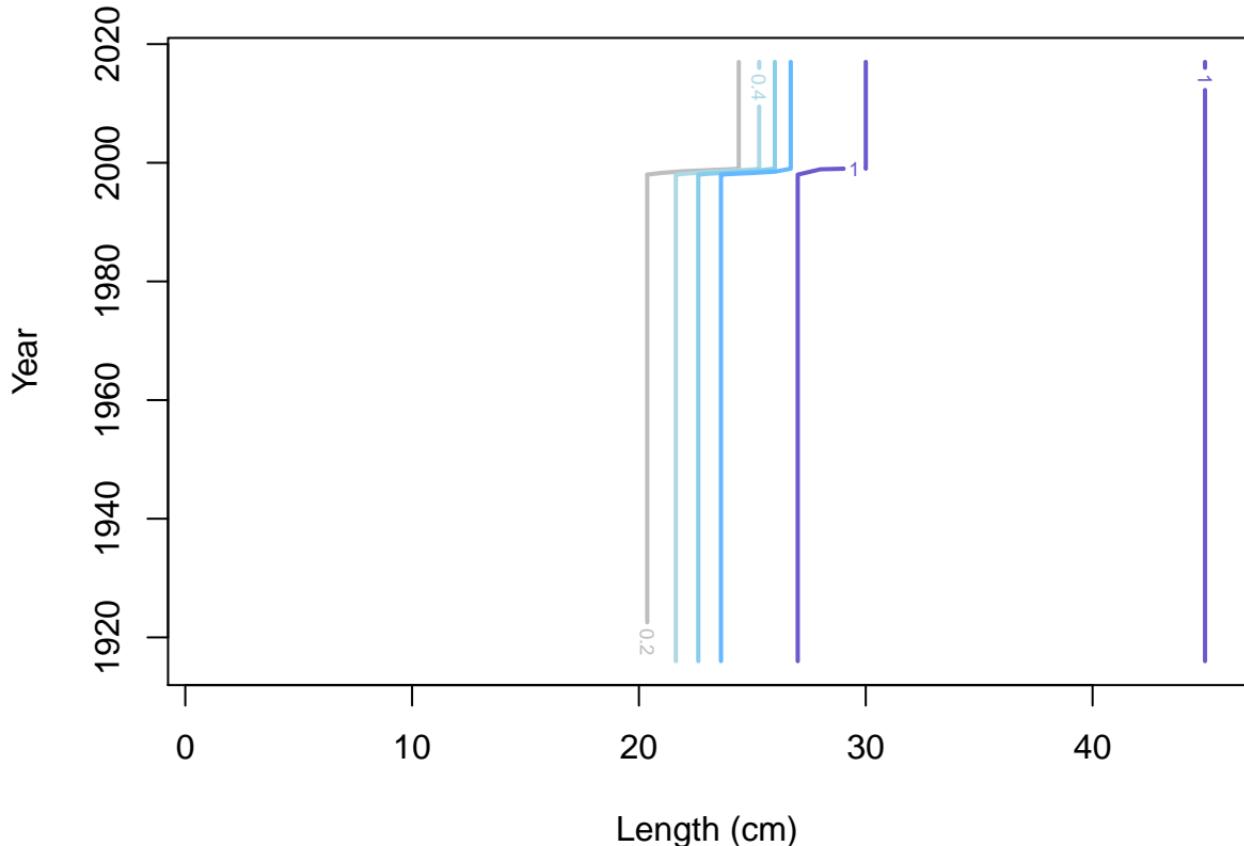
## Male ending year selectivity for ComNet



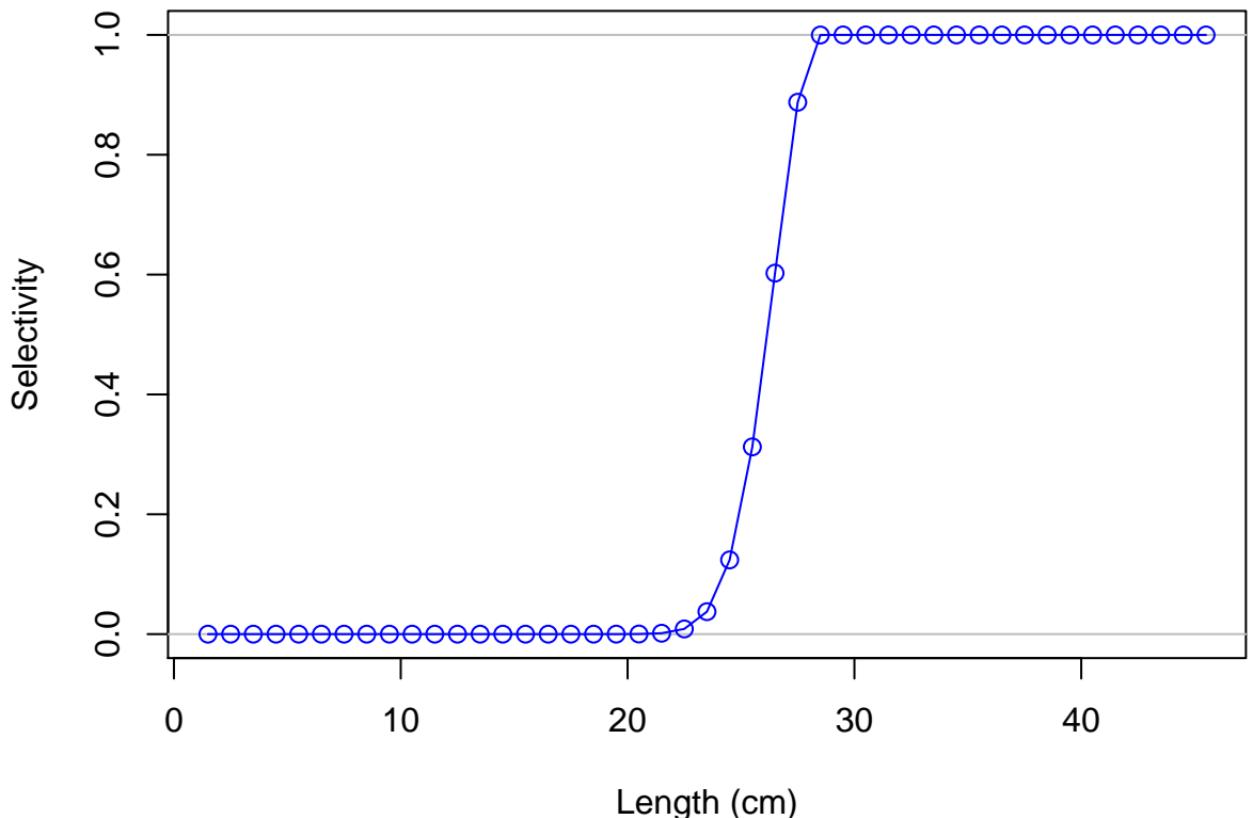
## Female time-varying selectivity for ComTrawl



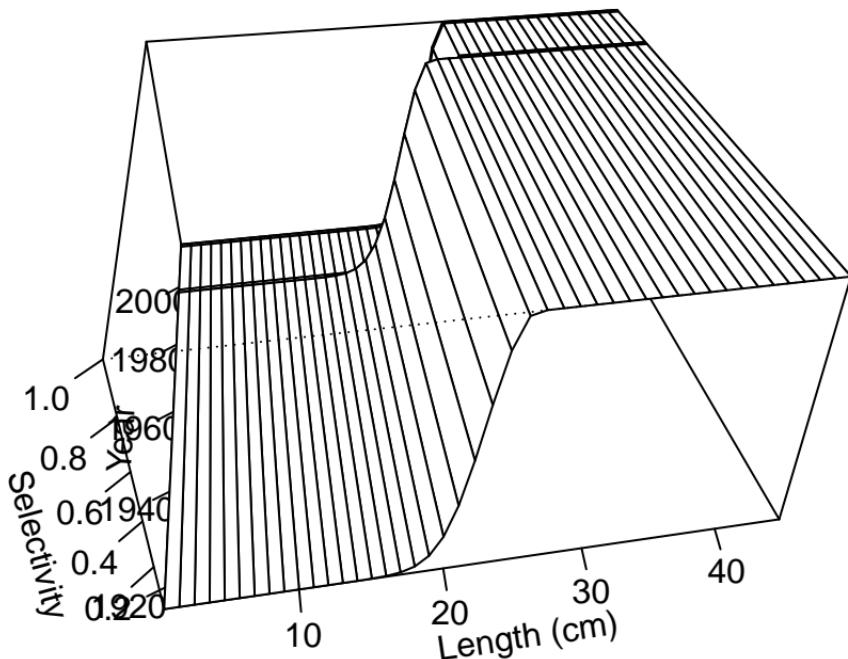
## Female time-varying selectivity for ComTrawl



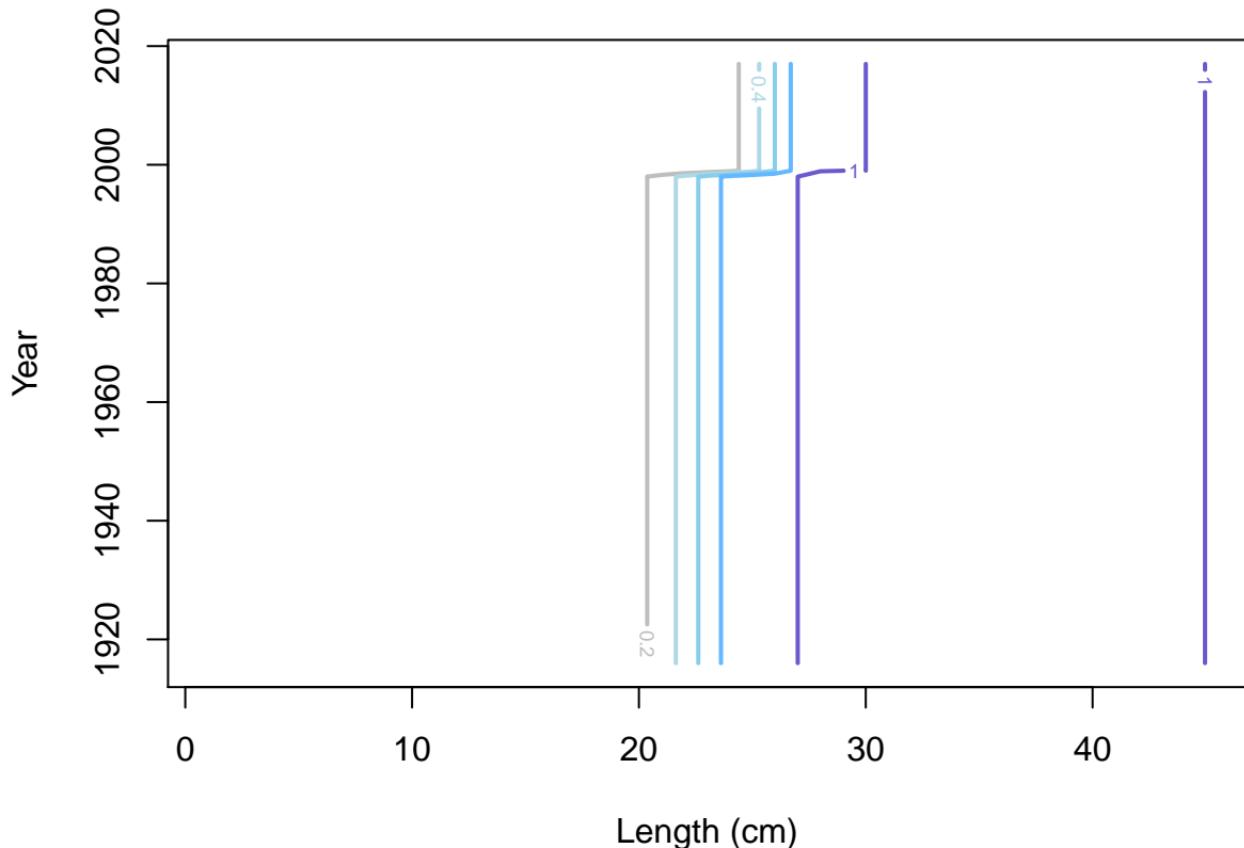
## Female ending year selectivity for ComTrawl



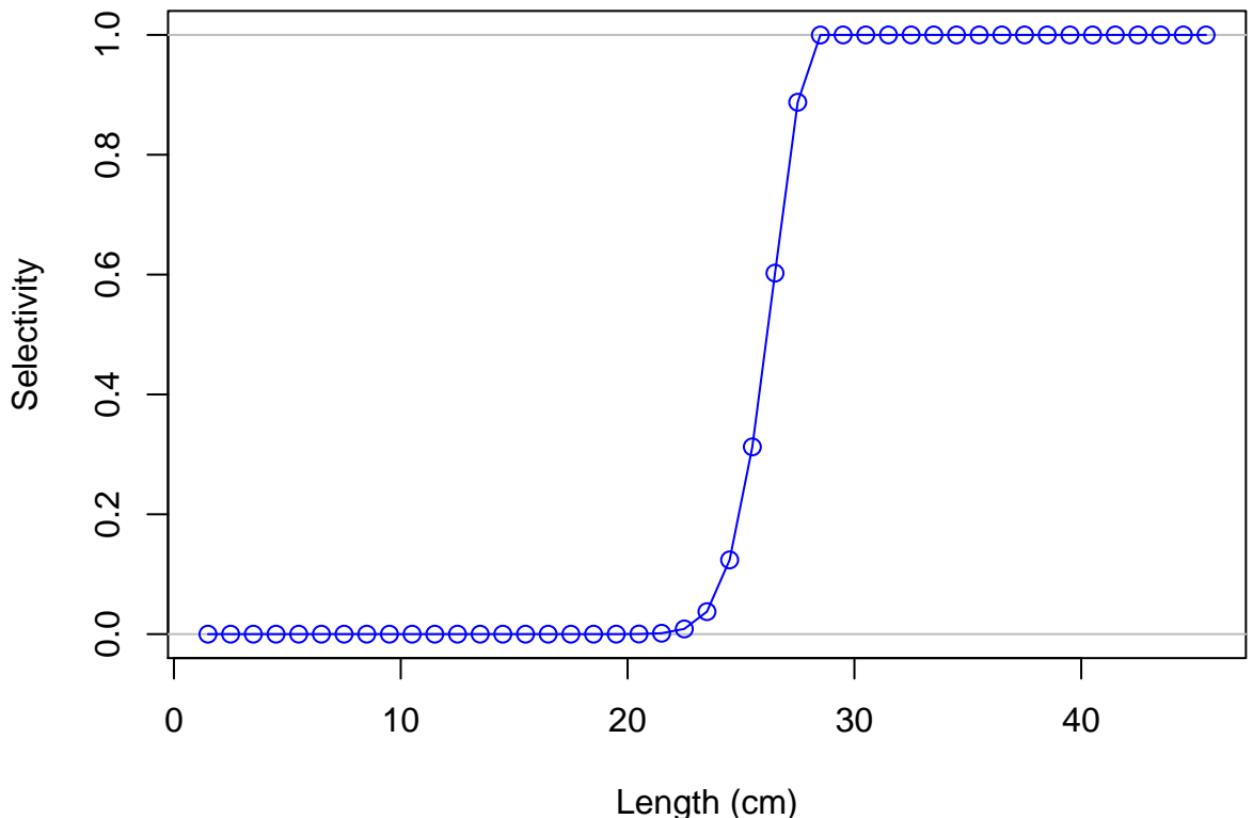
## Male time-varying selectivity for ComTrawl



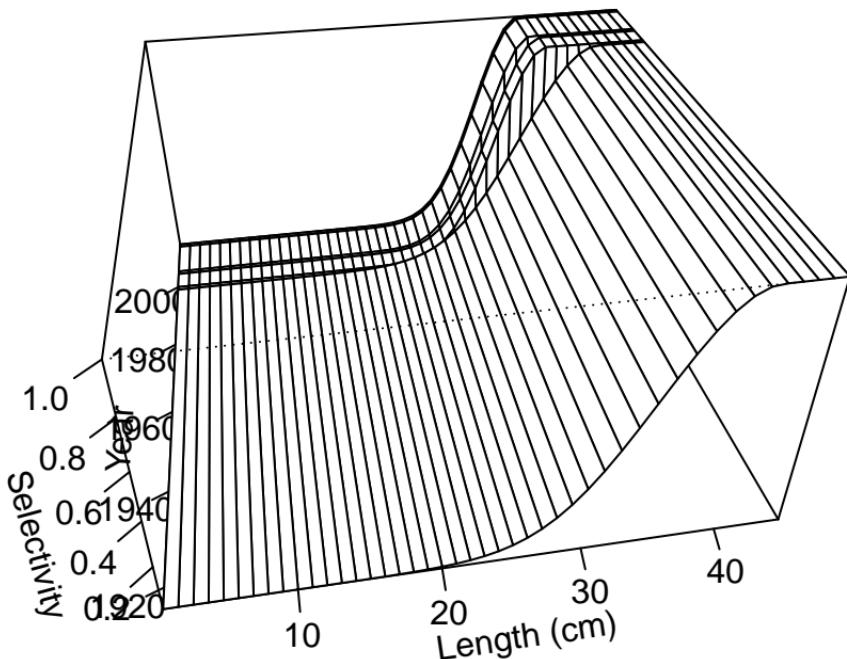
## Male time-varying selectivity for ComTrawl



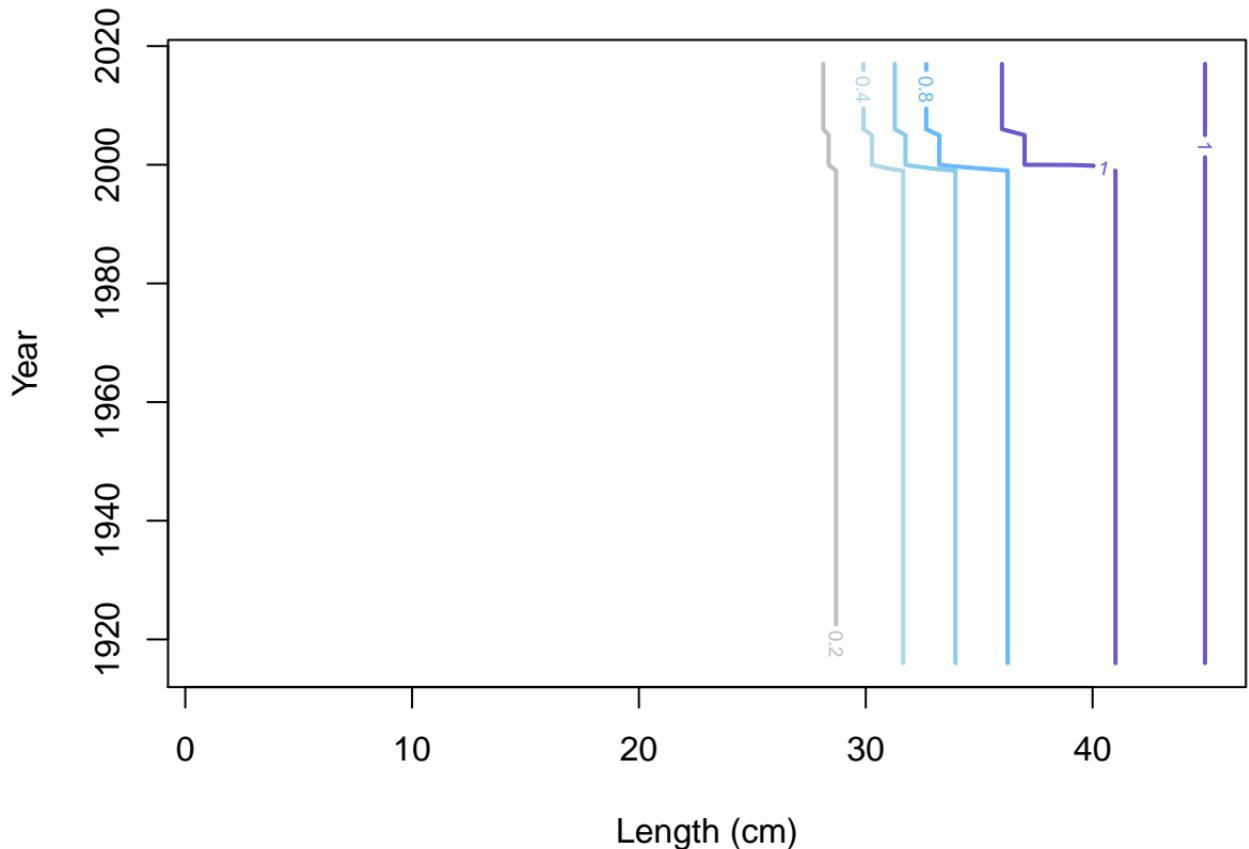
## Male ending year selectivity for ComTrawl



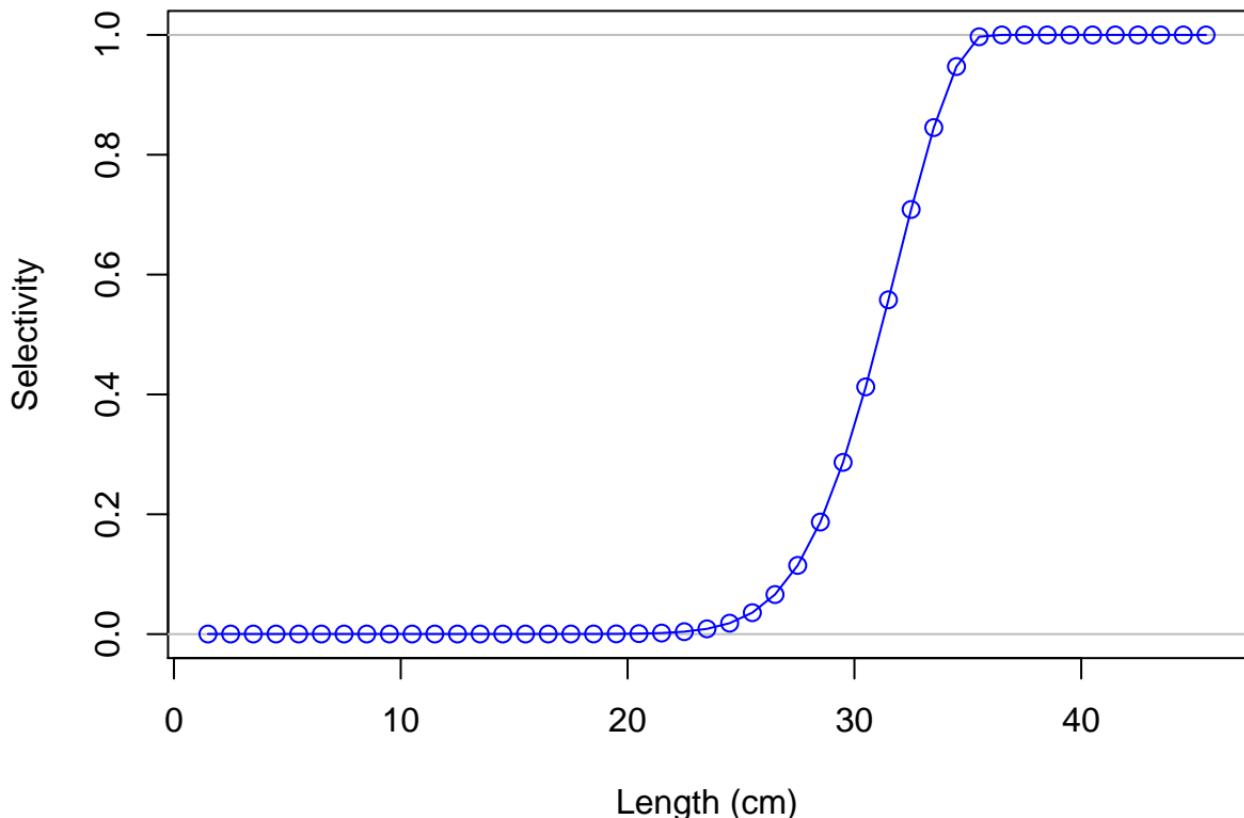
## Female time-varying selectivity for RecPR



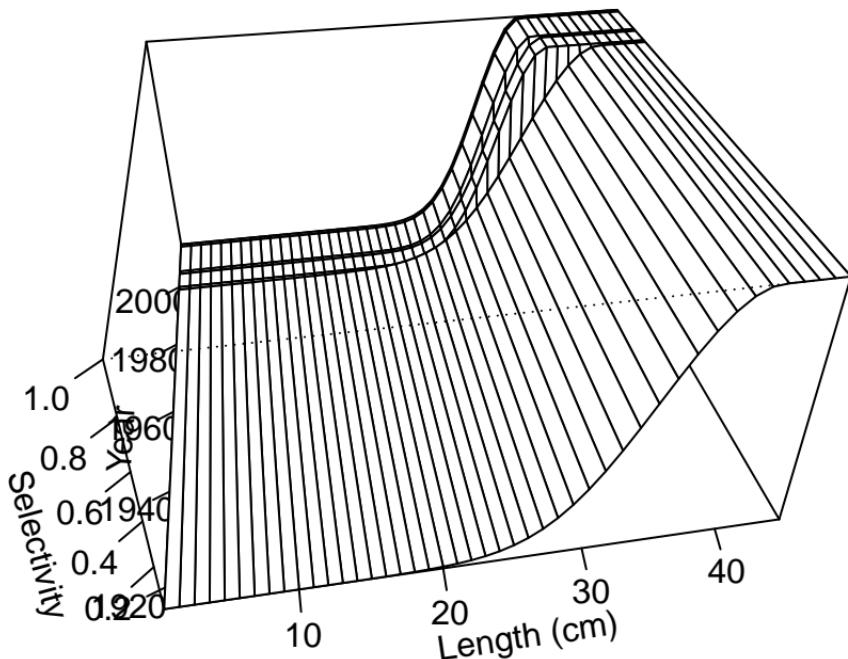
## Female time-varying selectivity for RecPR



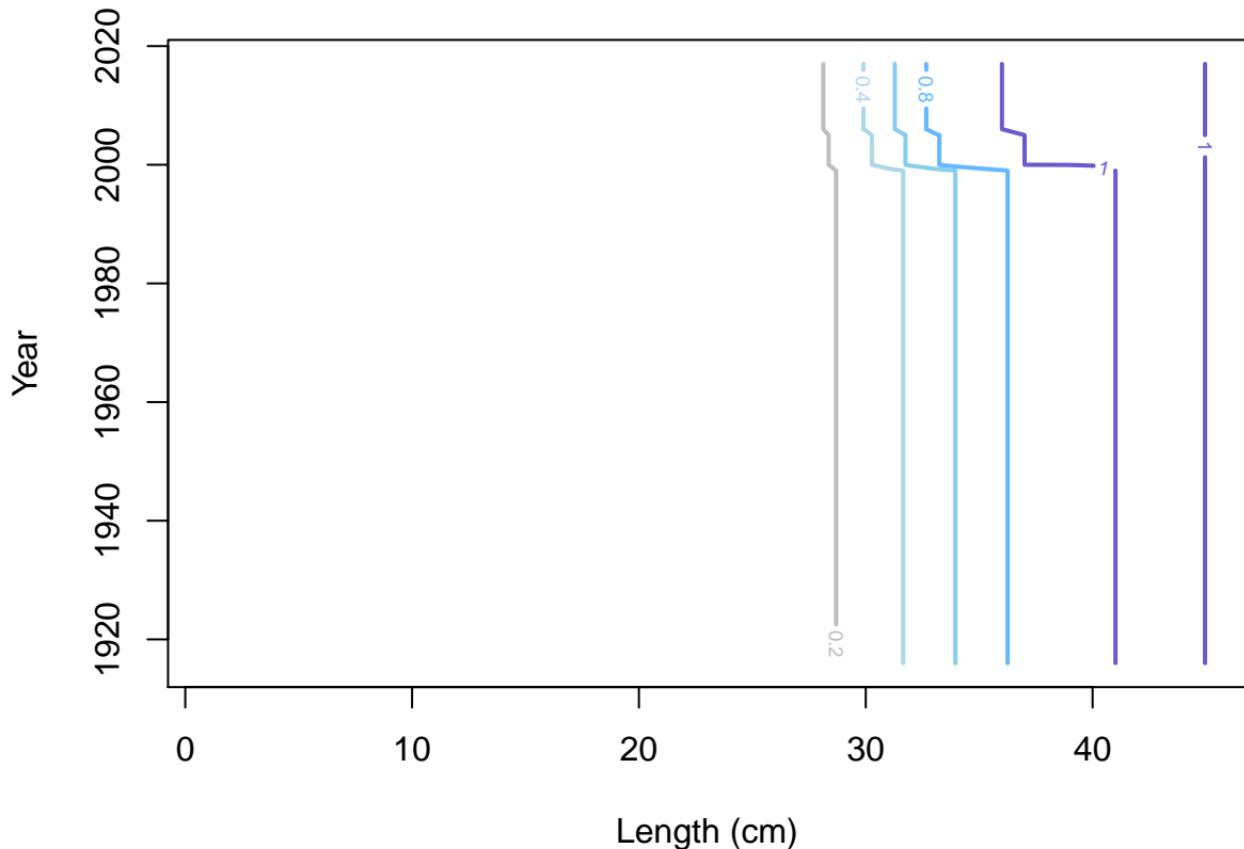
## Female ending year selectivity for RecPR



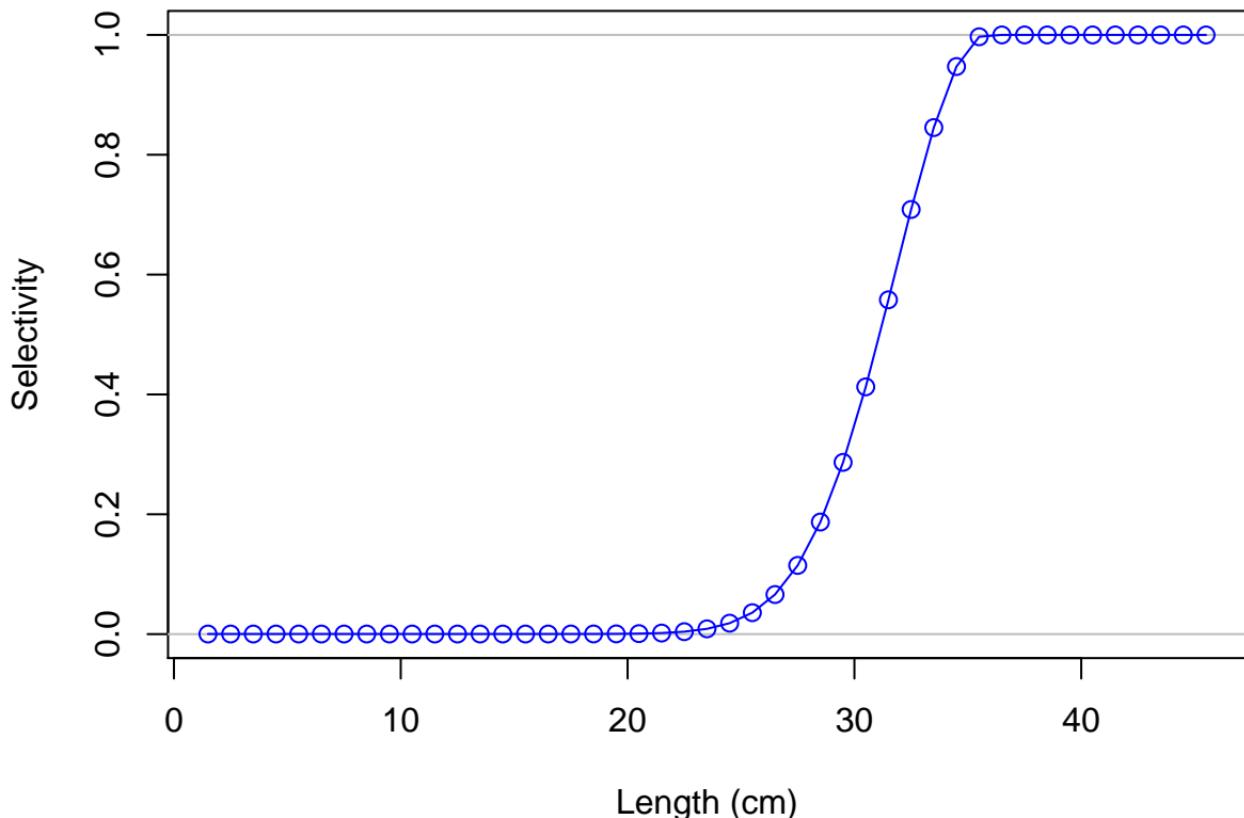
## Male time-varying selectivity for RecPR



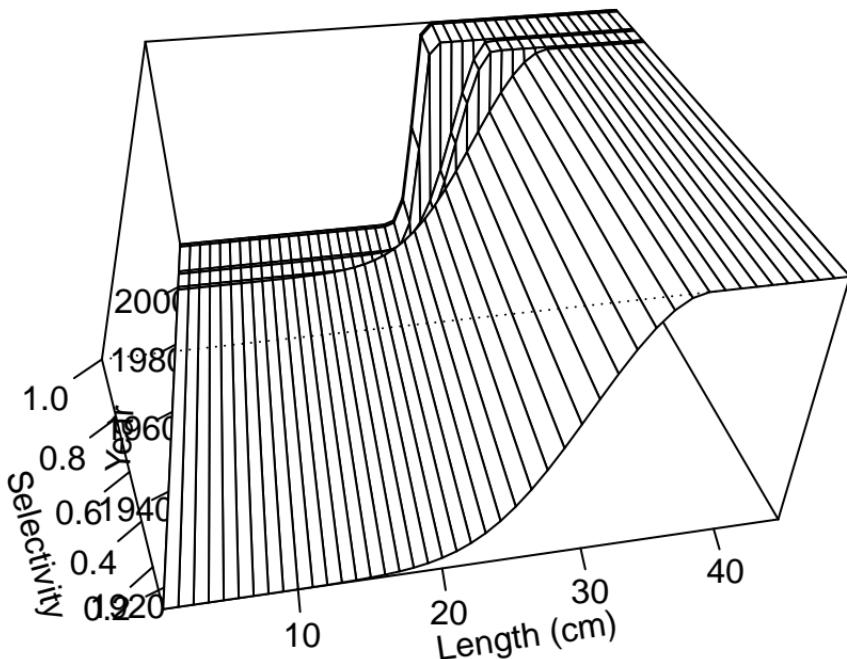
## Male time-varying selectivity for RecPR



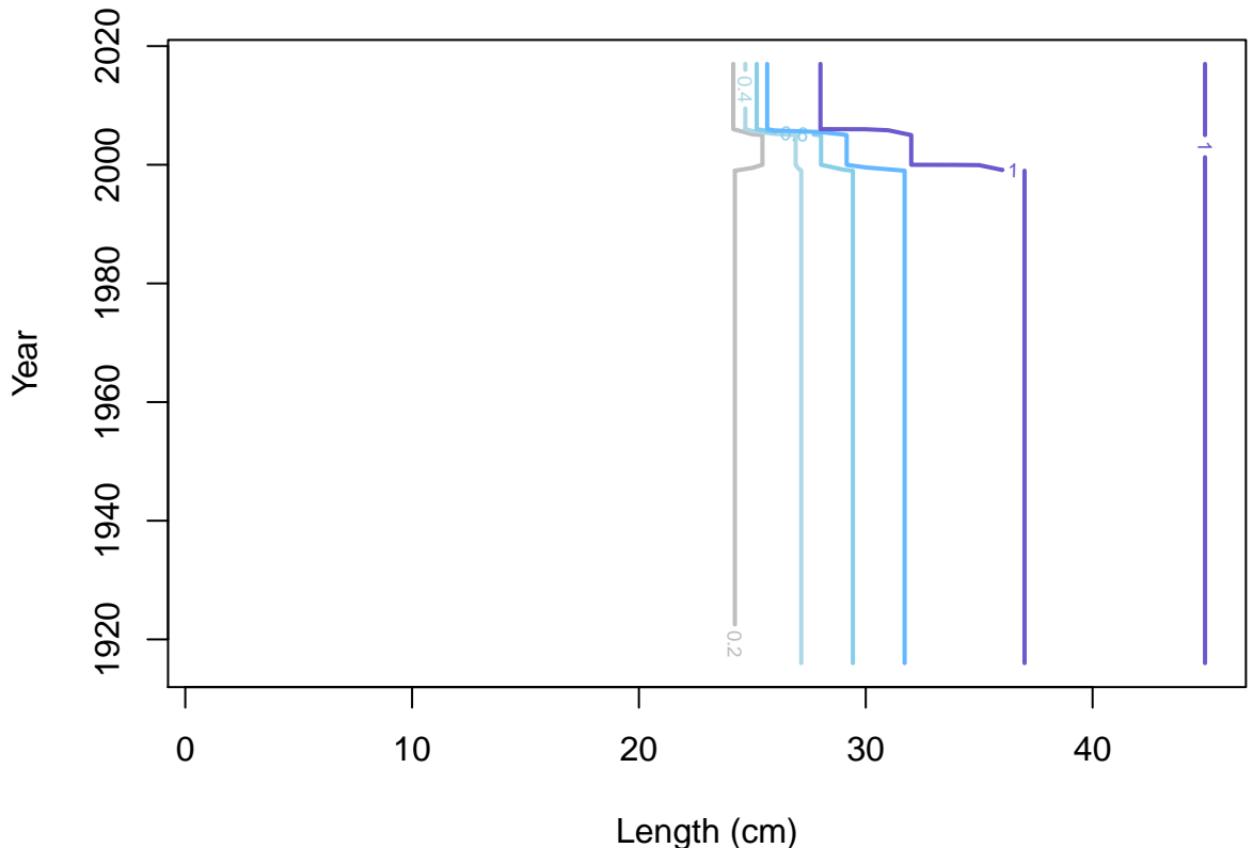
## Male ending year selectivity for RecPR



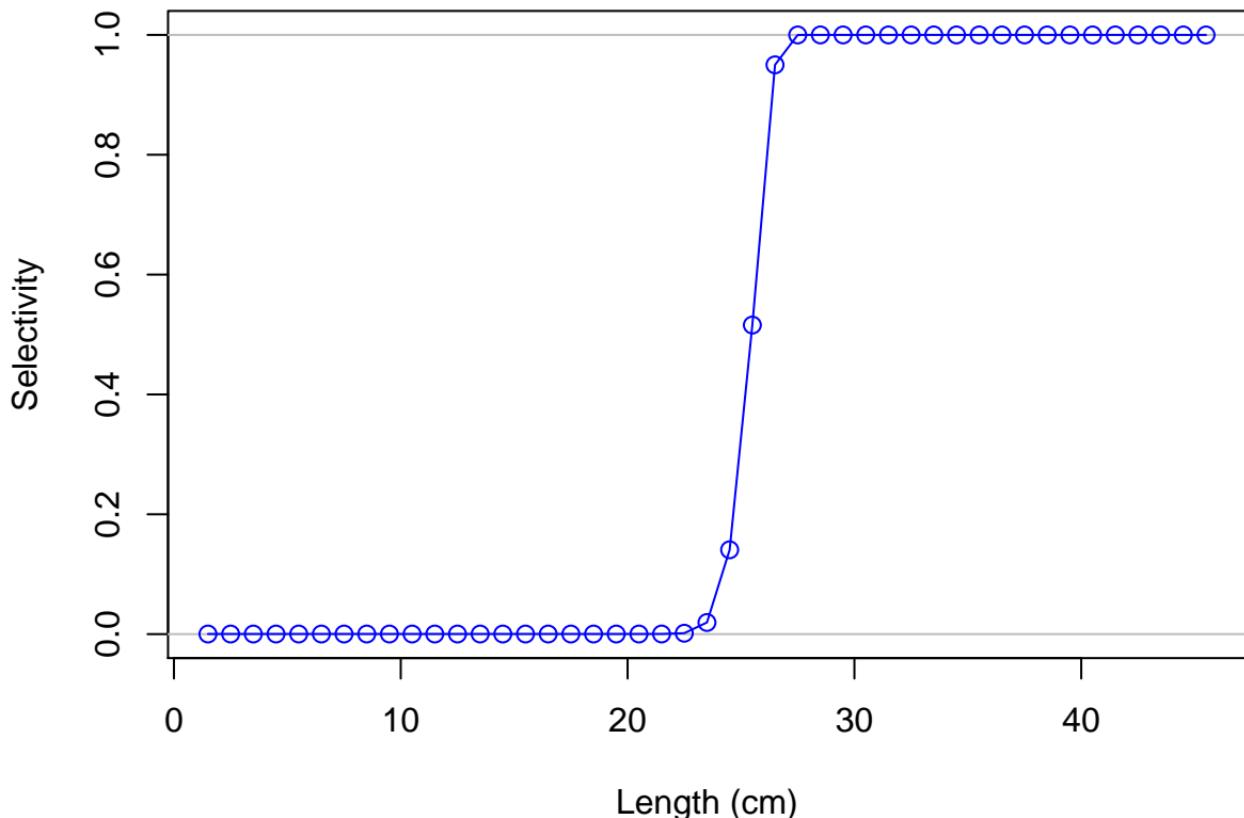
## Female time-varying selectivity for RecPC



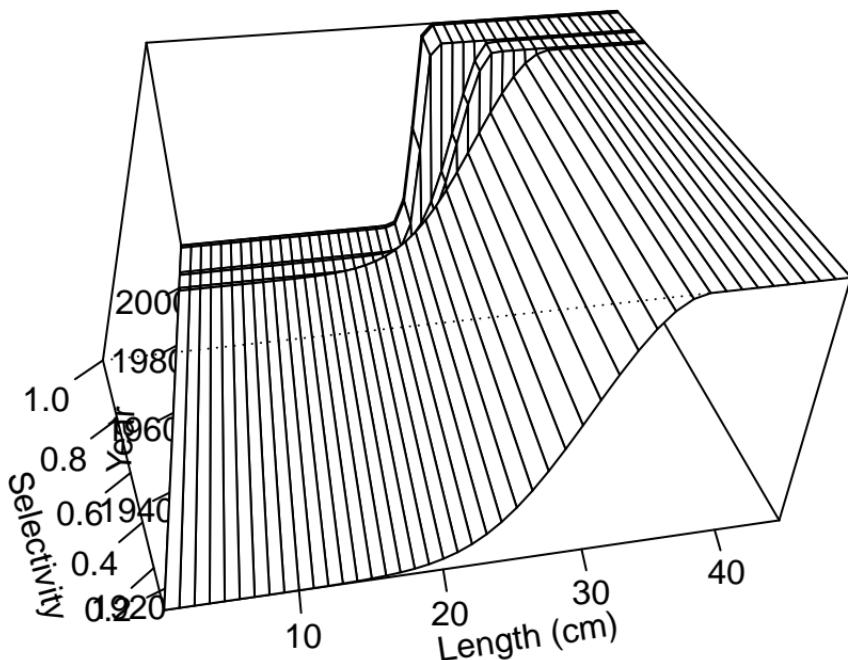
## Female time-varying selectivity for RecPC



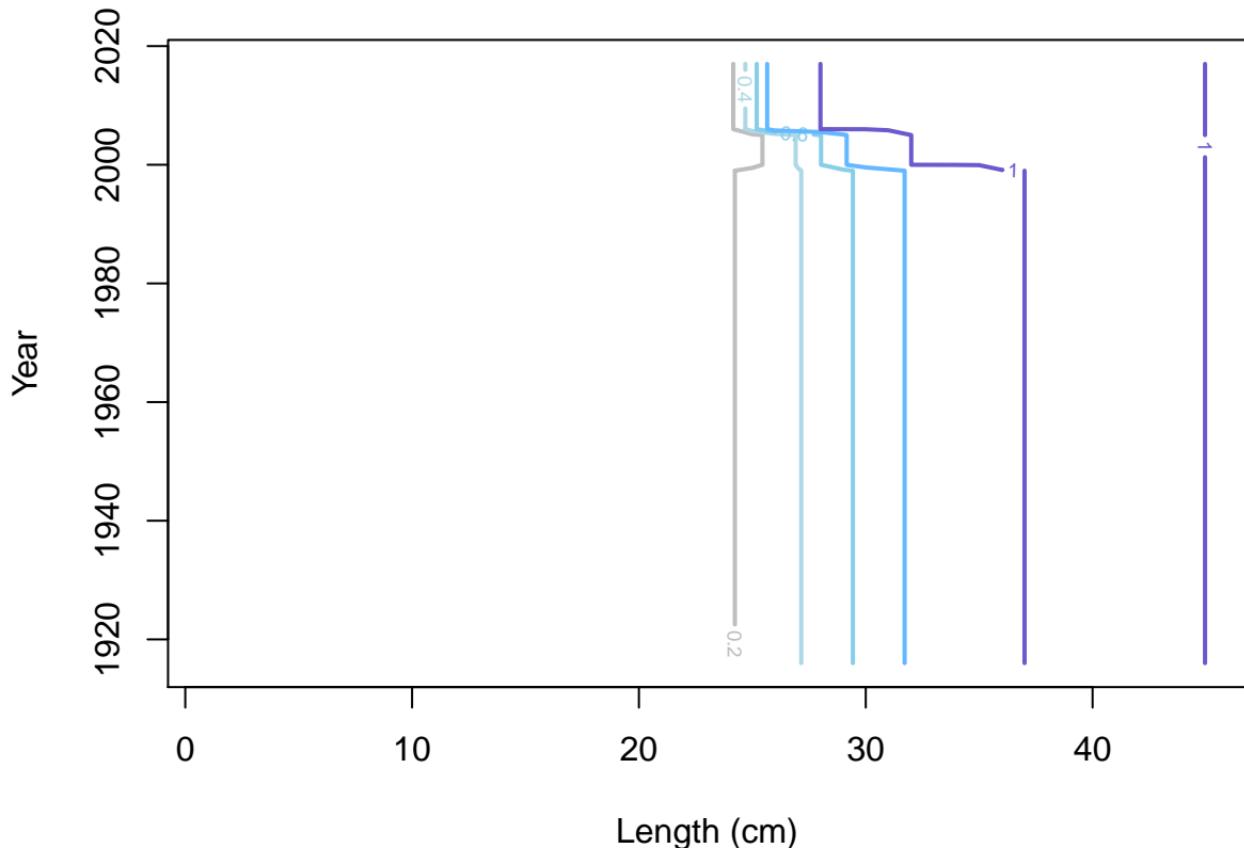
## Female ending year selectivity for RecPC



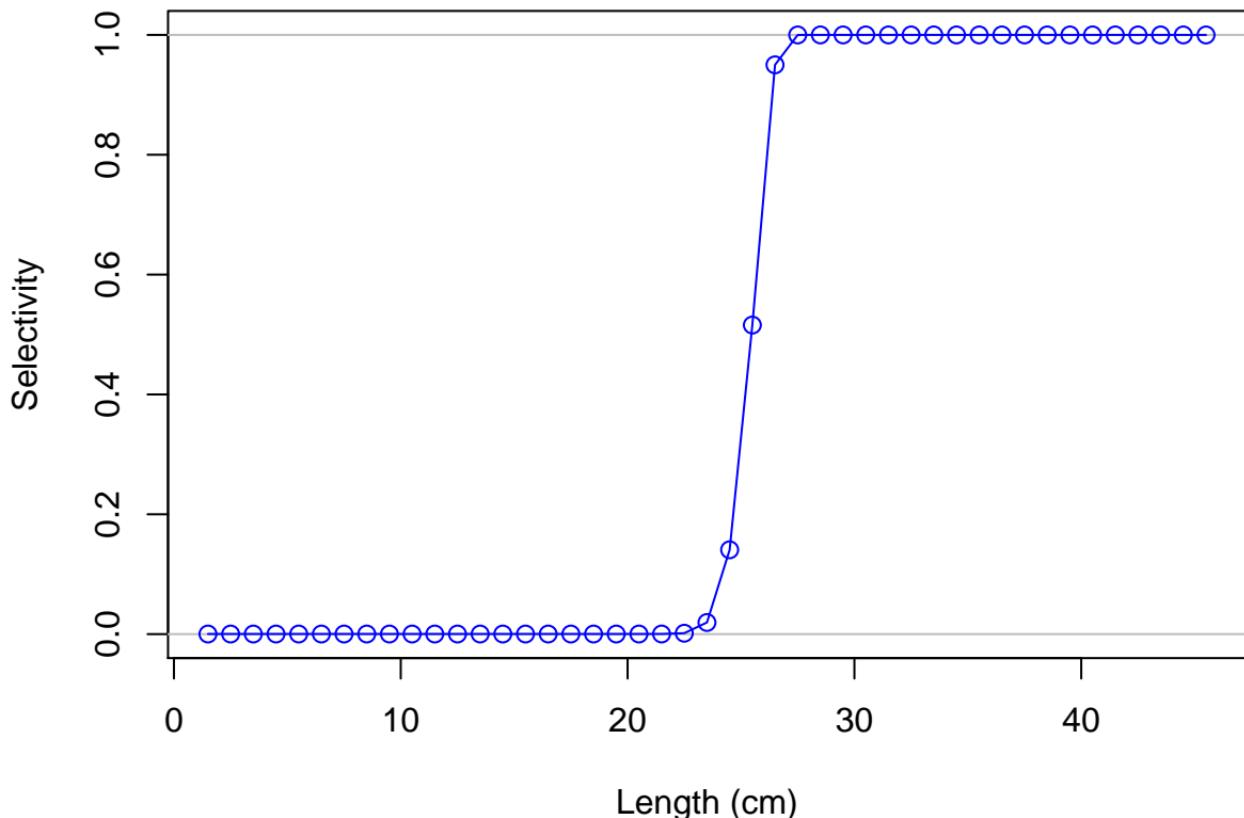
## Male time-varying selectivity for RecPC



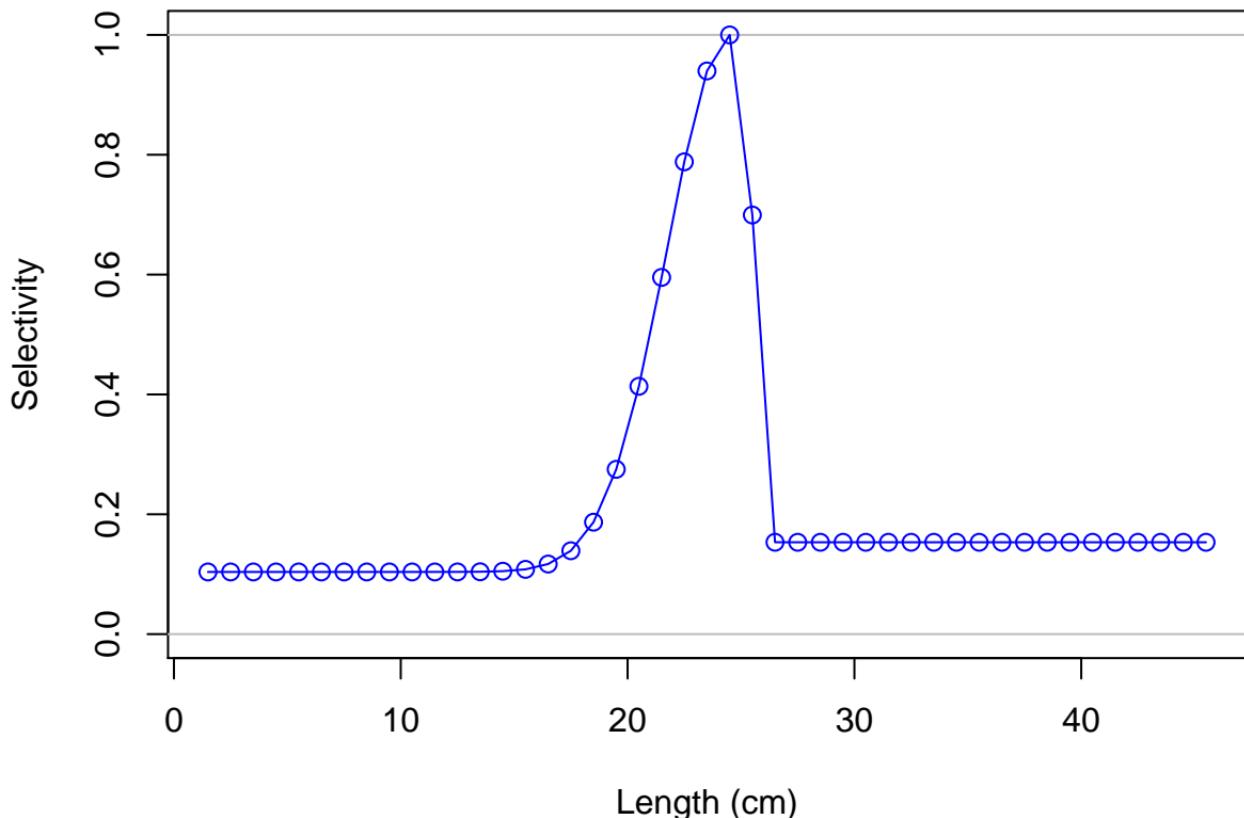
## Male time-varying selectivity for RecPC



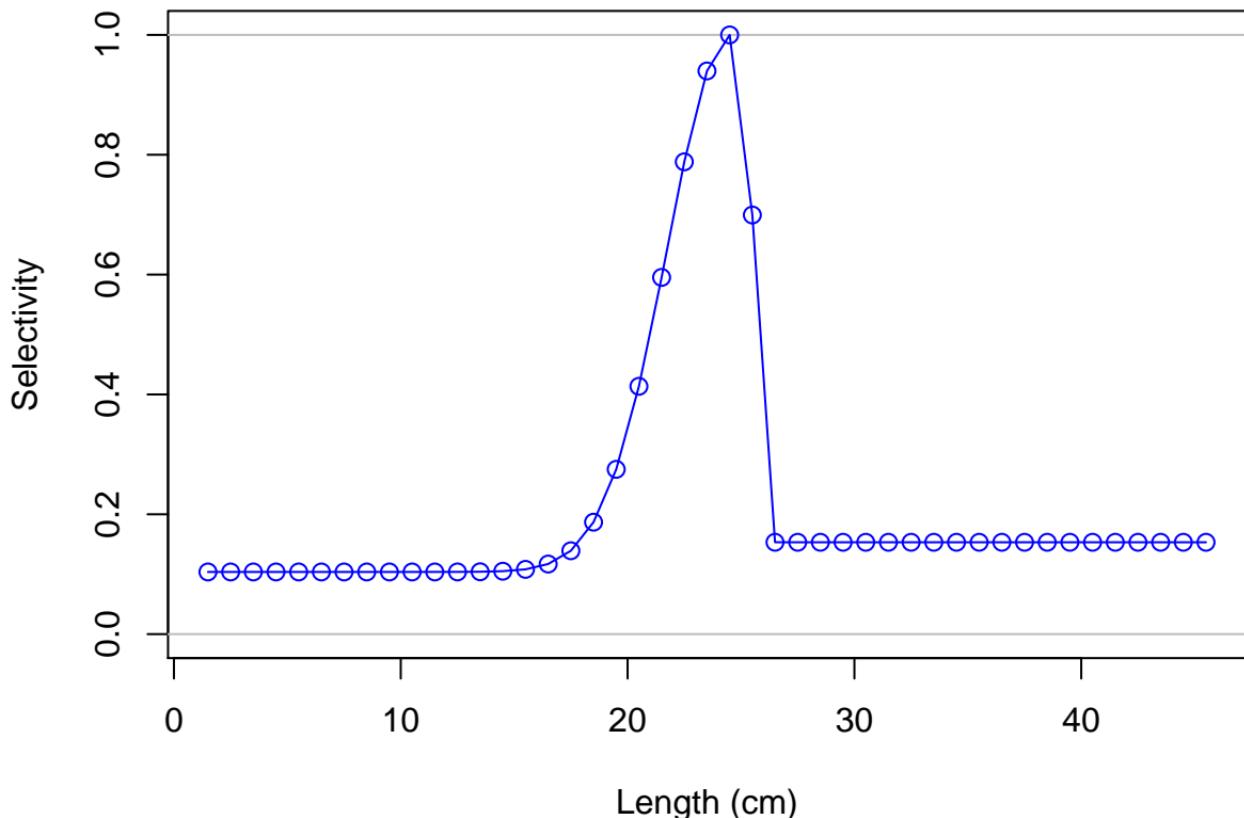
## Male ending year selectivity for RecPC



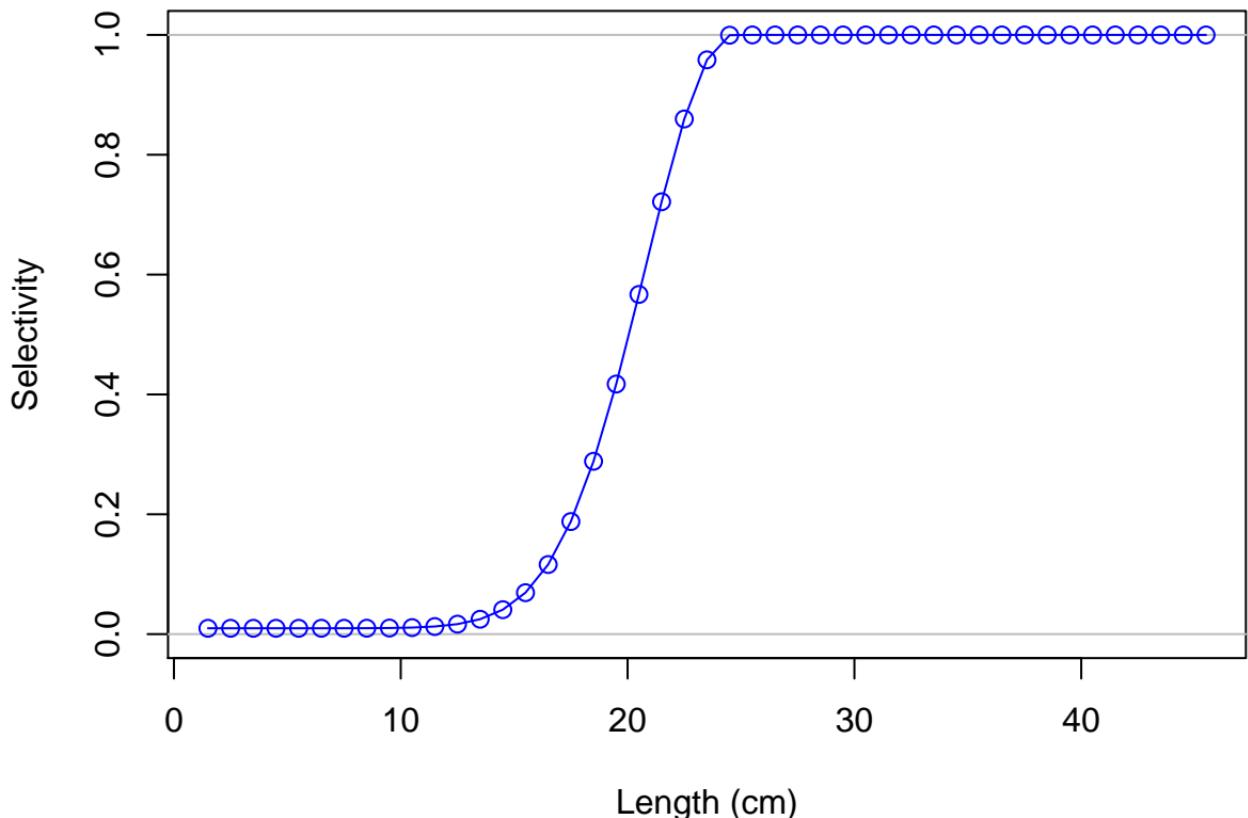
## Female ending year selectivity for RecDD



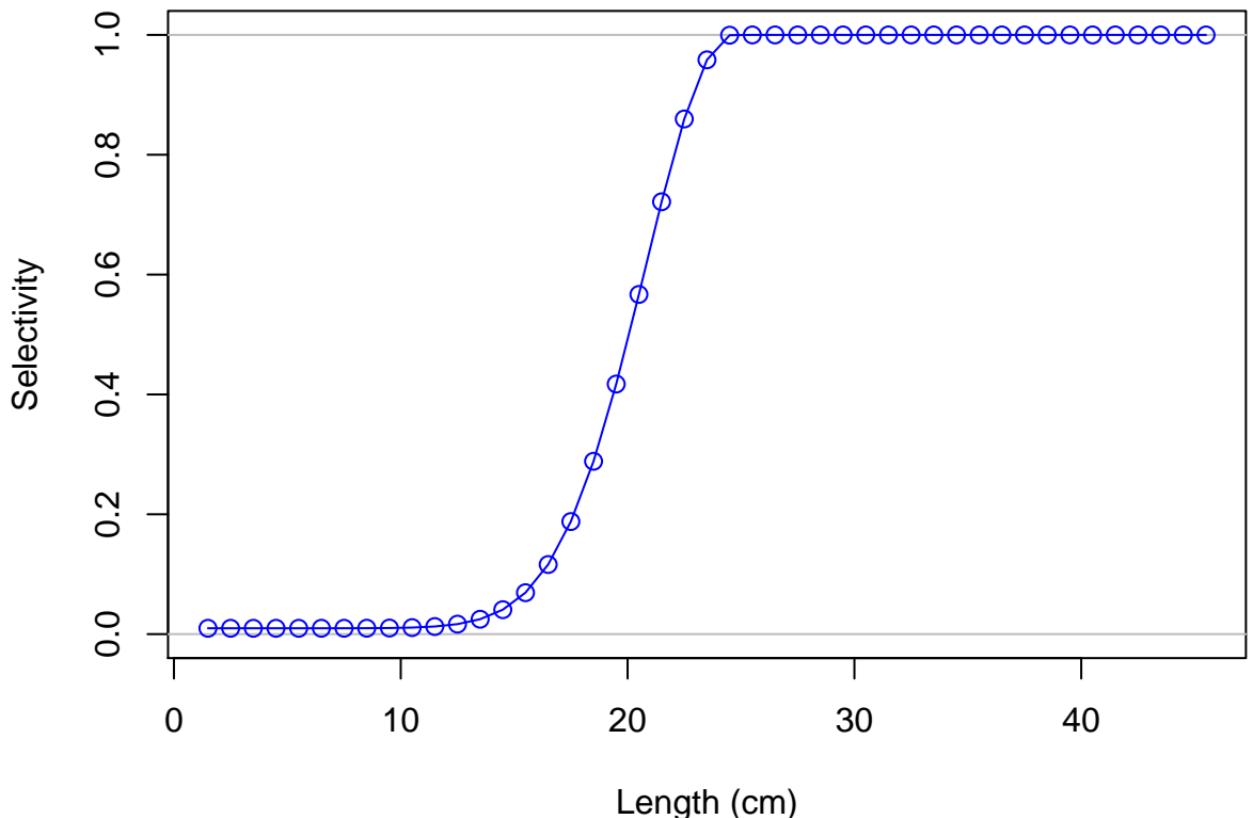
## Male ending year selectivity for RecDD



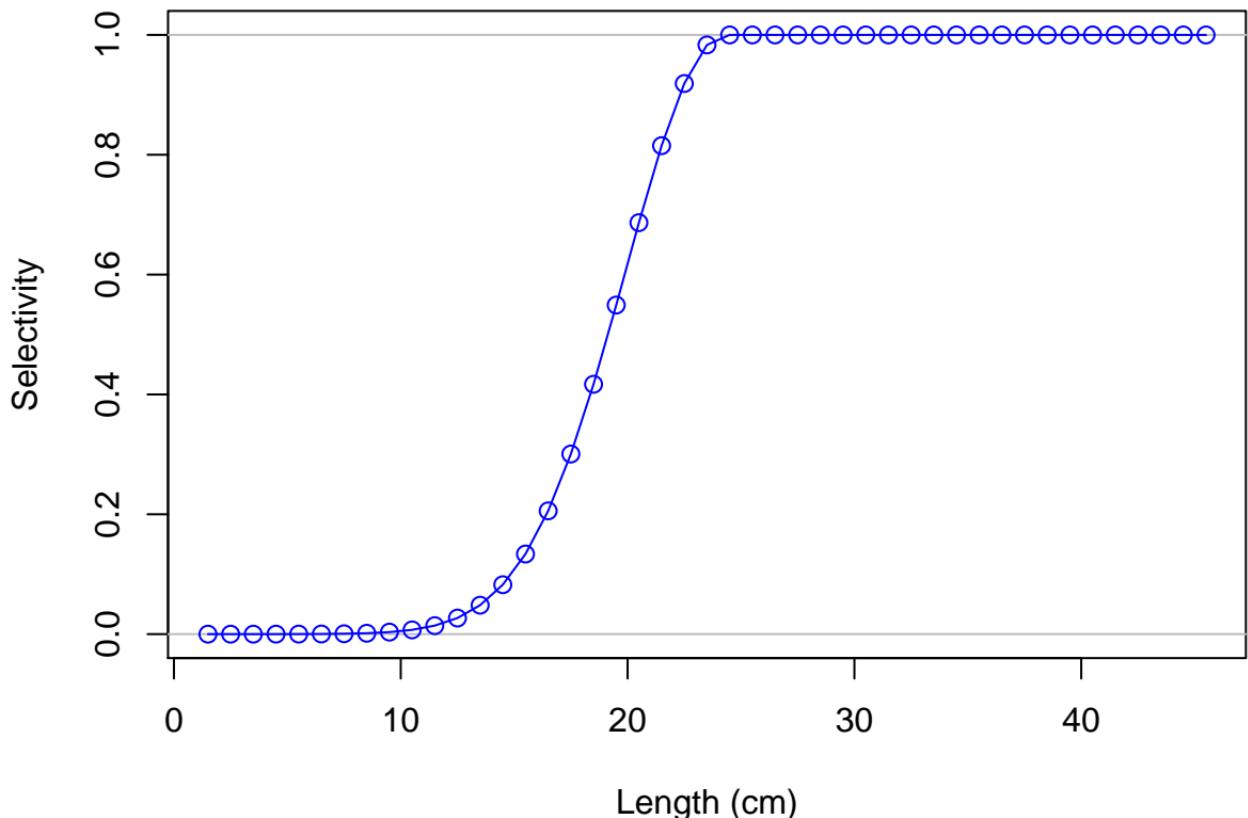
## Female ending year selectivity for Sanitation



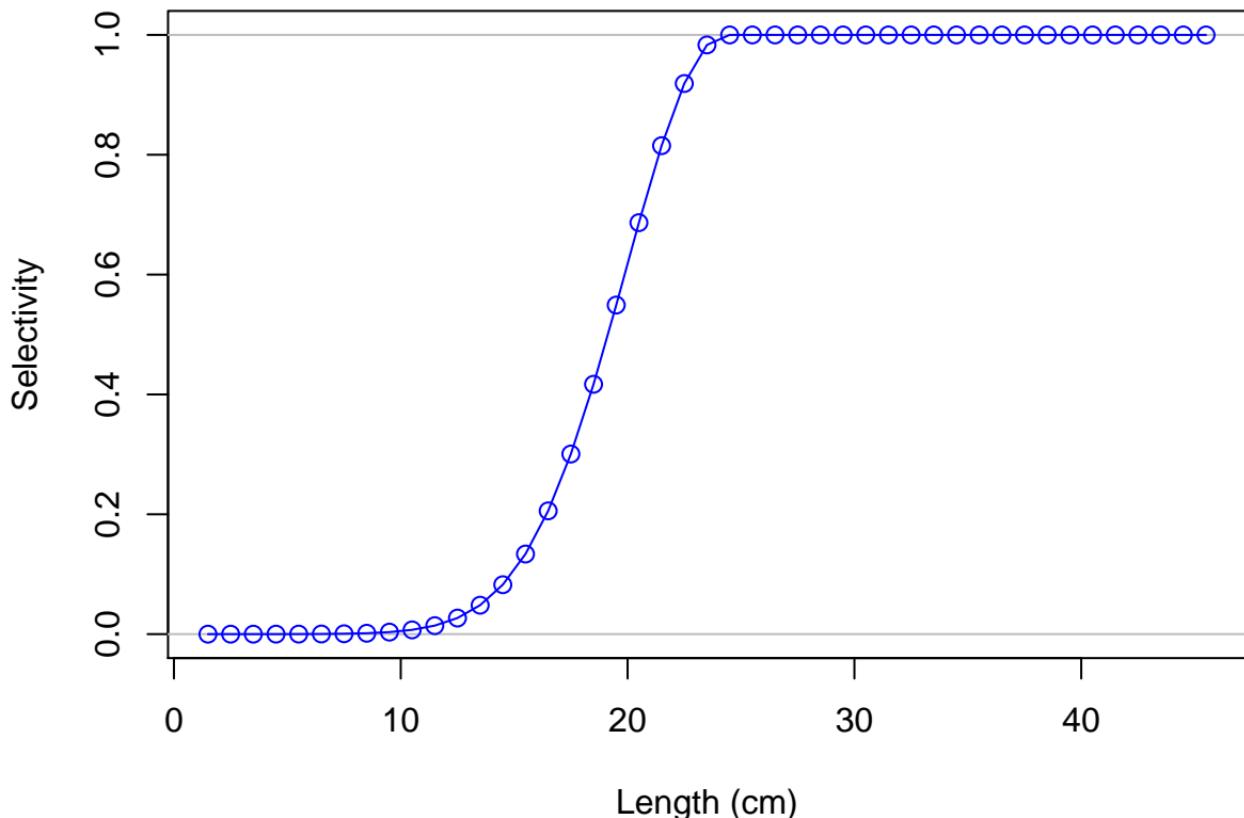
## Male ending year selectivity for Sanitation



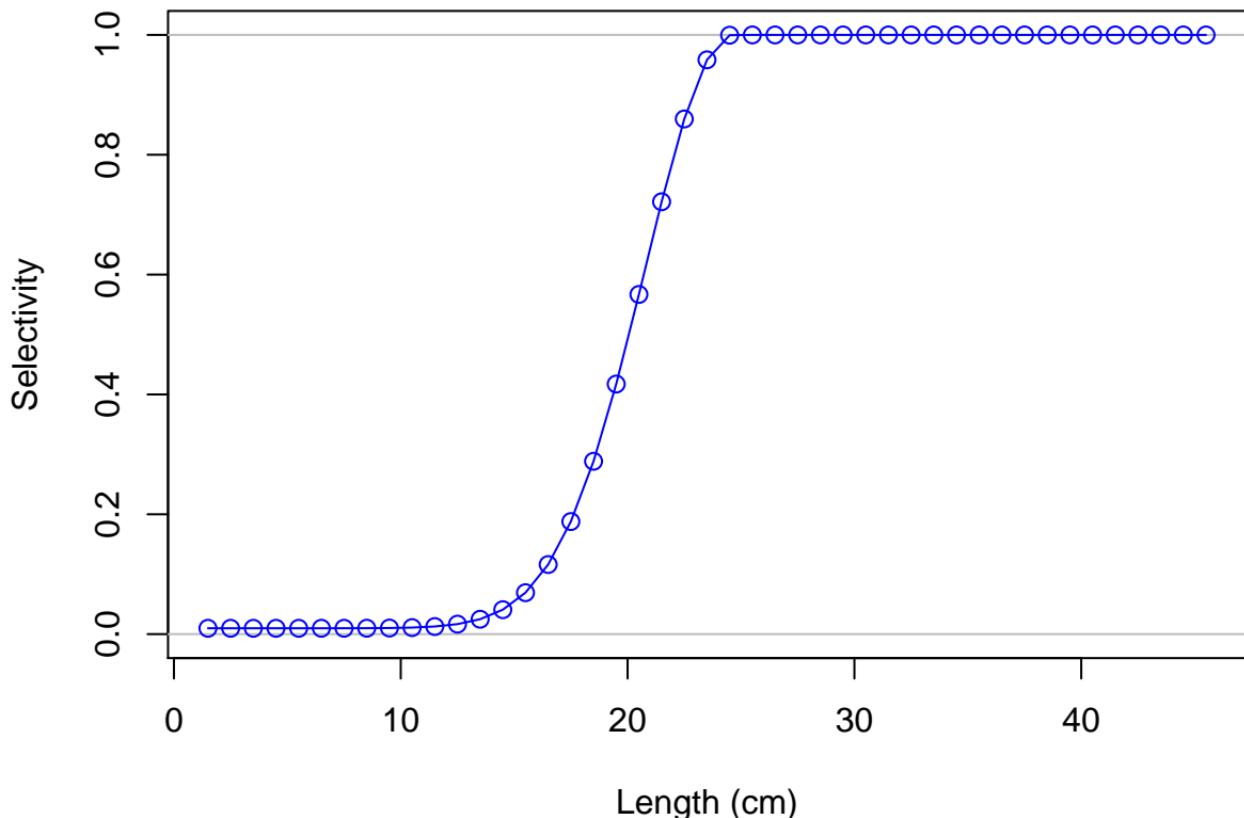
## Female ending year selectivity for NWFSC Trawl



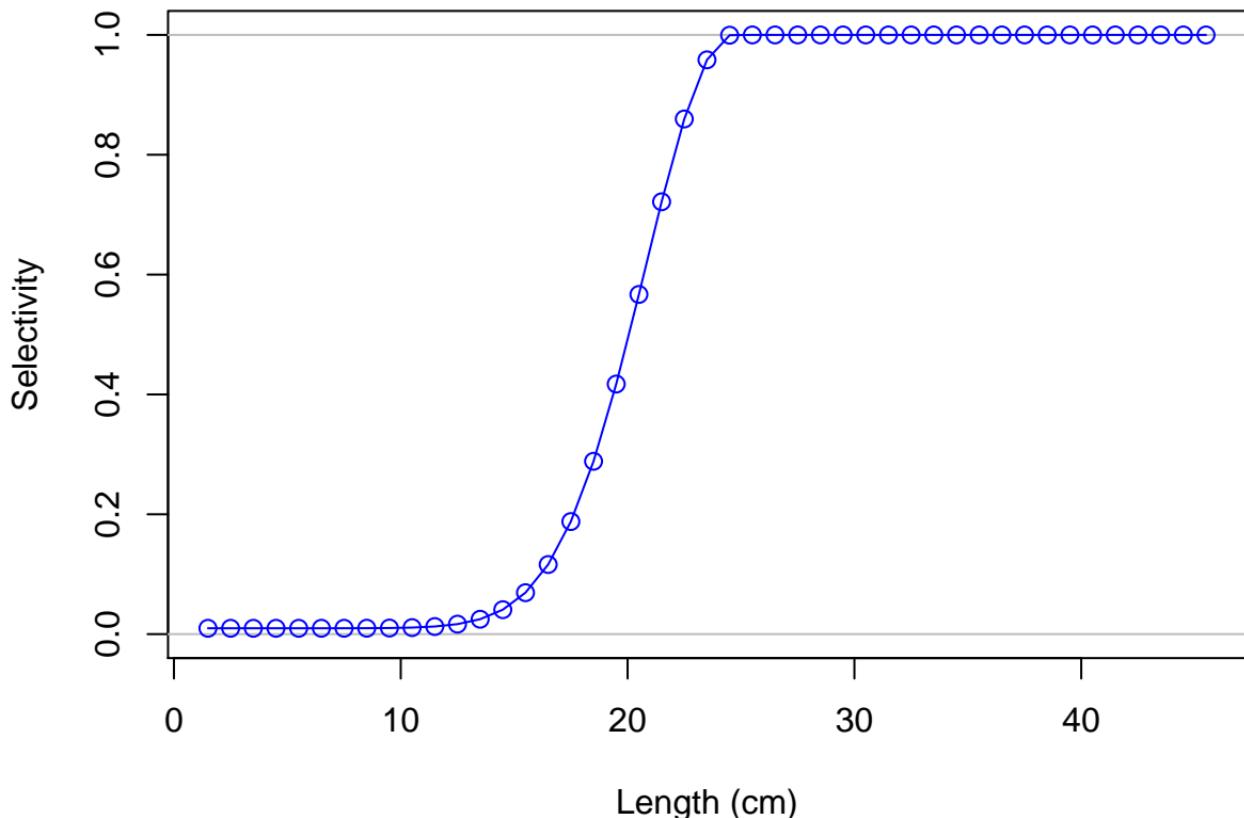
## Male ending year selectivity for NWFSC Trawl



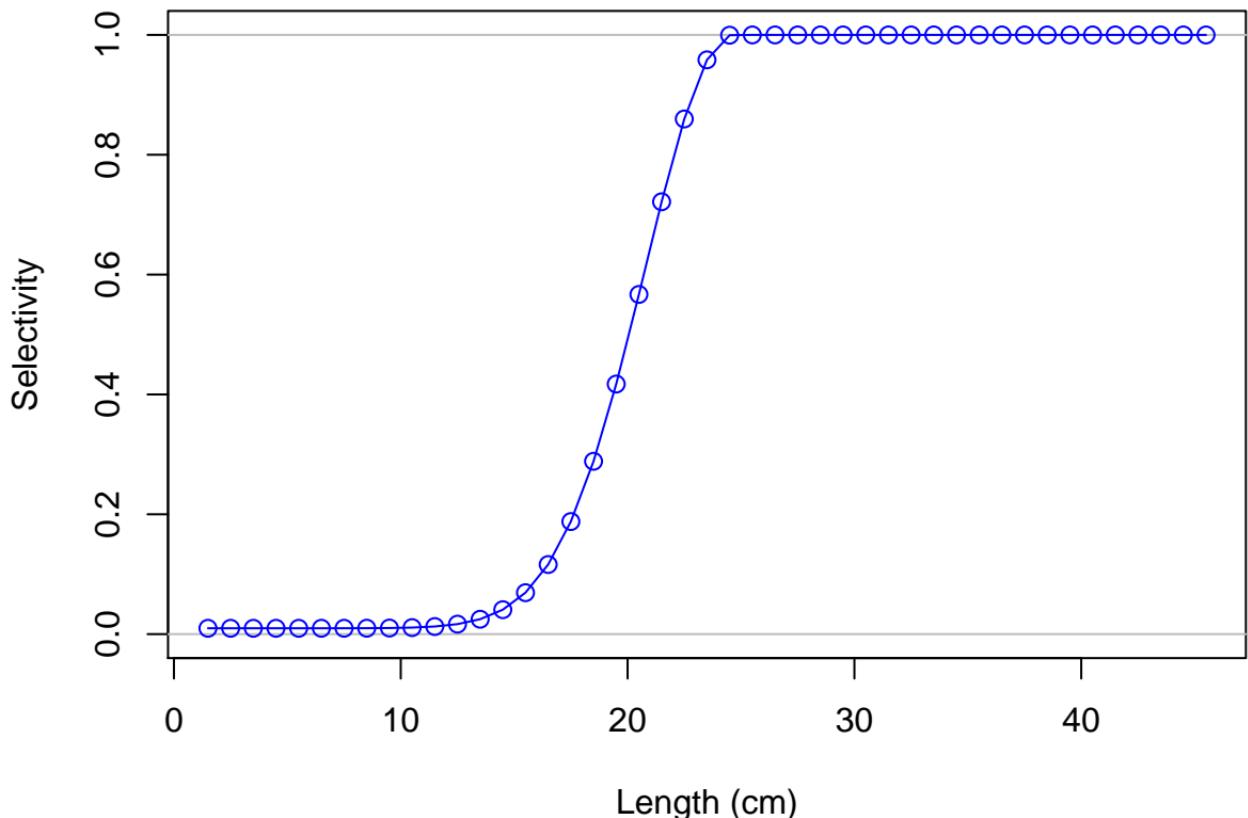
## Female ending year selectivity for GillnetSurvey



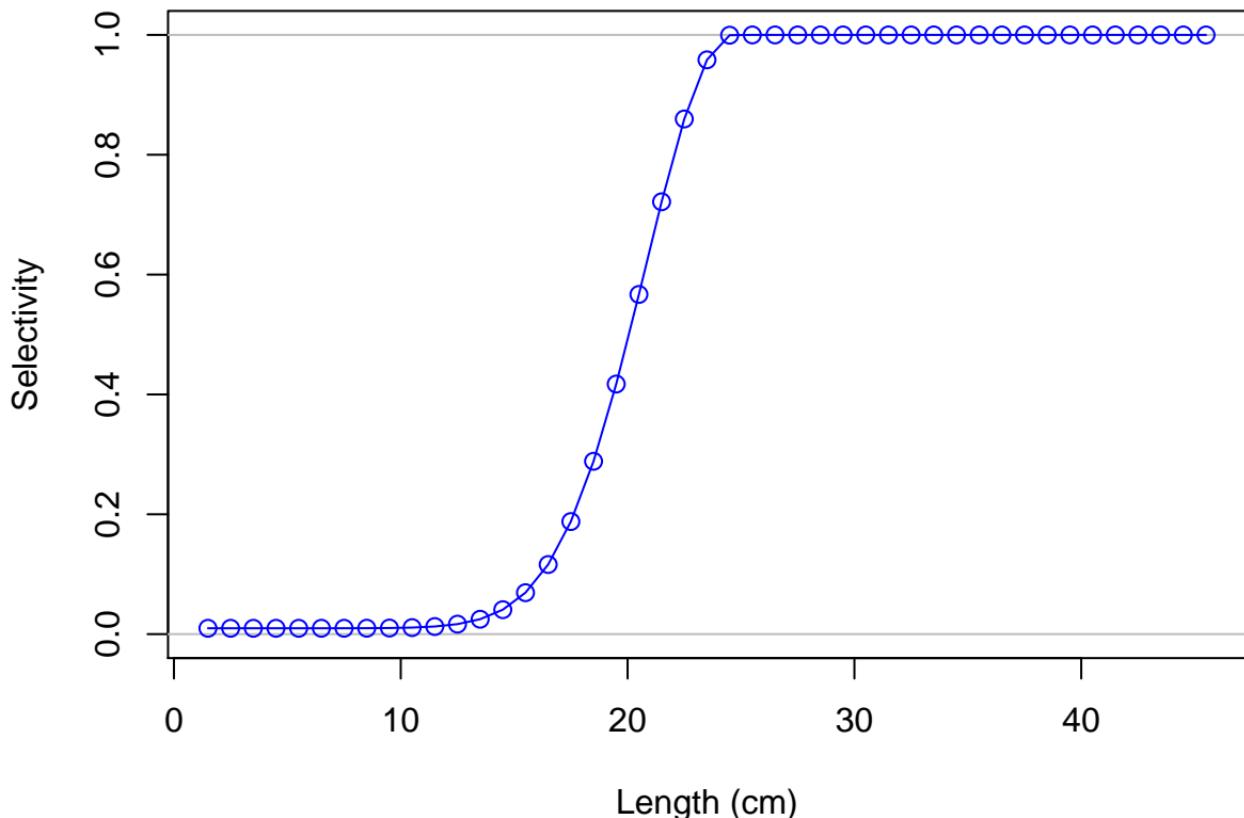
## Male ending year selectivity for GillnetSurvey



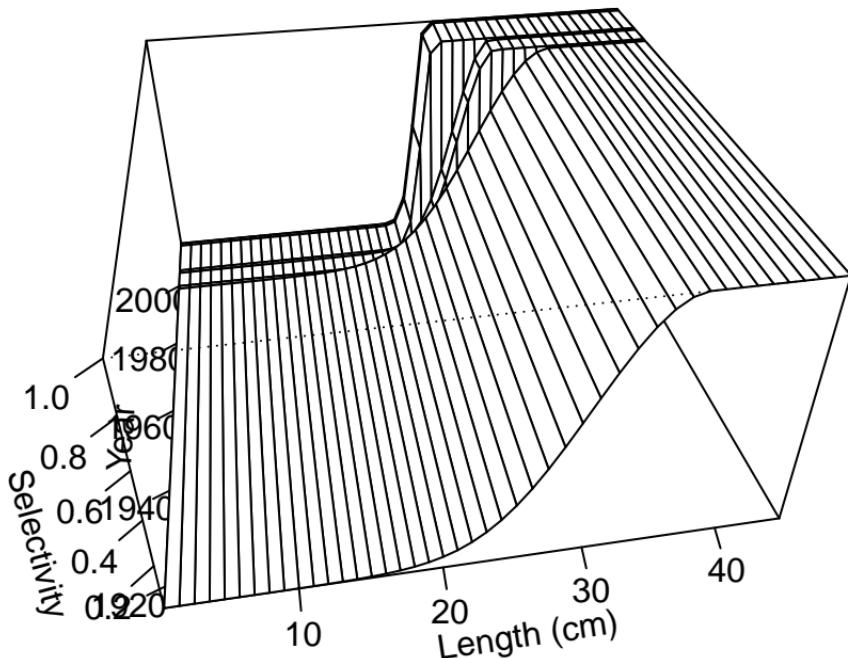
## Female ending year selectivity for SCBSurvey



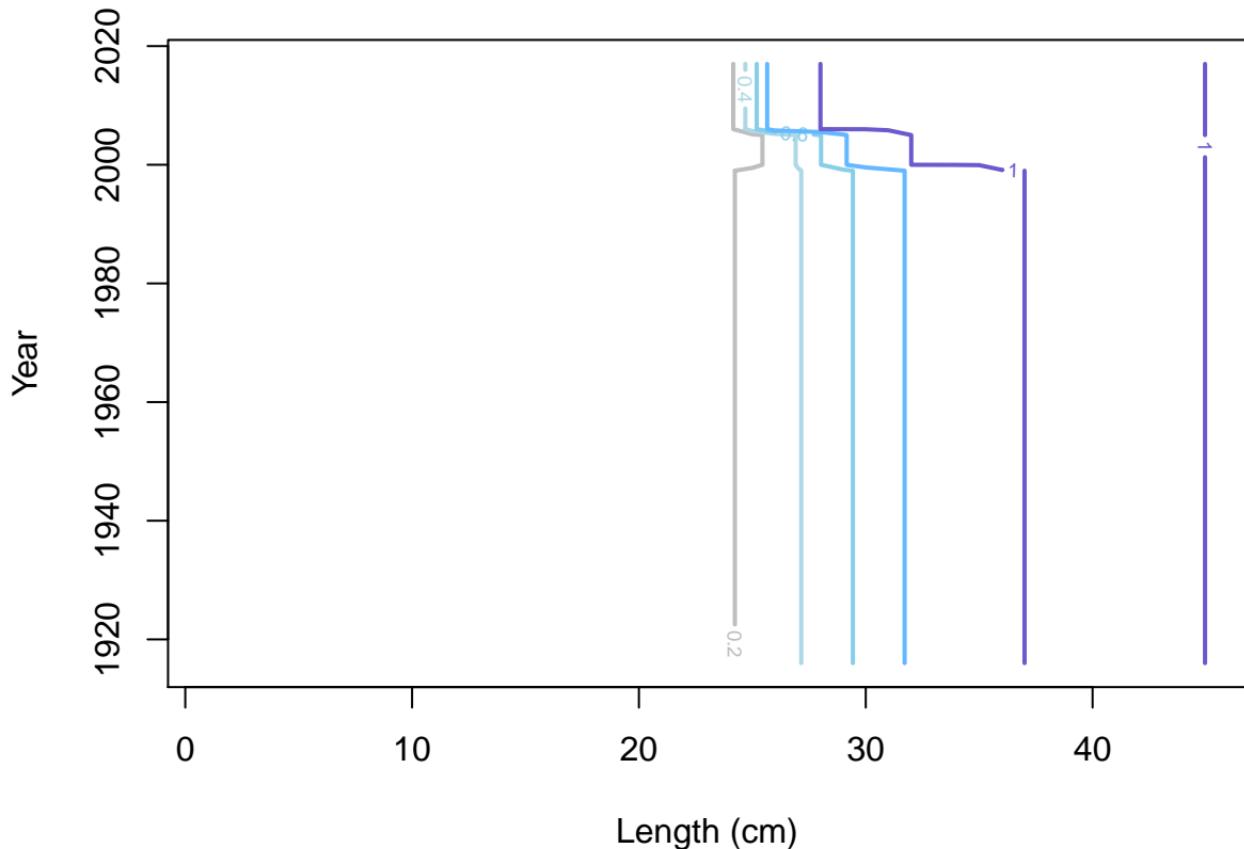
## Male ending year selectivity for SCBSurvey



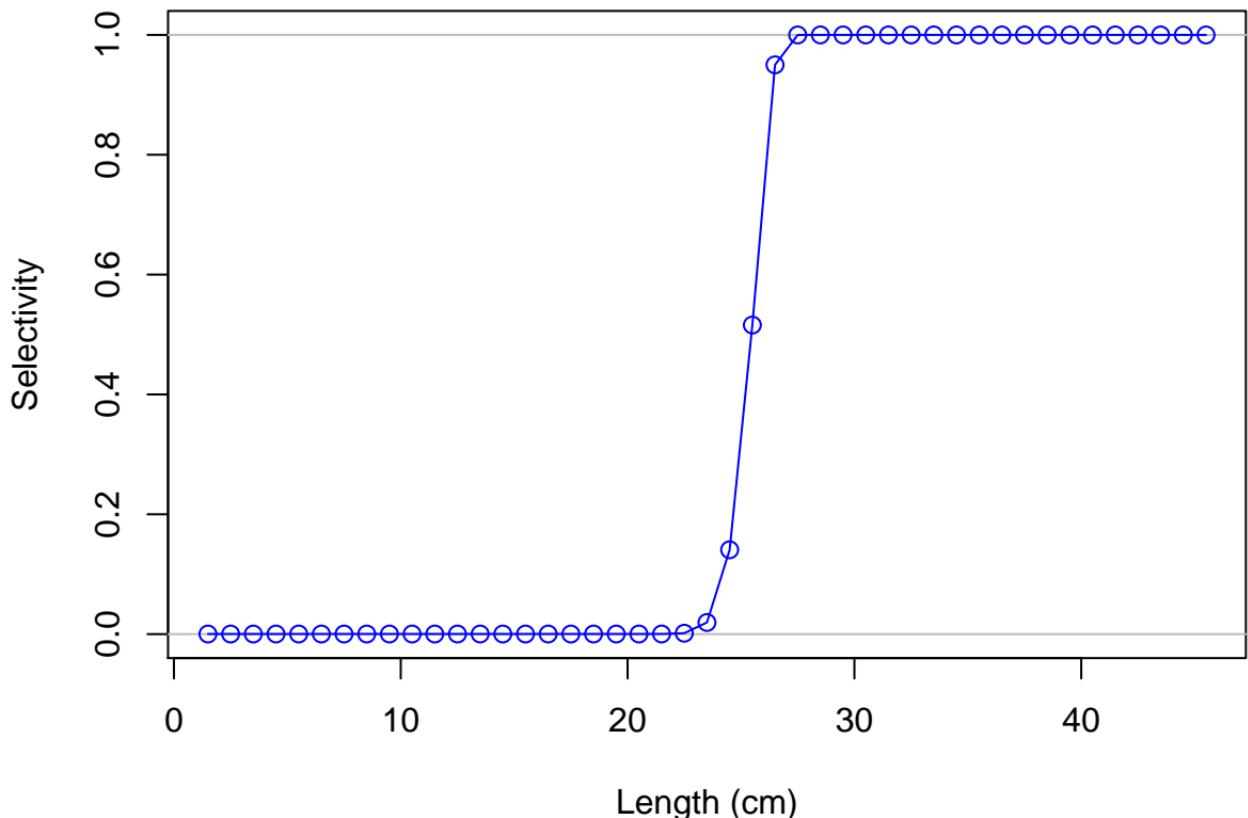
## Female time-varying selectivity for RecPCOBR



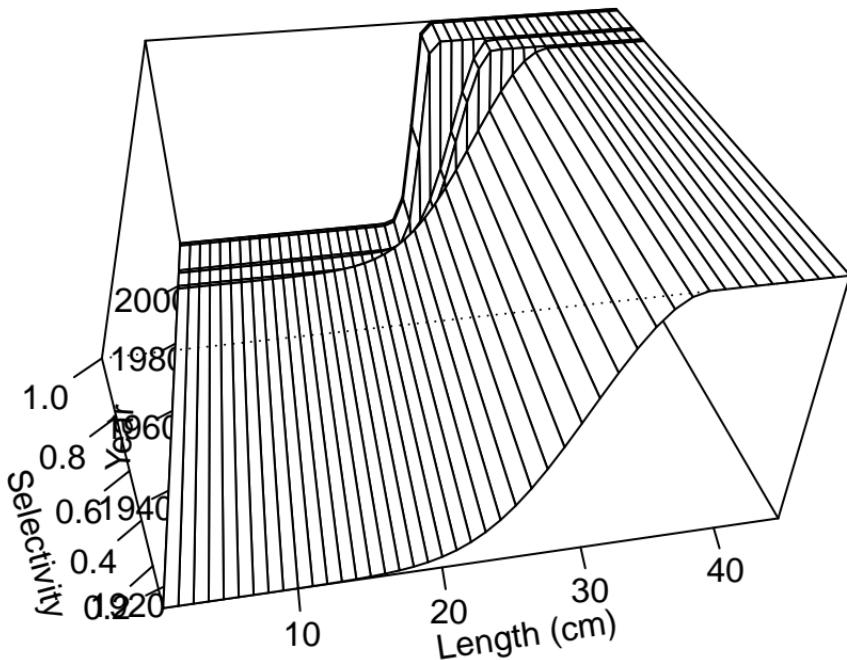
## Female time-varying selectivity for RecPCOBR



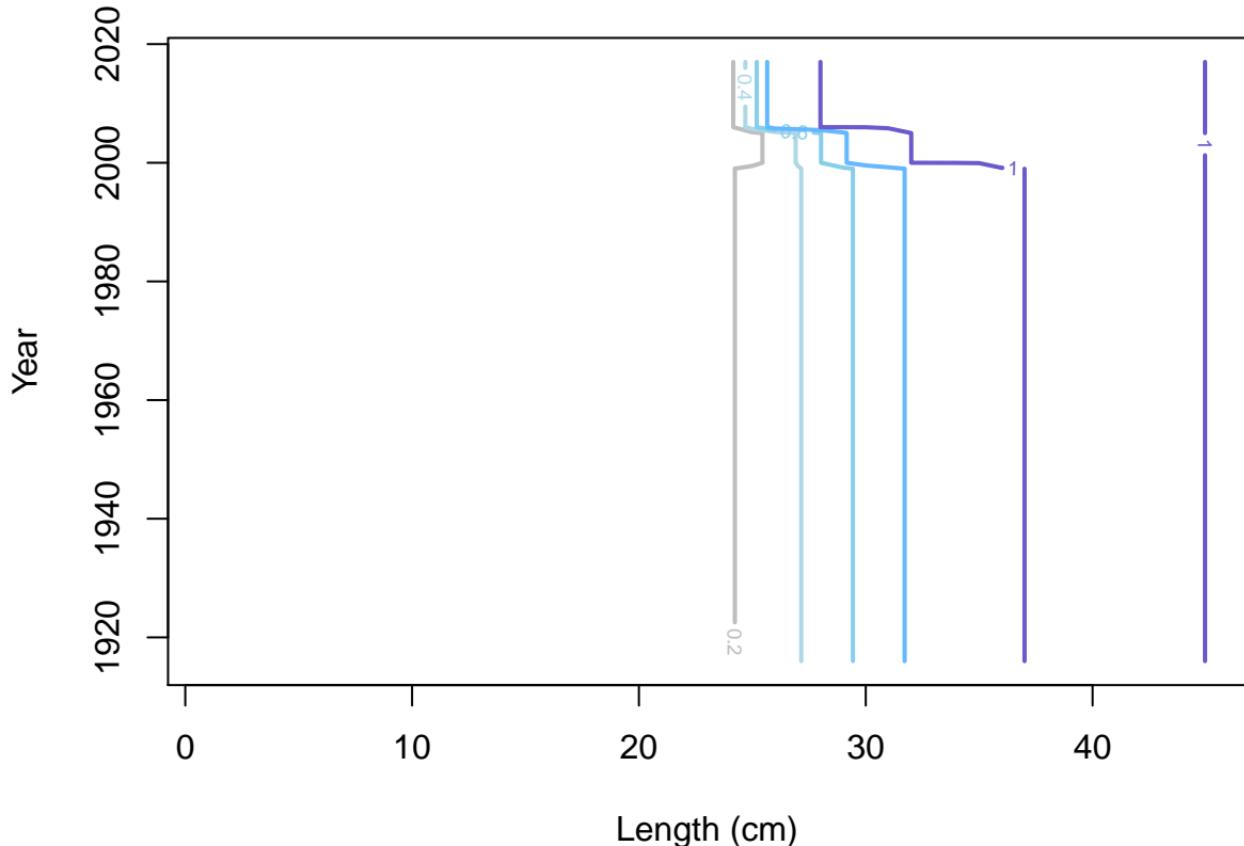
## Female ending year selectivity for RecPCOBR



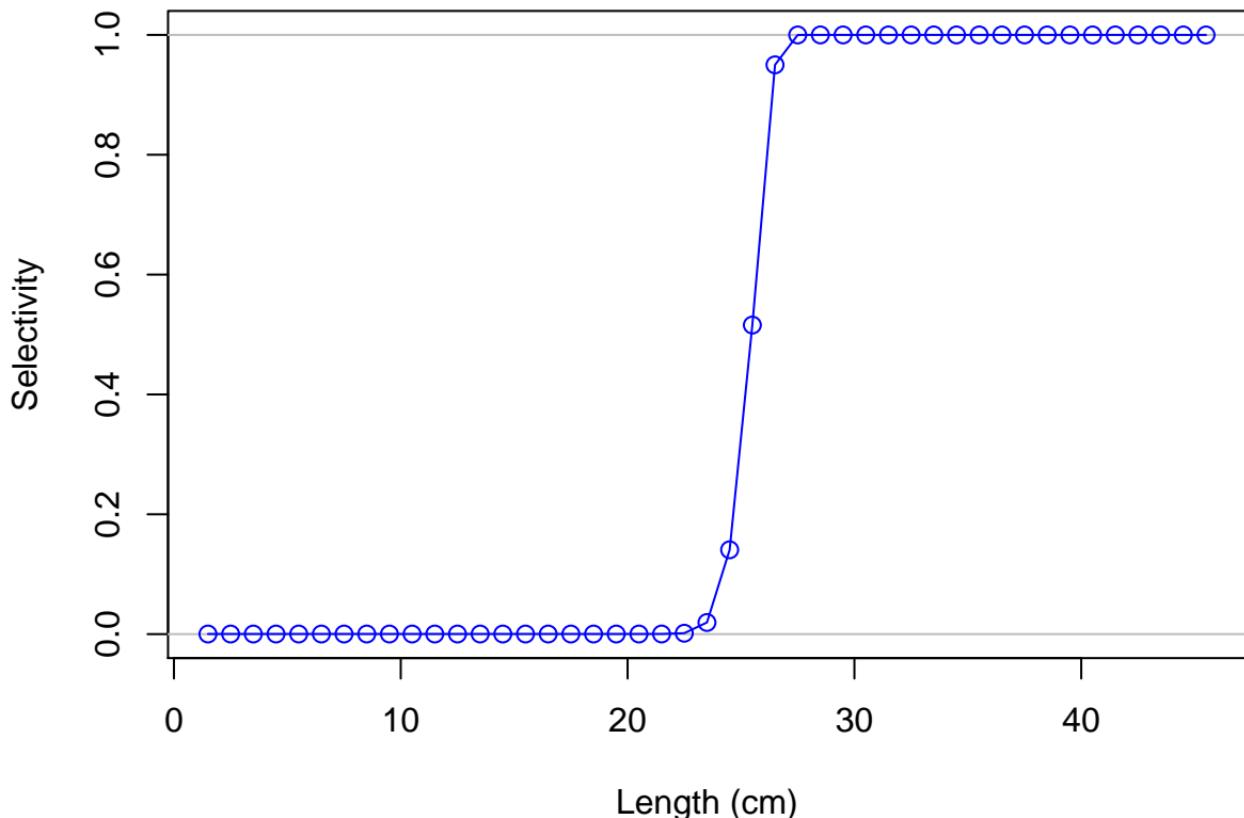
## Male time-varying selectivity for RecPCOBR



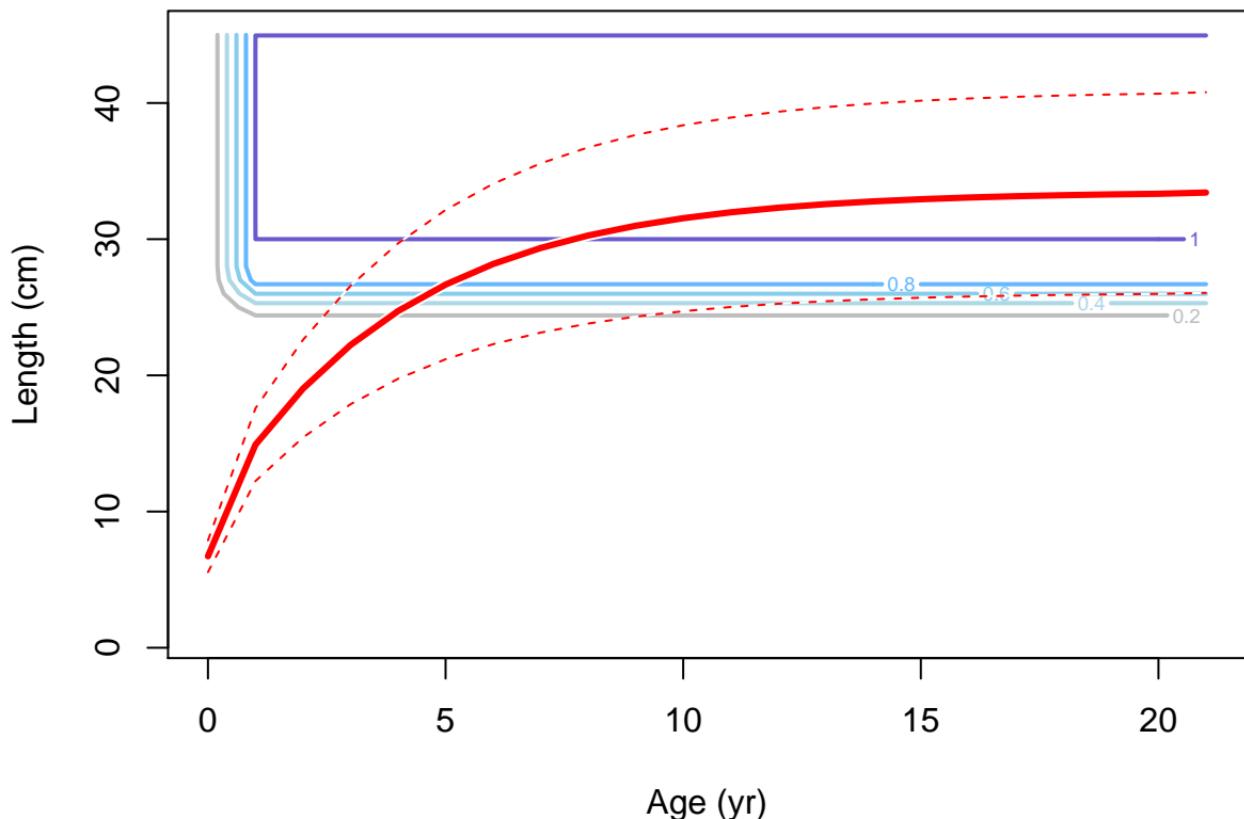
## Male time-varying selectivity for RecPCOBR



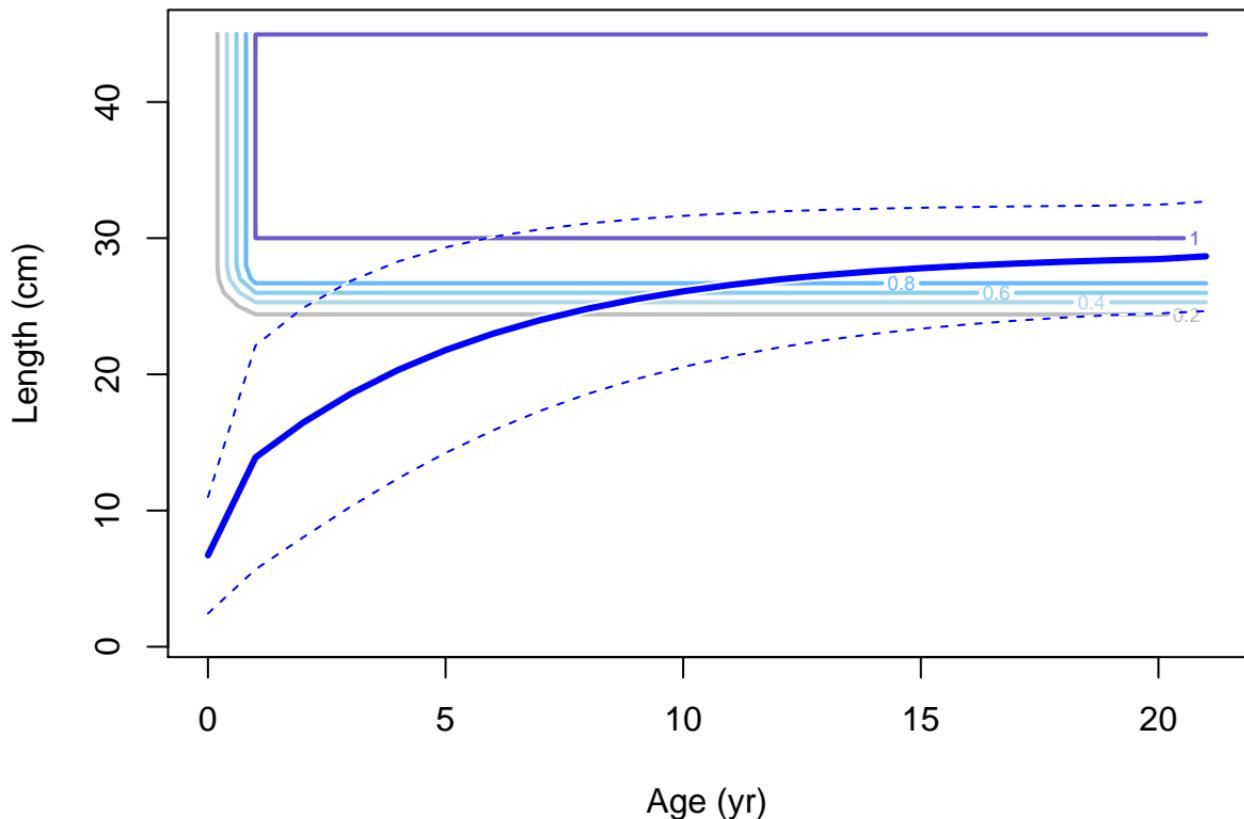
## Male ending year selectivity for RecPCOBR



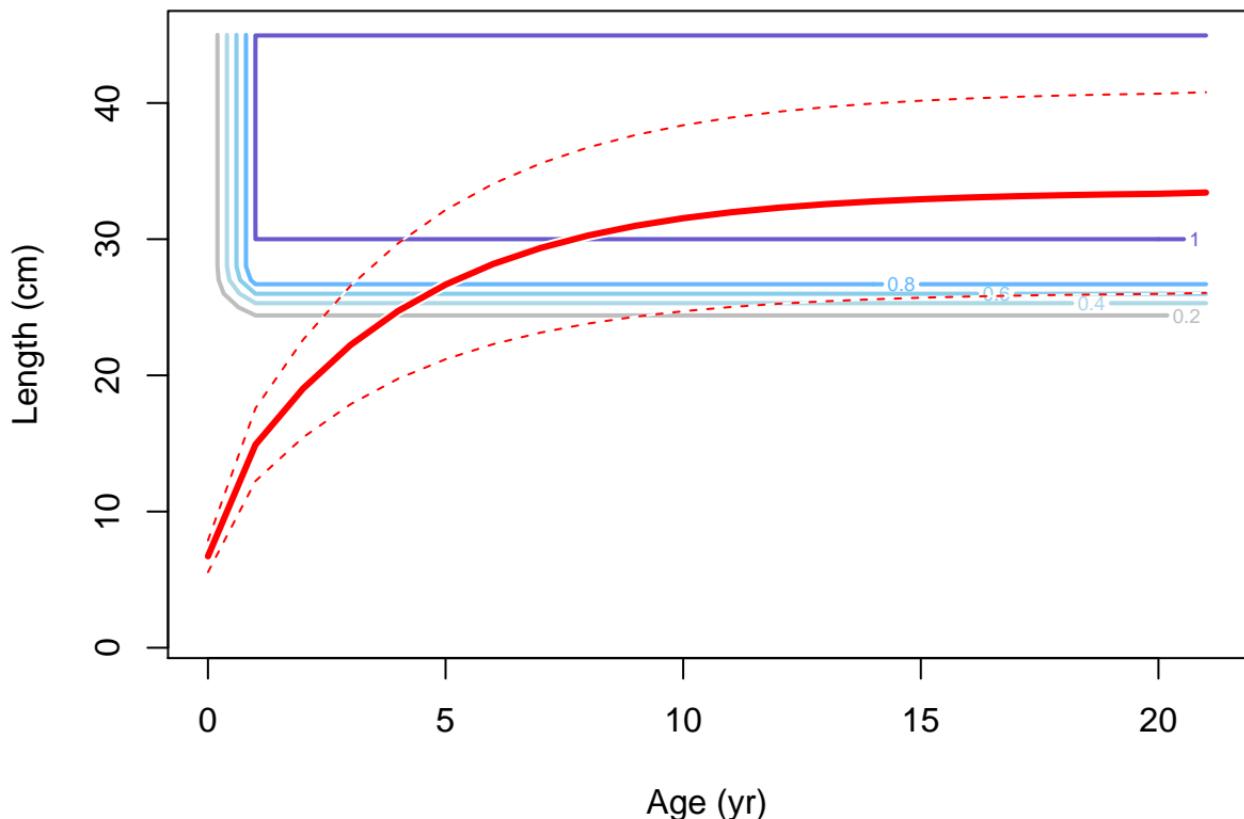
## Female ending year selectivity and growth for ComHL



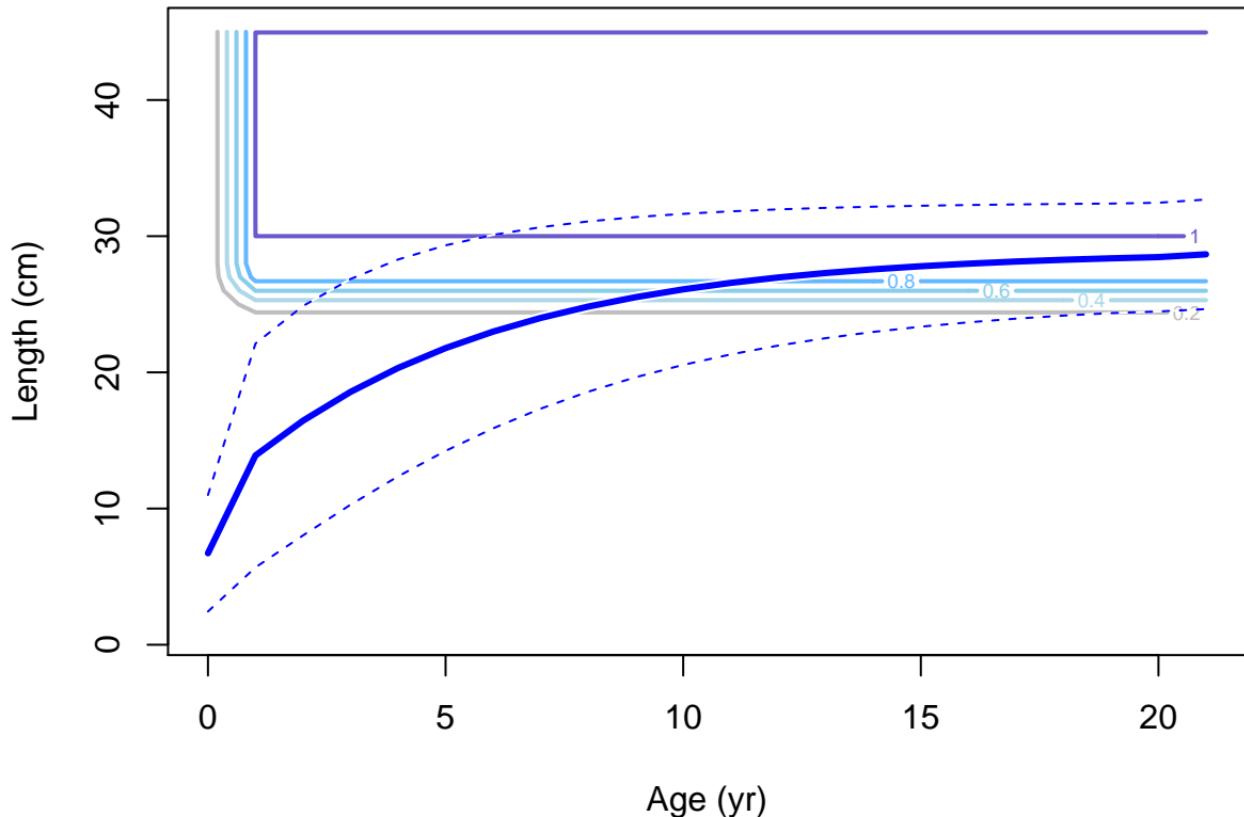
## Male ending year selectivity and growth for ComHL



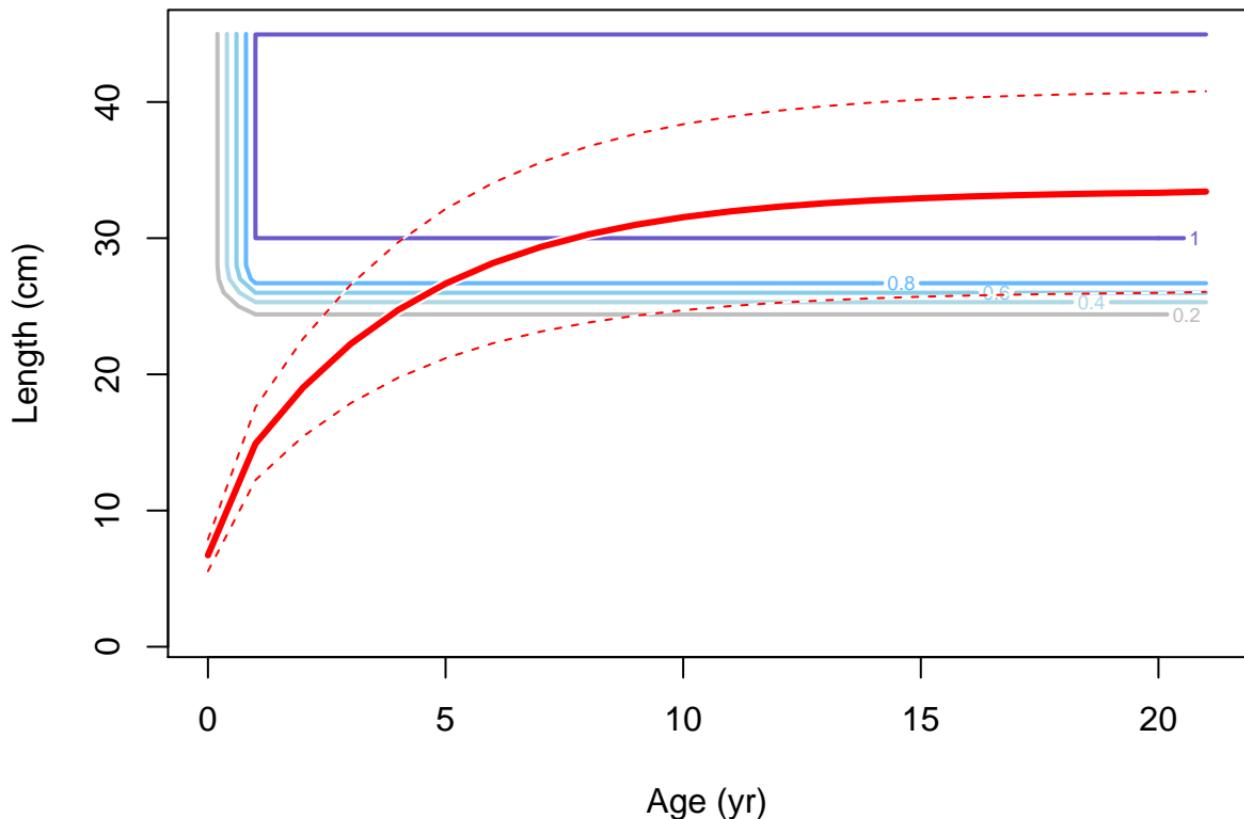
## Female ending year selectivity and growth for ComNet



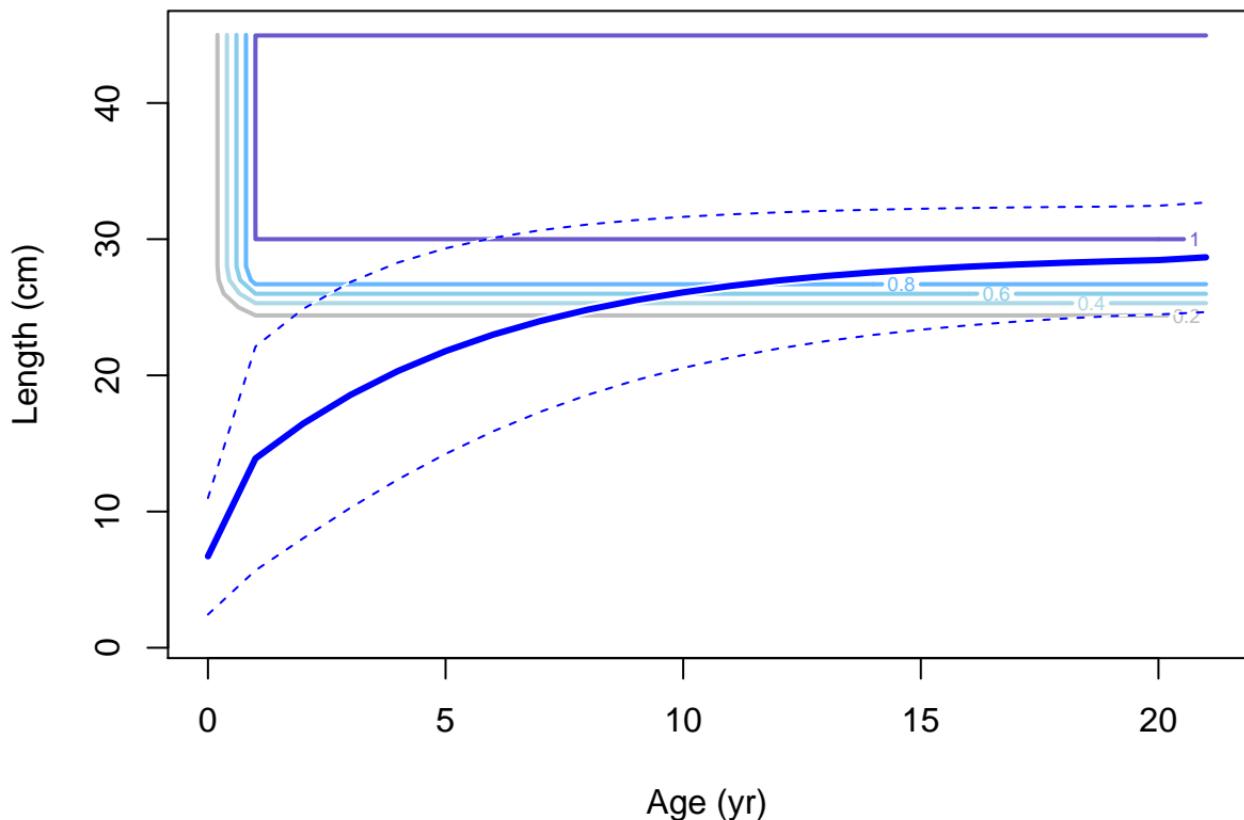
## Male ending year selectivity and growth for ComNet



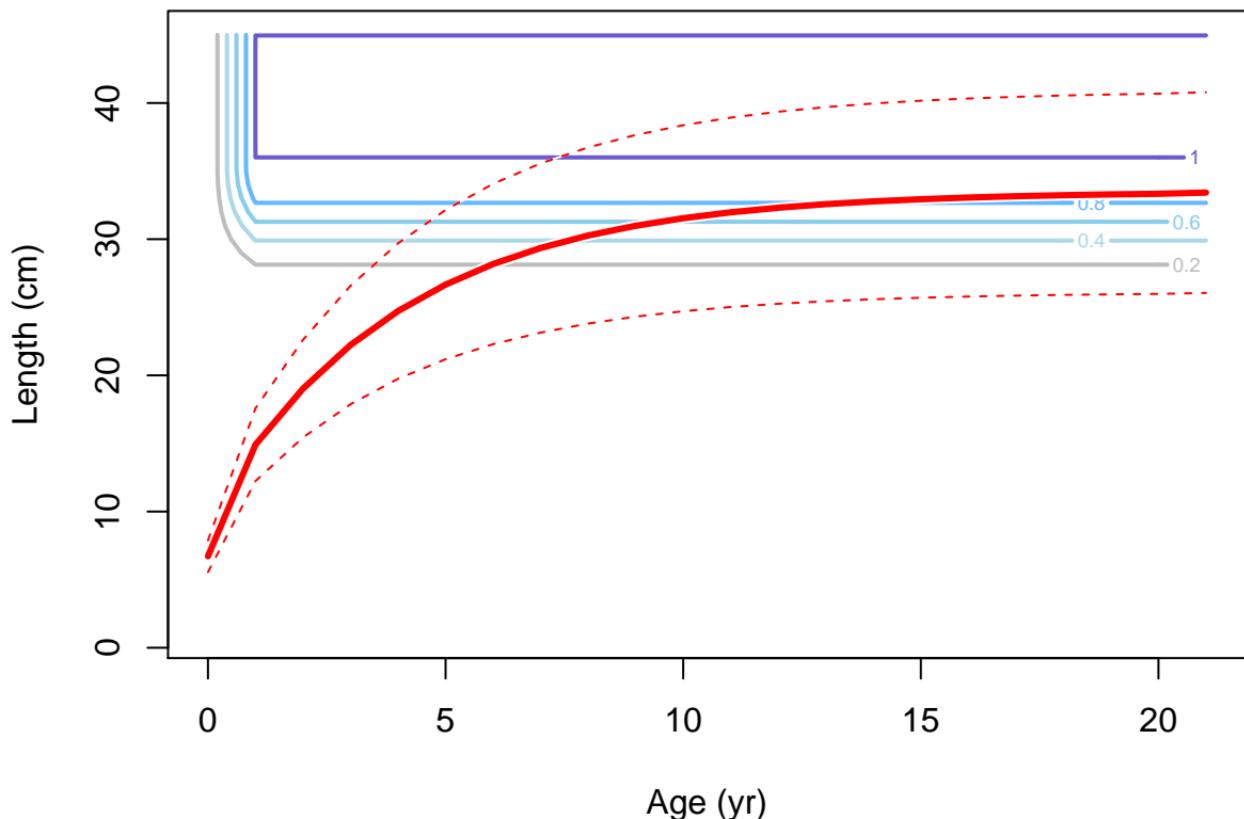
## Female ending year selectivity and growth for ComTrawl



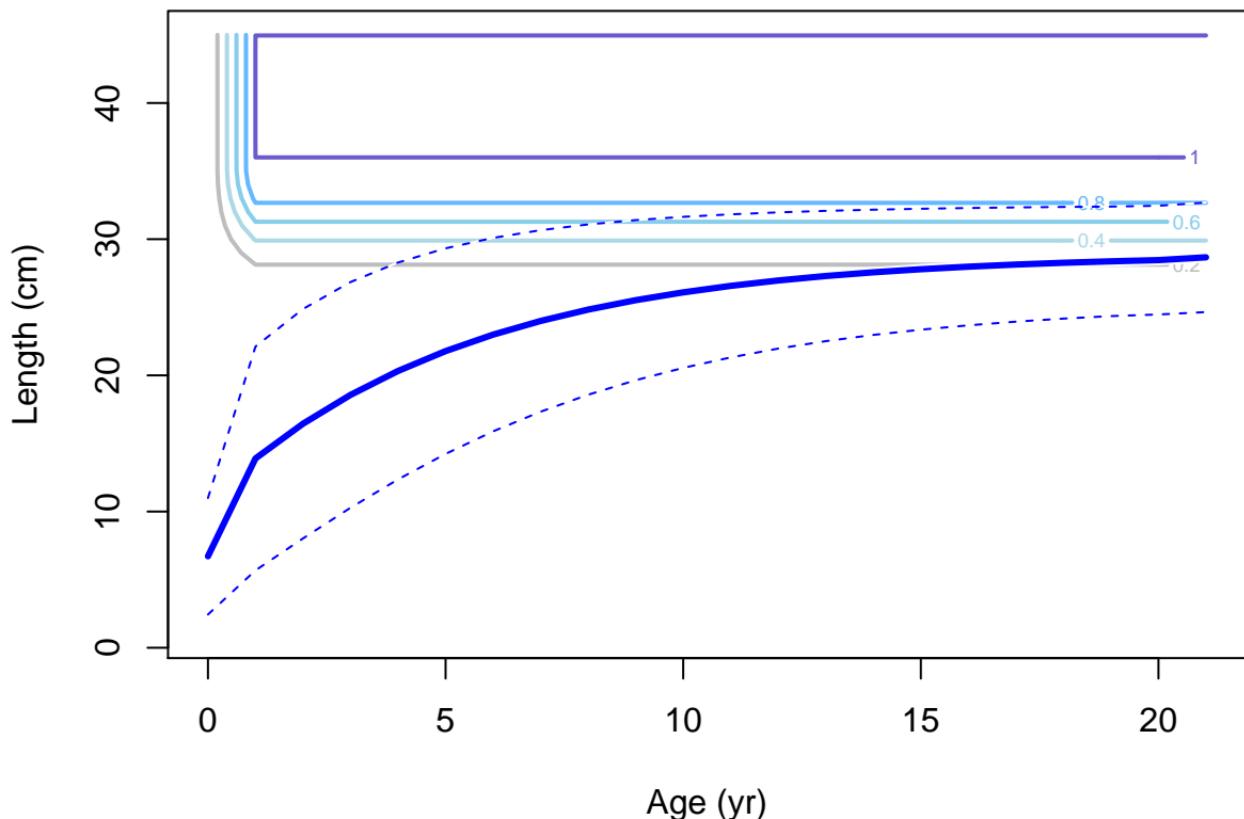
## Male ending year selectivity and growth for ComTrawl



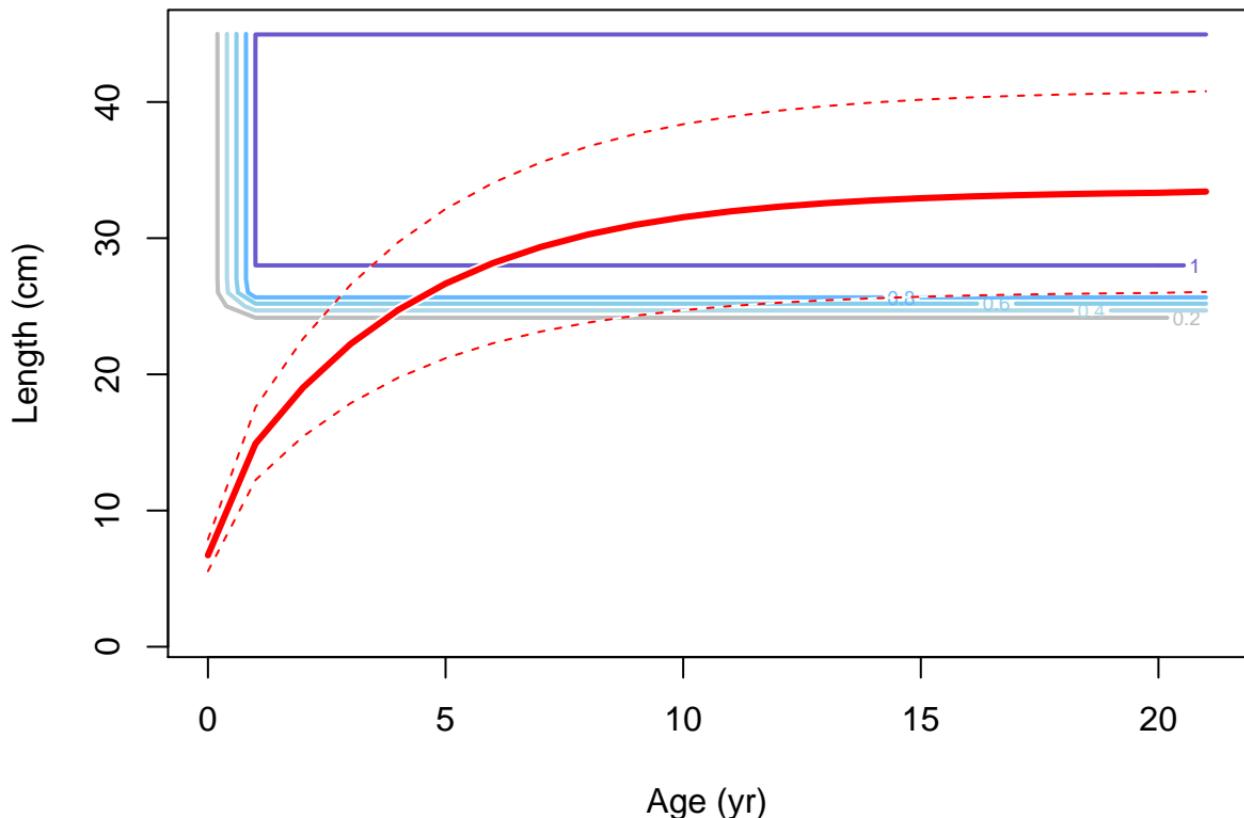
## Female ending year selectivity and growth for RecPR



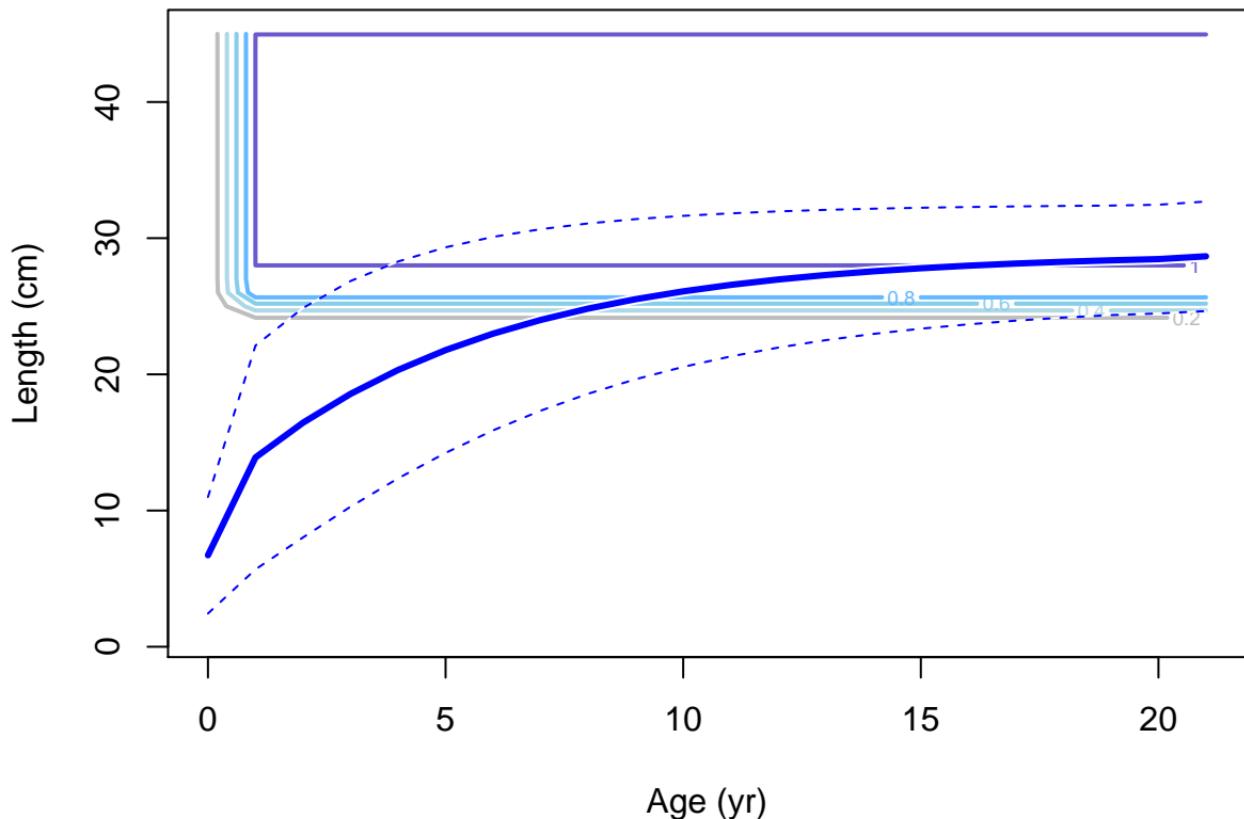
## Male ending year selectivity and growth for RecPR



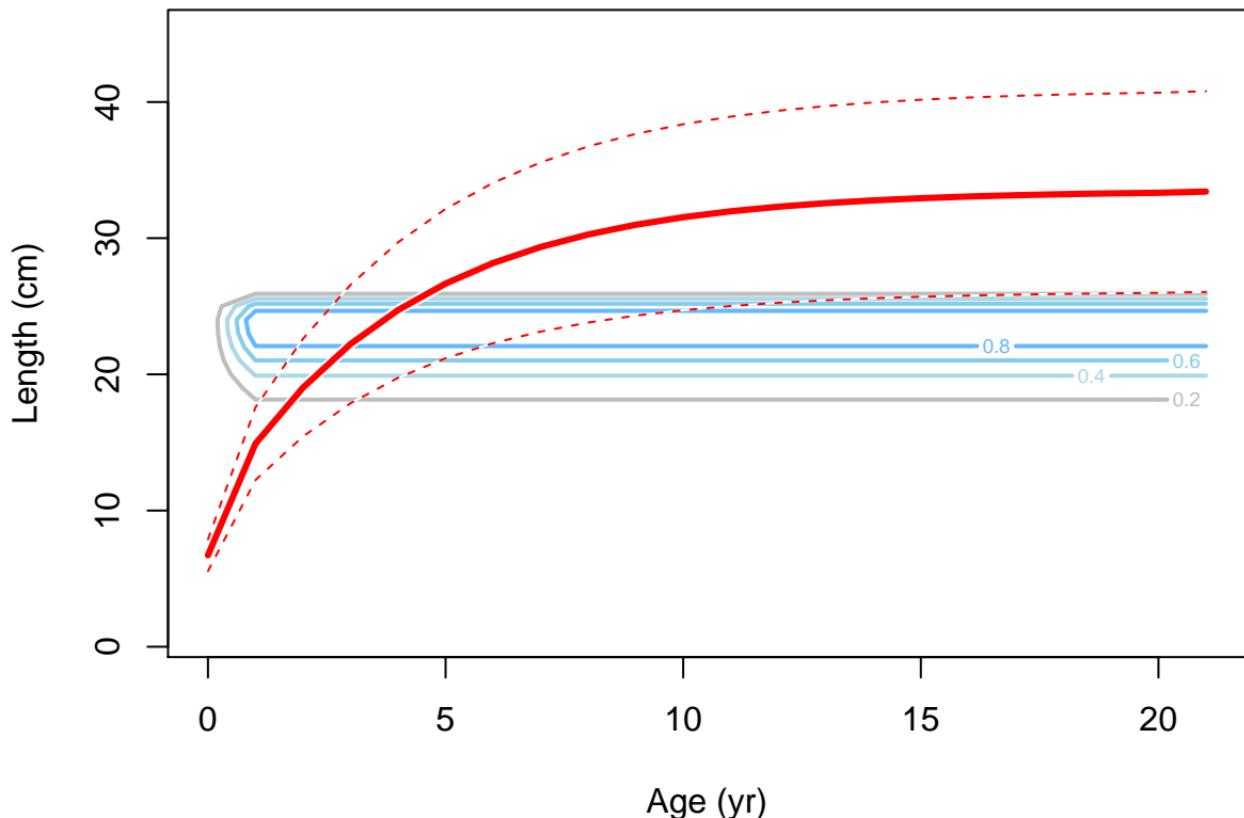
## Female ending year selectivity and growth for RecPC



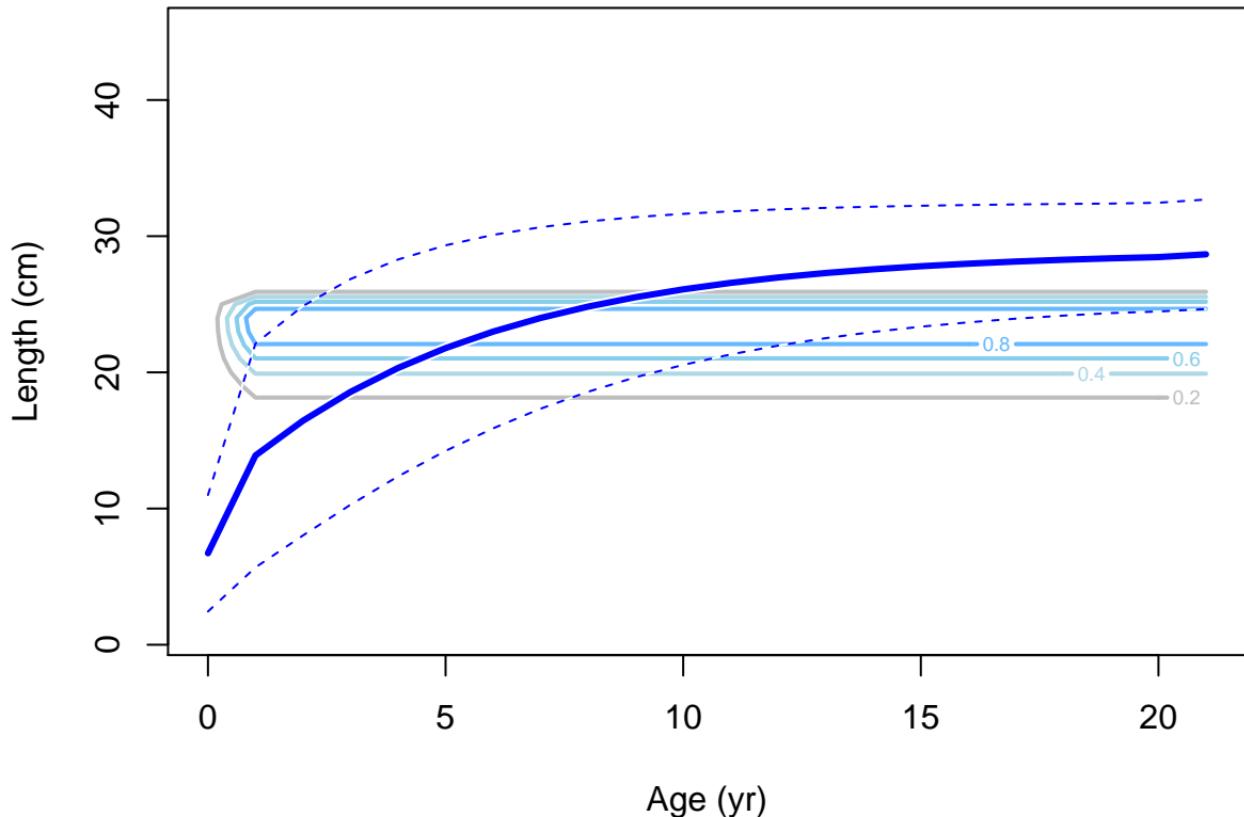
## Male ending year selectivity and growth for RecPC



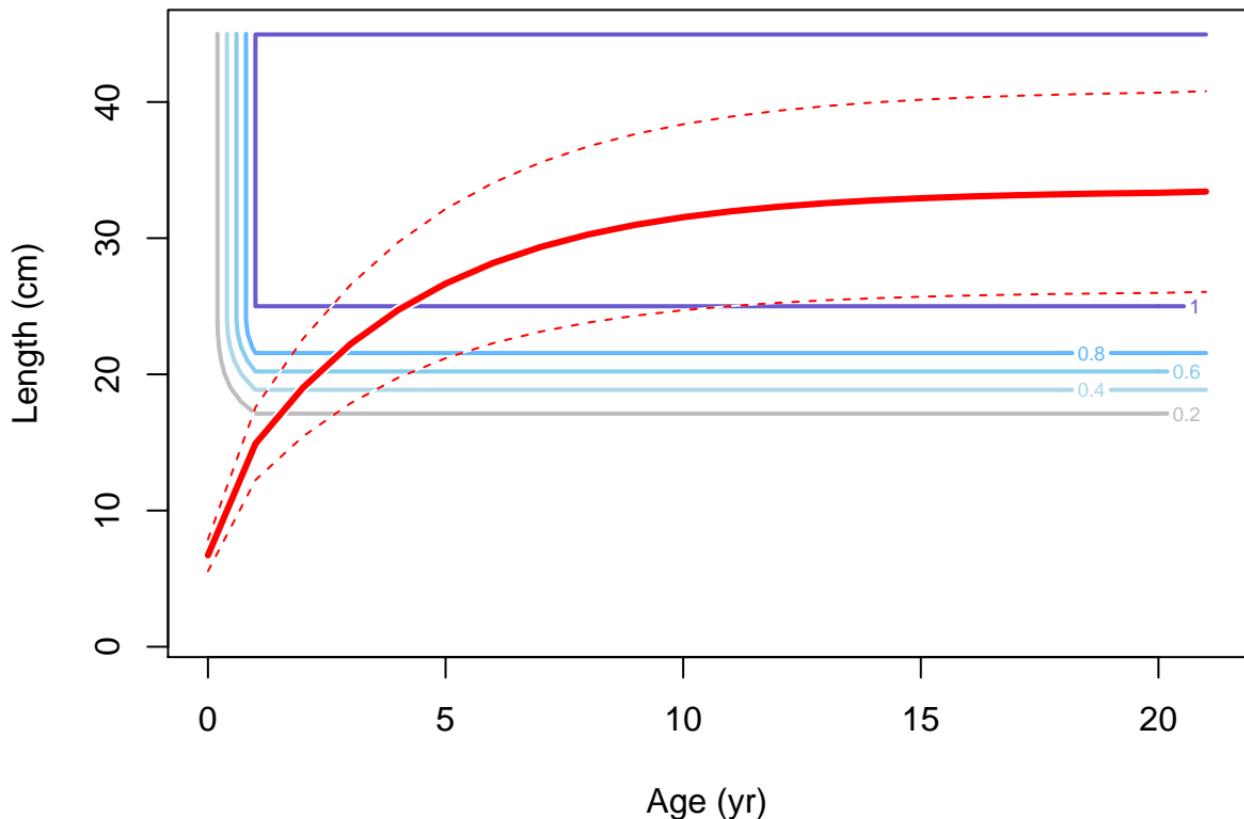
## Female ending year selectivity and growth for RecDD



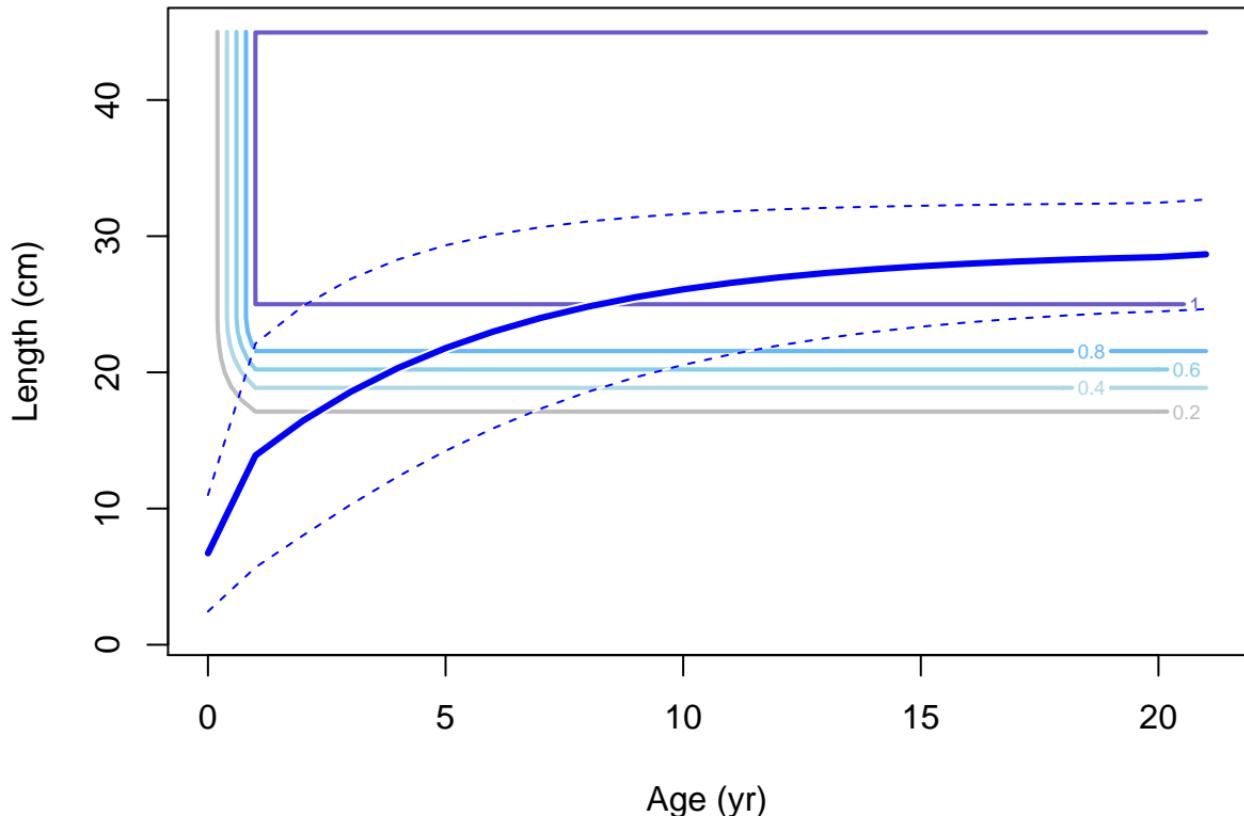
## Male ending year selectivity and growth for RecDD



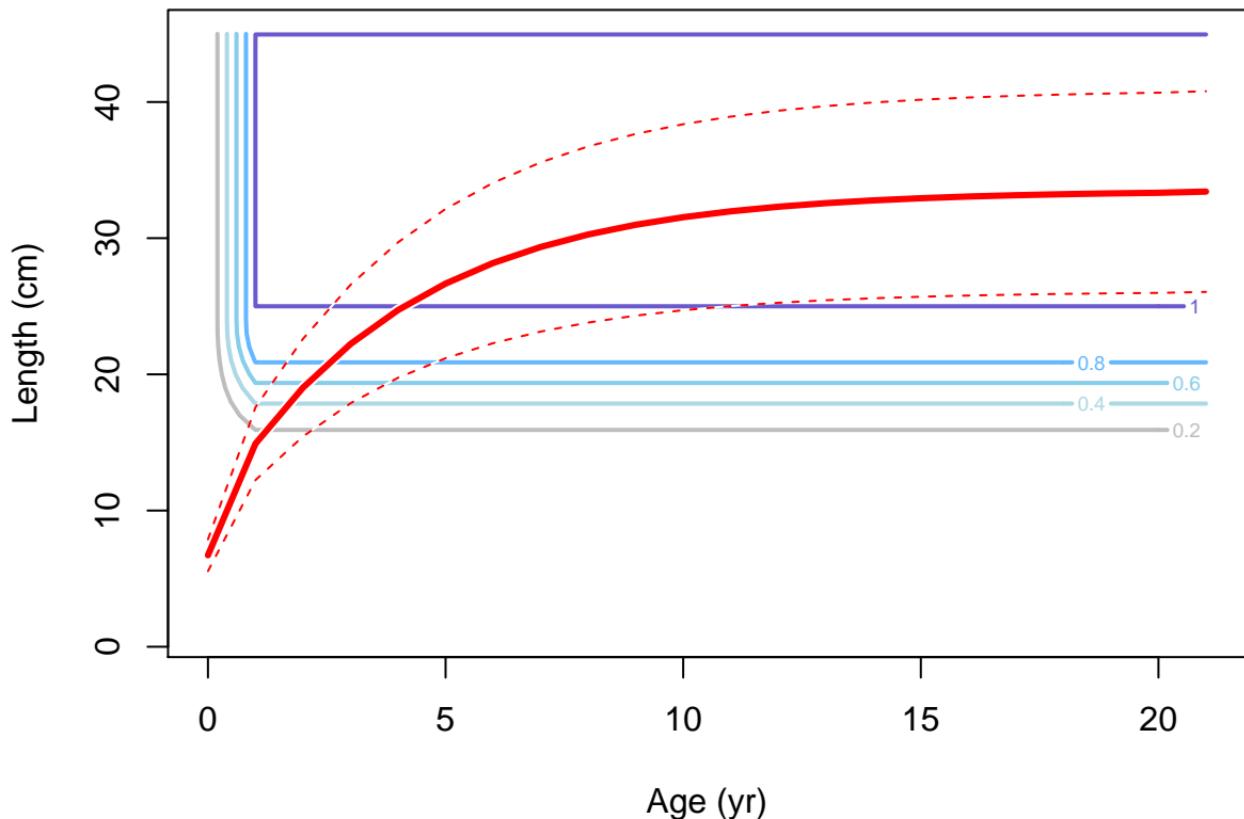
## Female ending year selectivity and growth for Sanitation



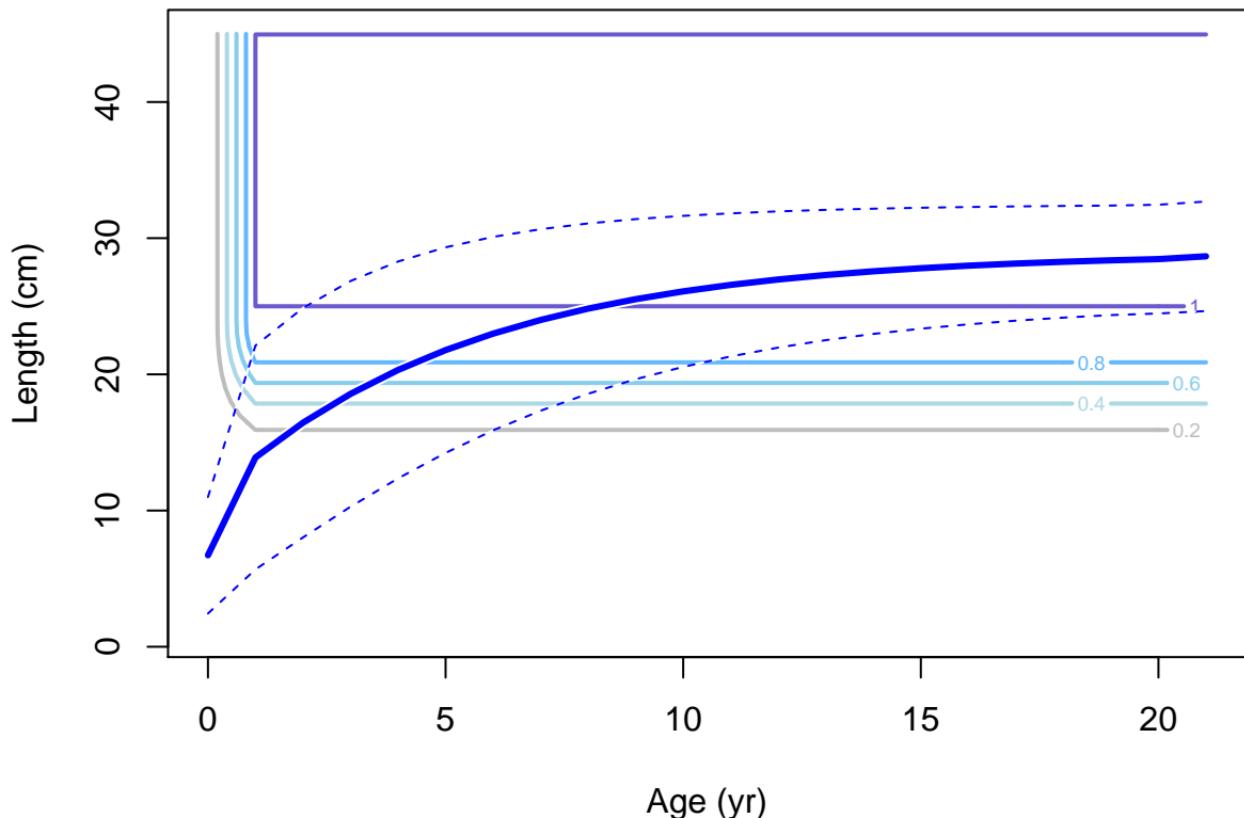
## Male ending year selectivity and growth for Sanitation



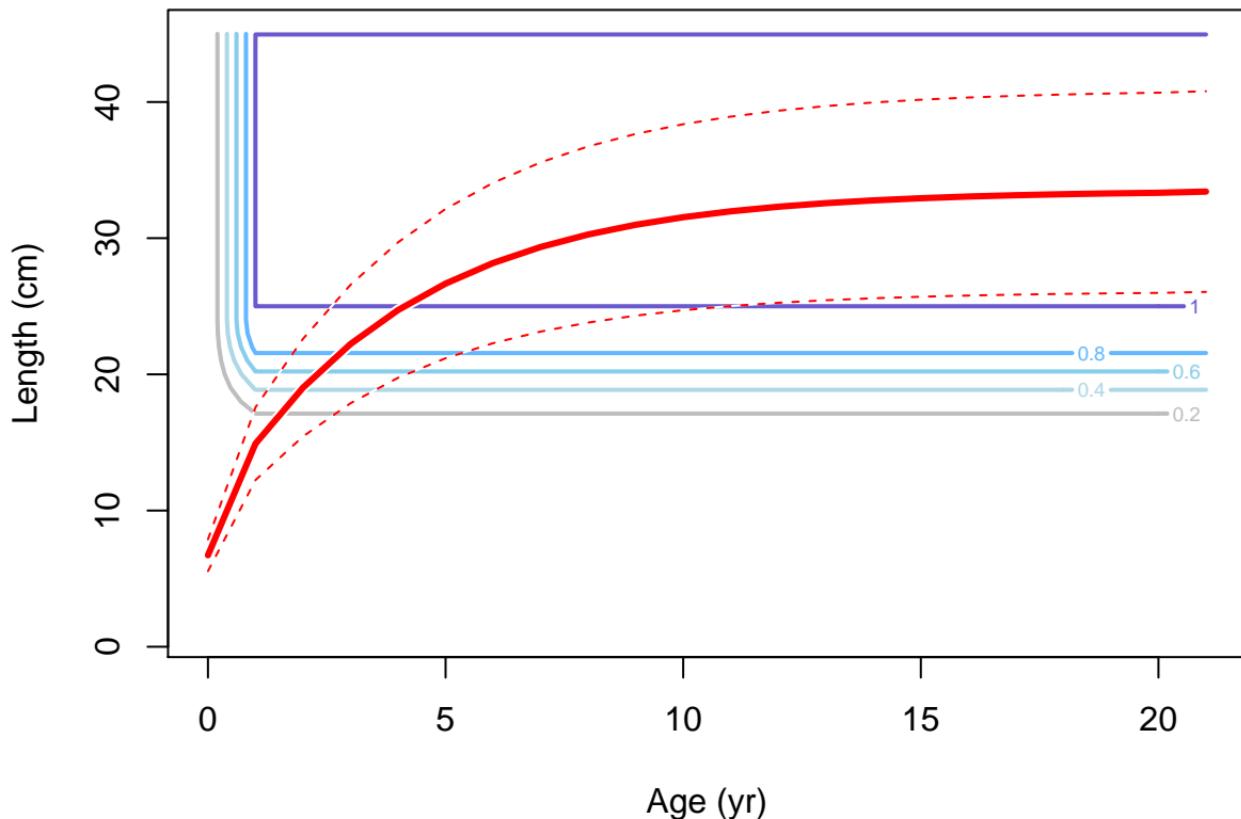
## Female ending year selectivity and growth for NWFSC Trawl



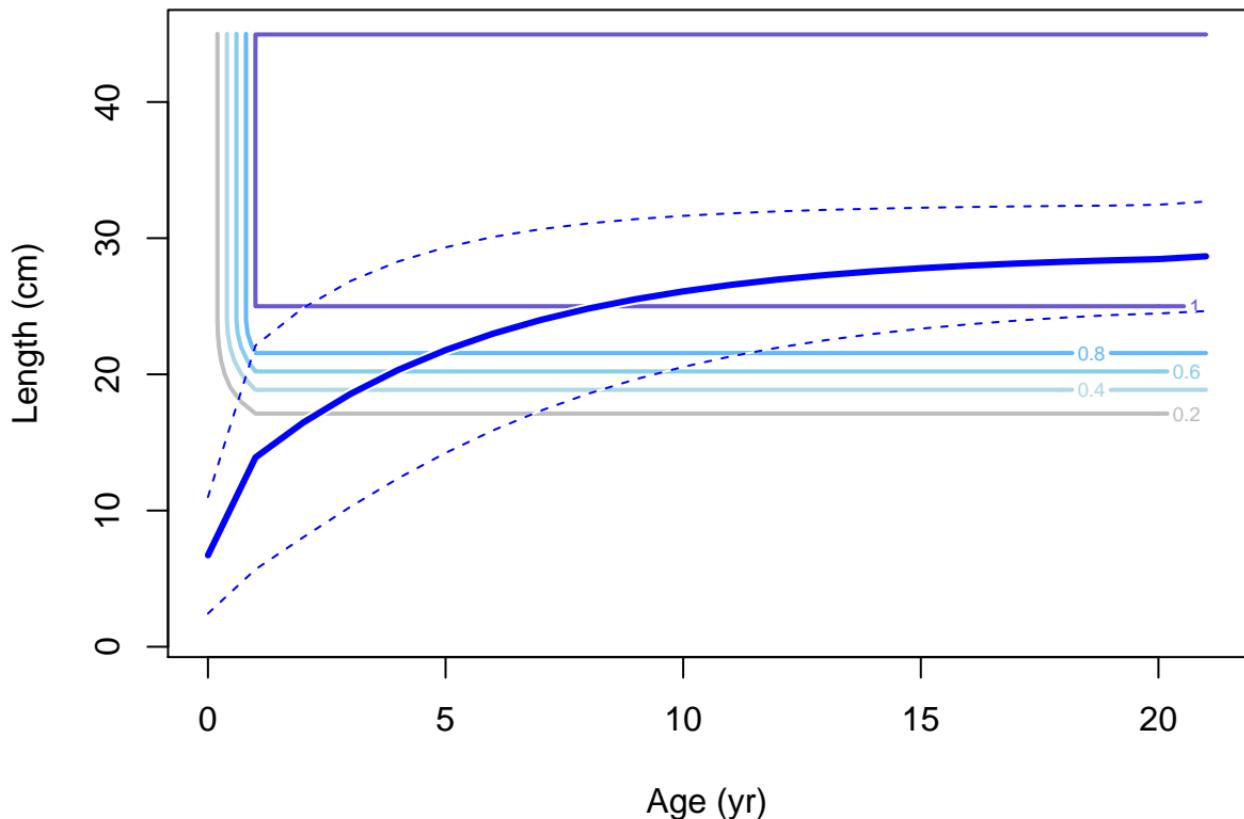
## Male ending year selectivity and growth for NWFSC Trawl



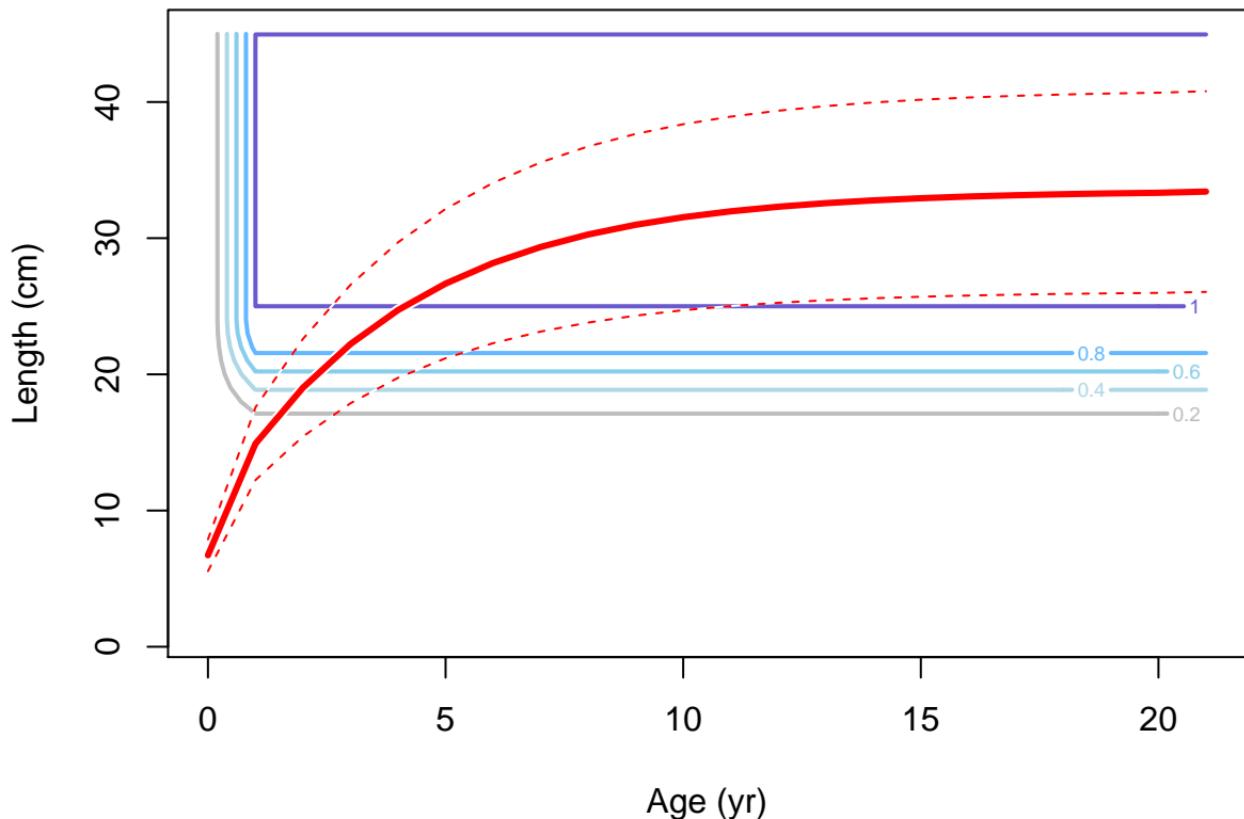
## Female ending year selectivity and growth for GillnetSurvey



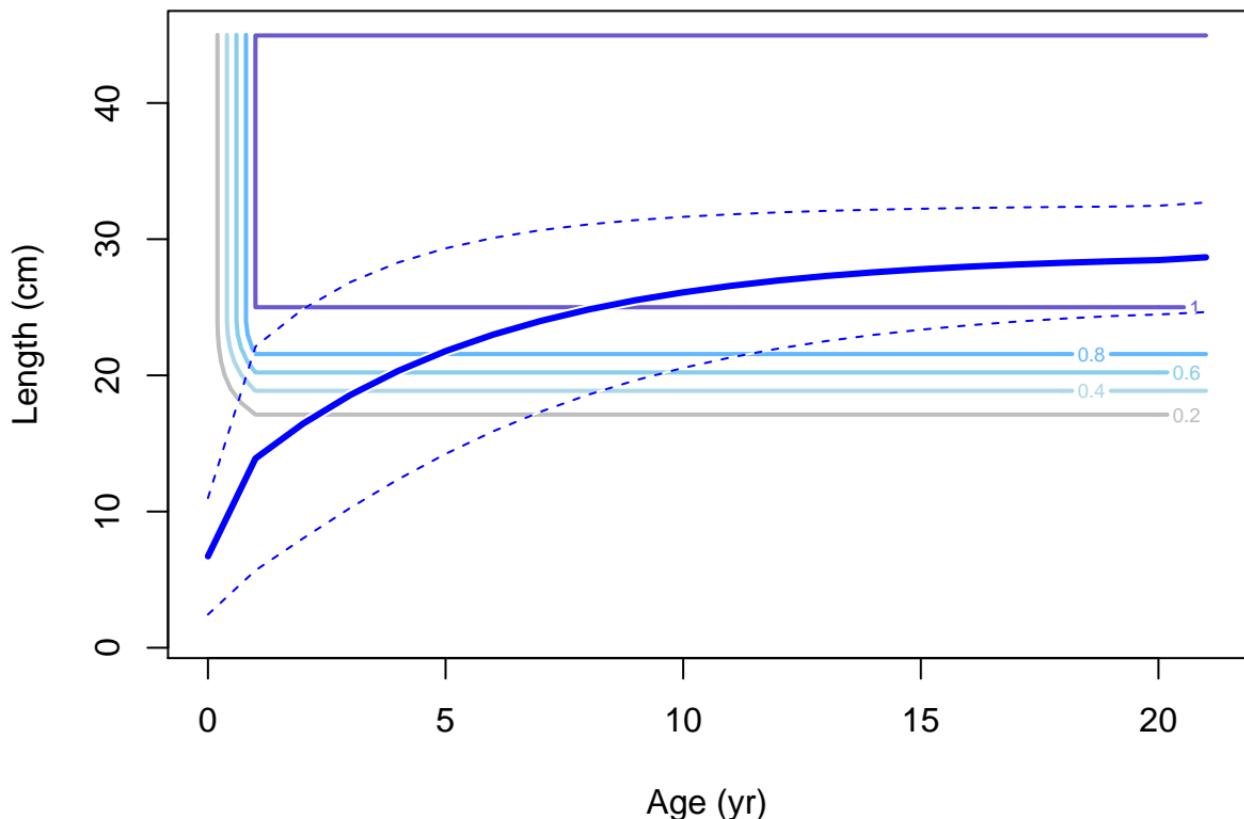
## Male ending year selectivity and growth for GillnetSurvey



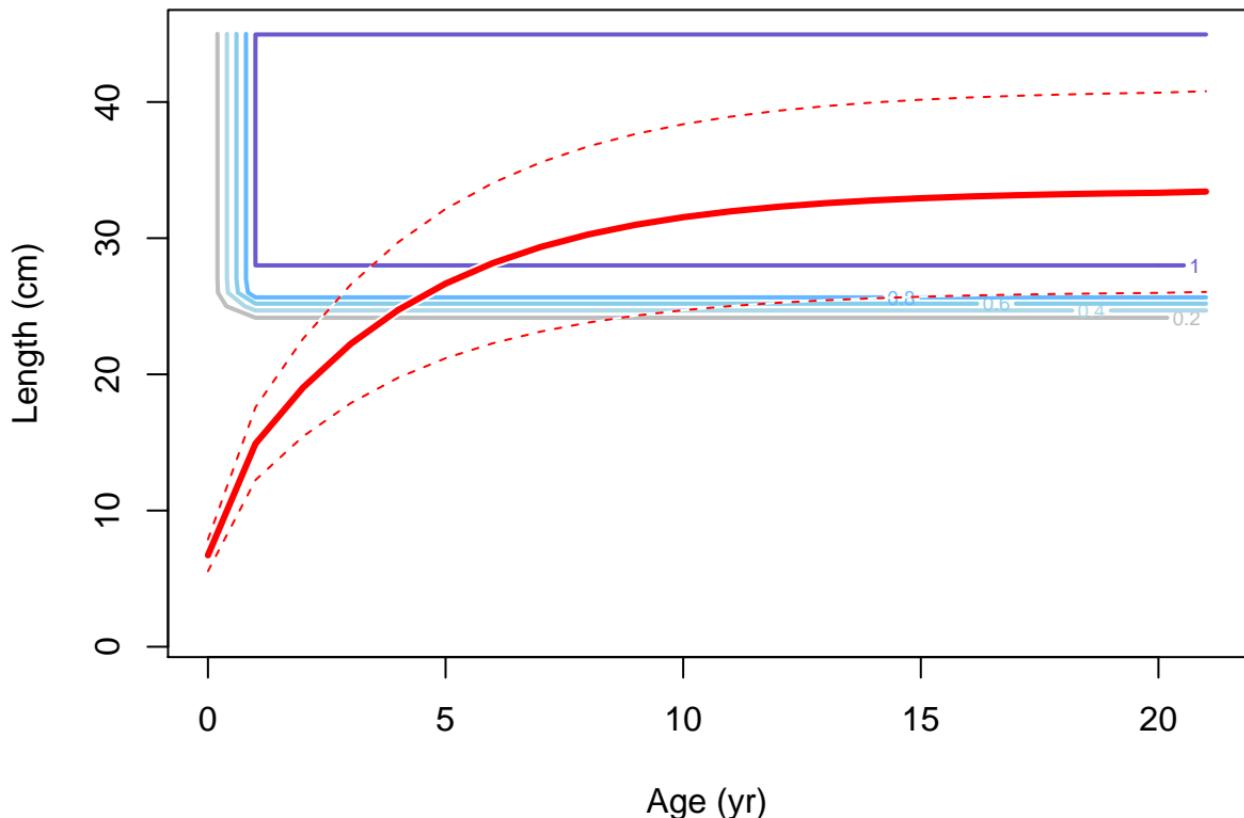
## Female ending year selectivity and growth for SCBSurvey



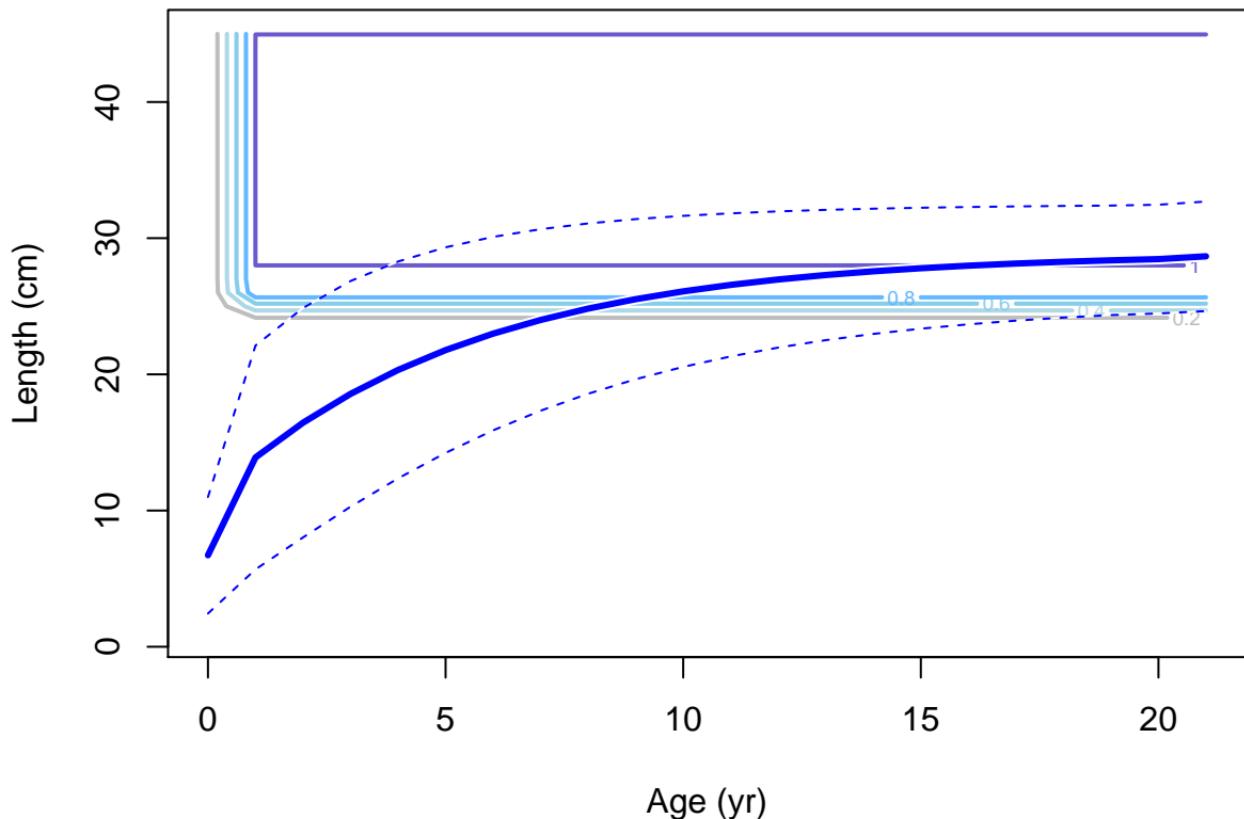
## Male ending year selectivity and growth for SCBSurvey



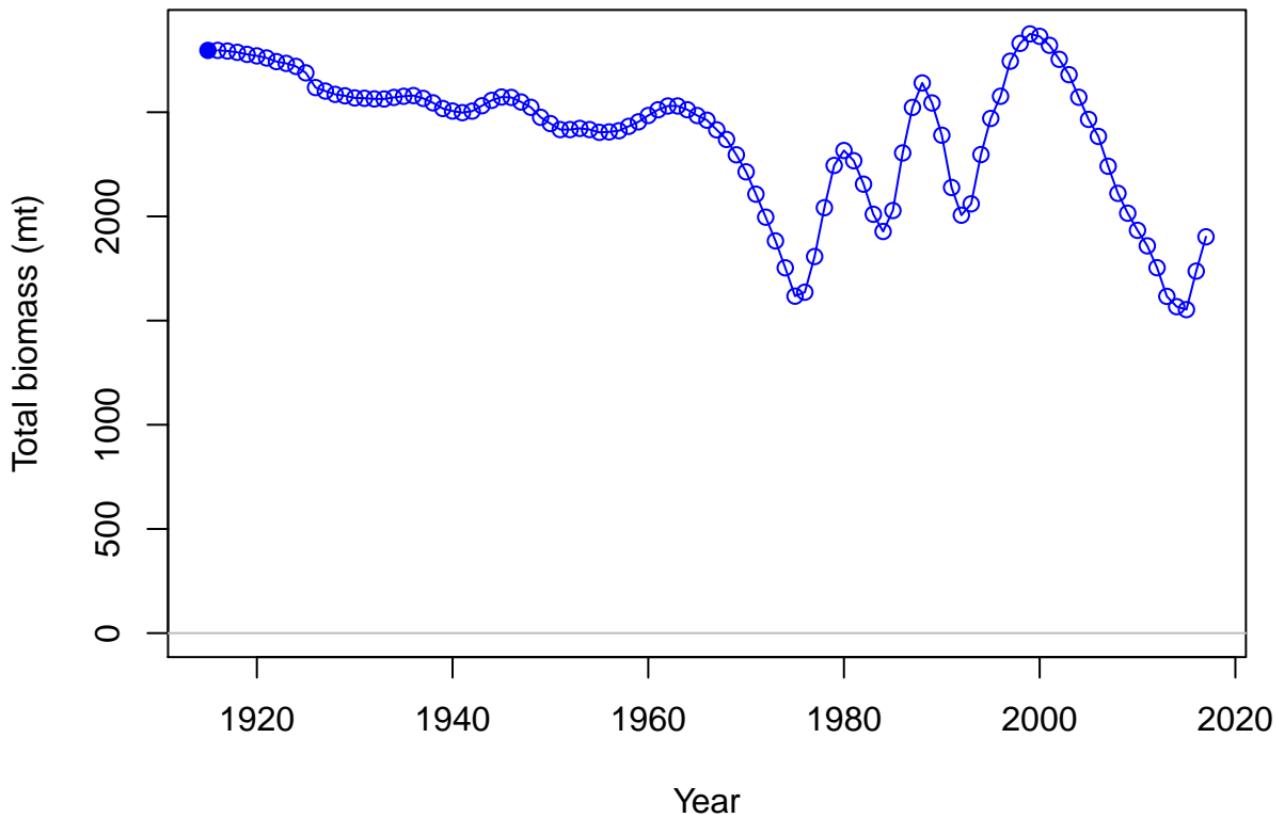
## Female ending year selectivity and growth for RecPCOBR



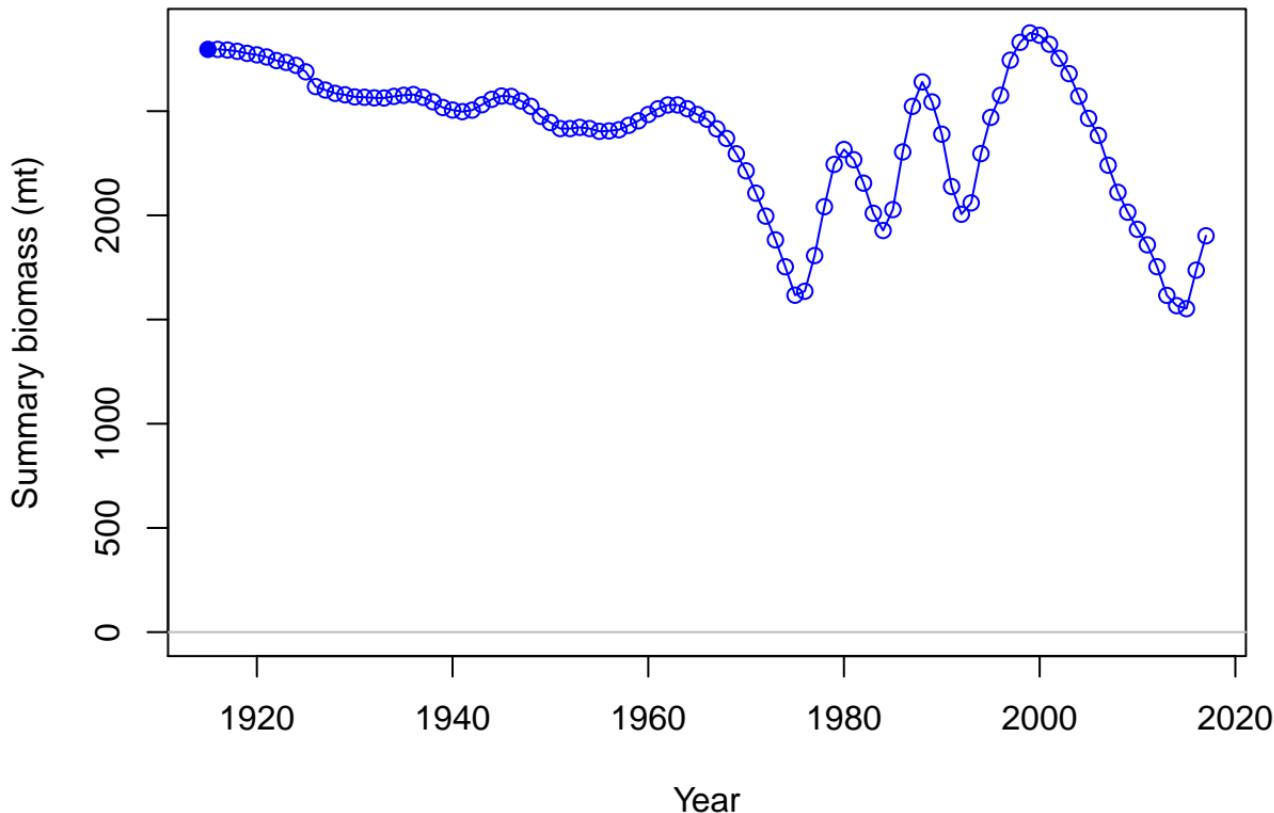
## Male ending year selectivity and growth for RecPCOBR



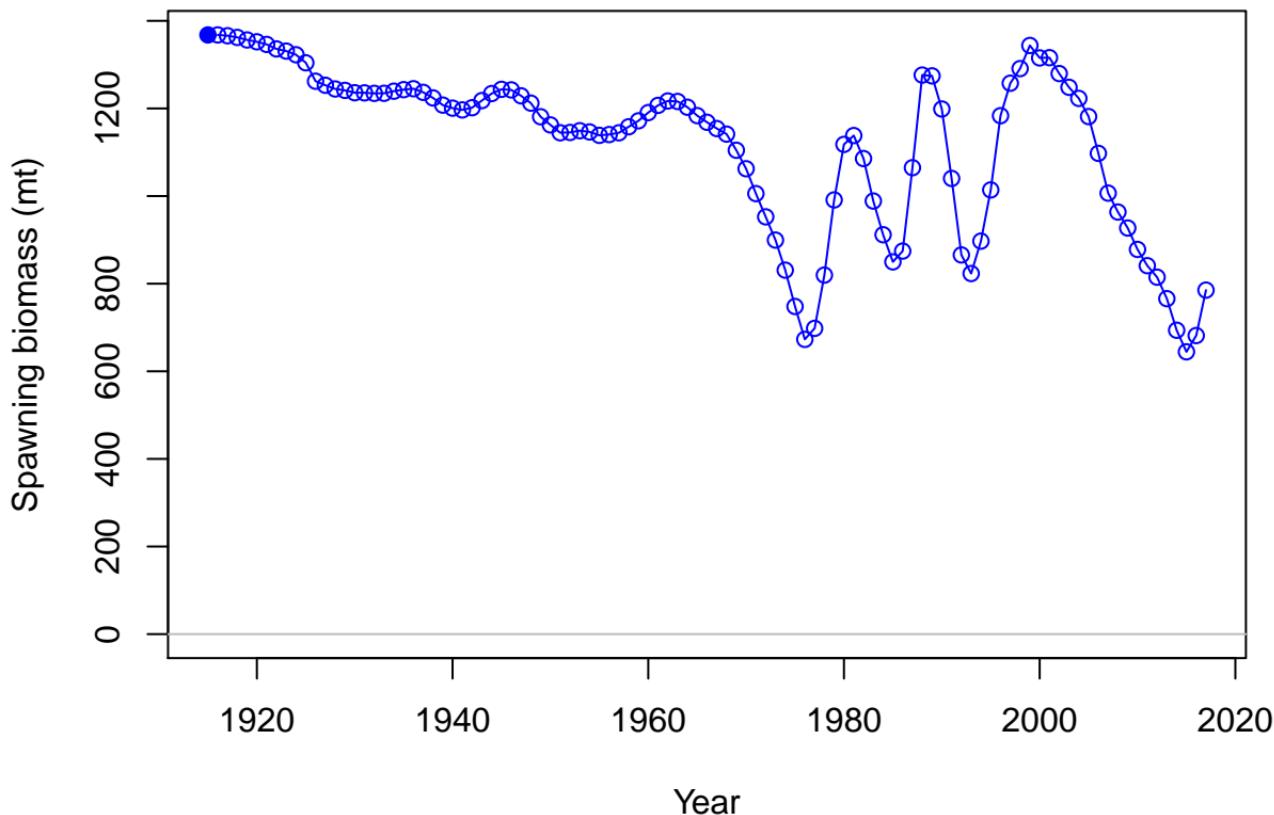
### Total biomass (mt)



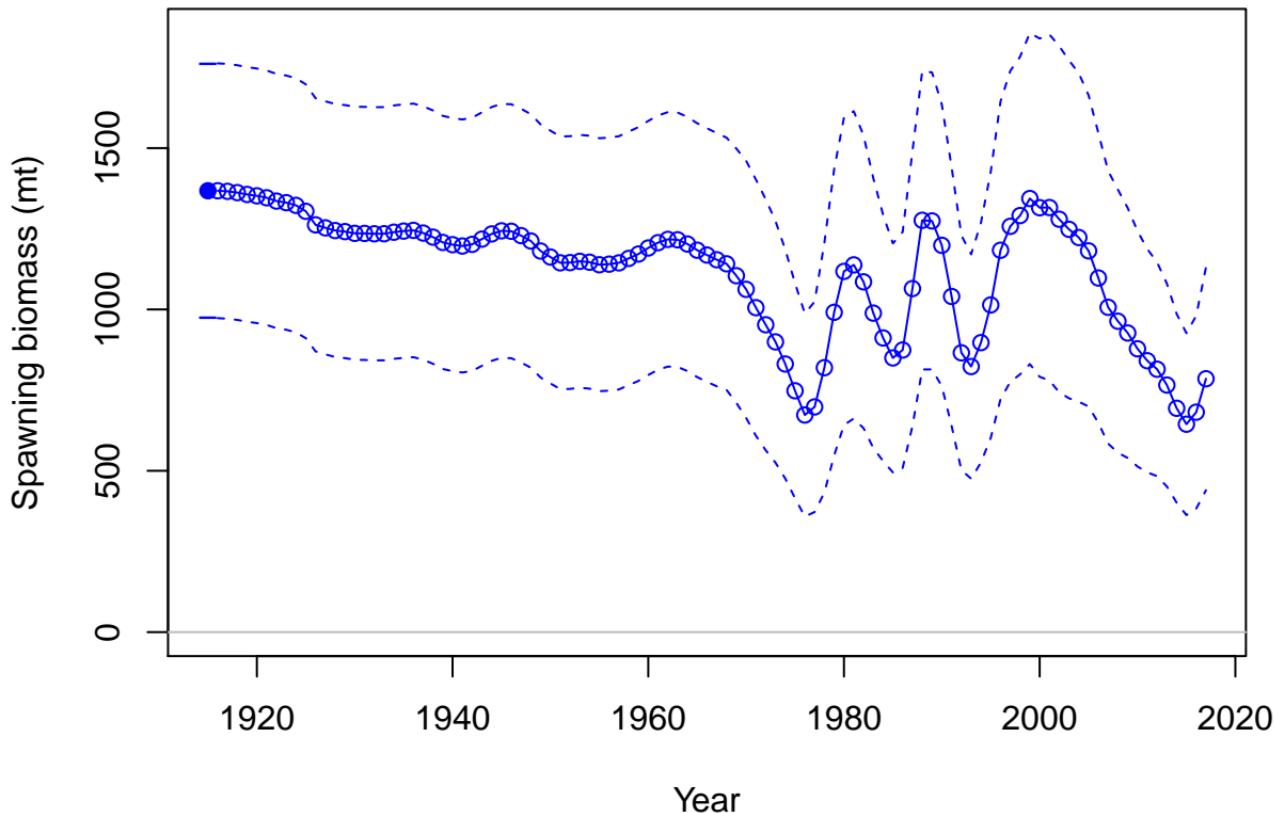
## Summary biomass (mt)



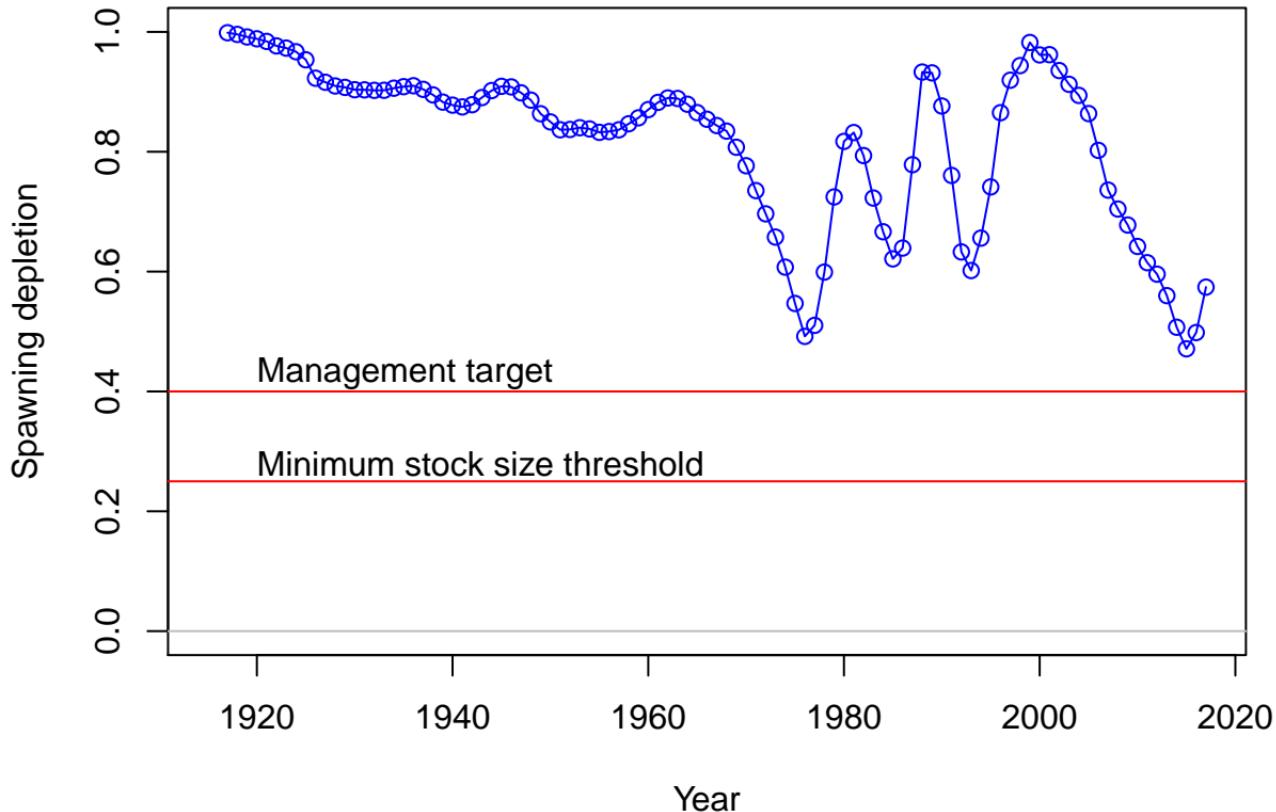
## Spawning biomass (mt)



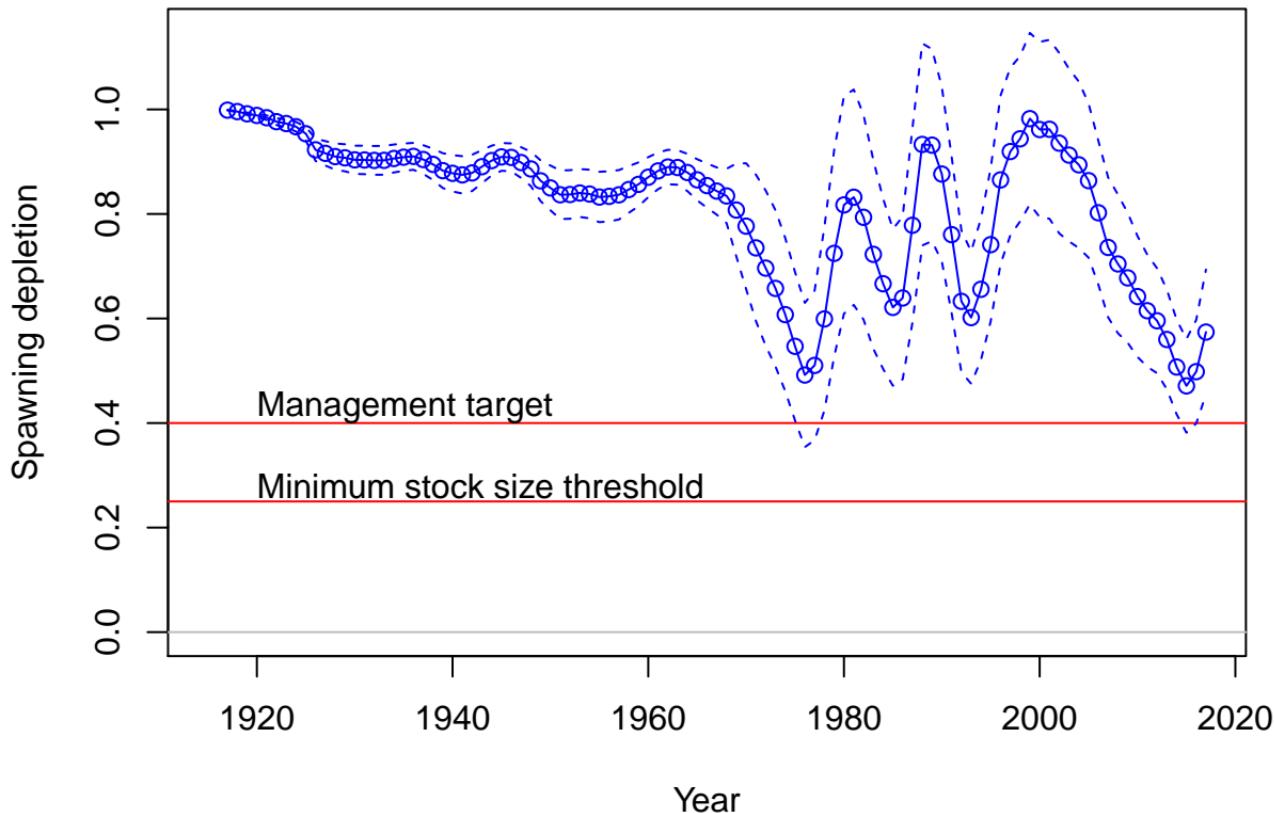
## Spawning biomass (mt) with ~95% asymptotic intervals



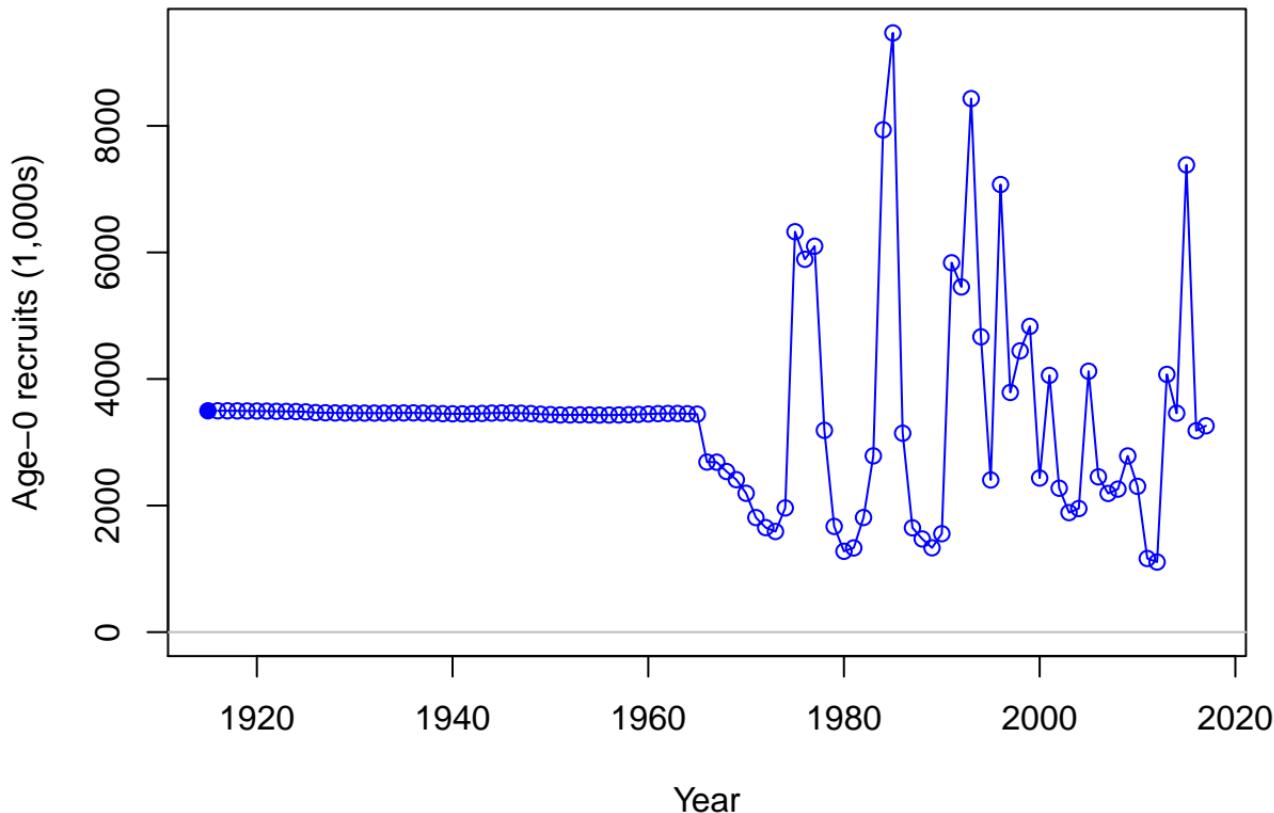
## Spawning depletion



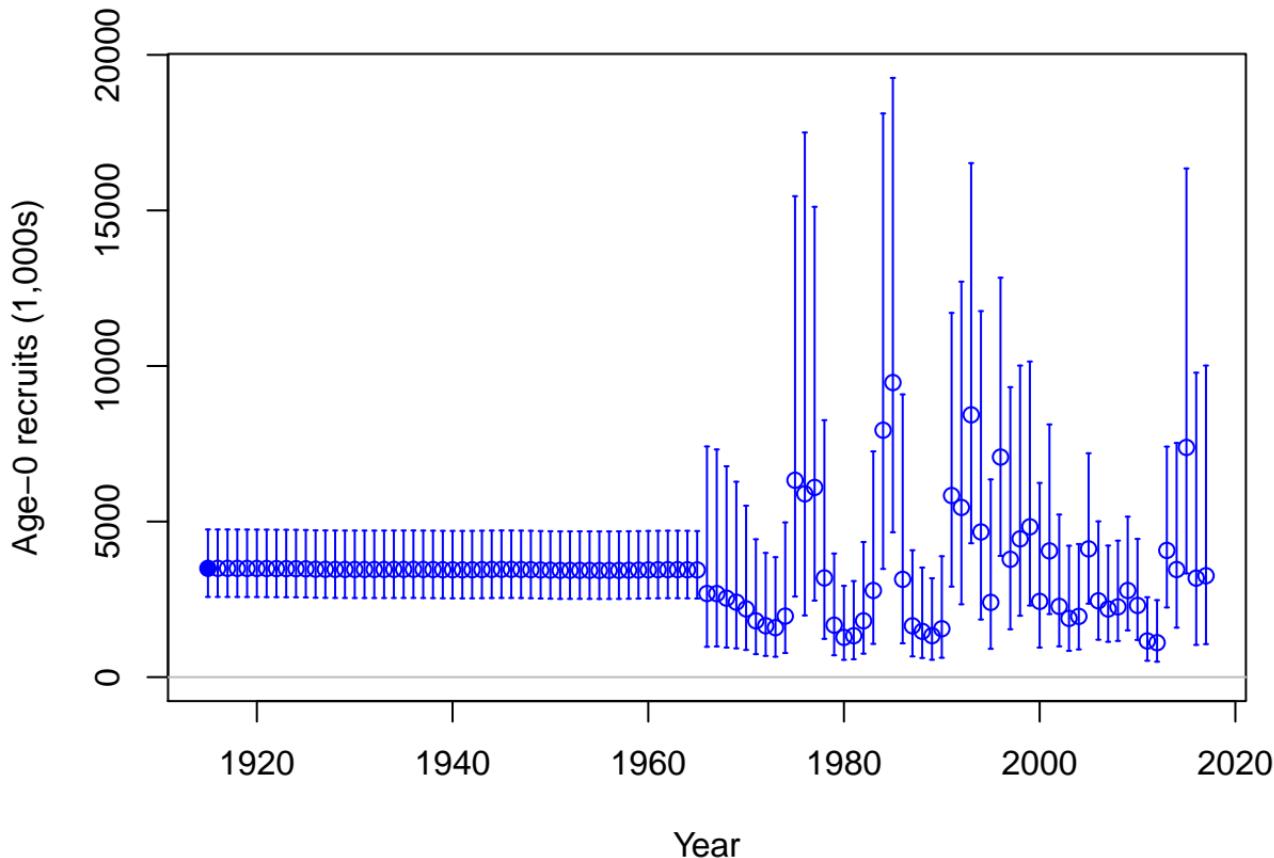
## Spawning depletion with ~95% asymptotic intervals

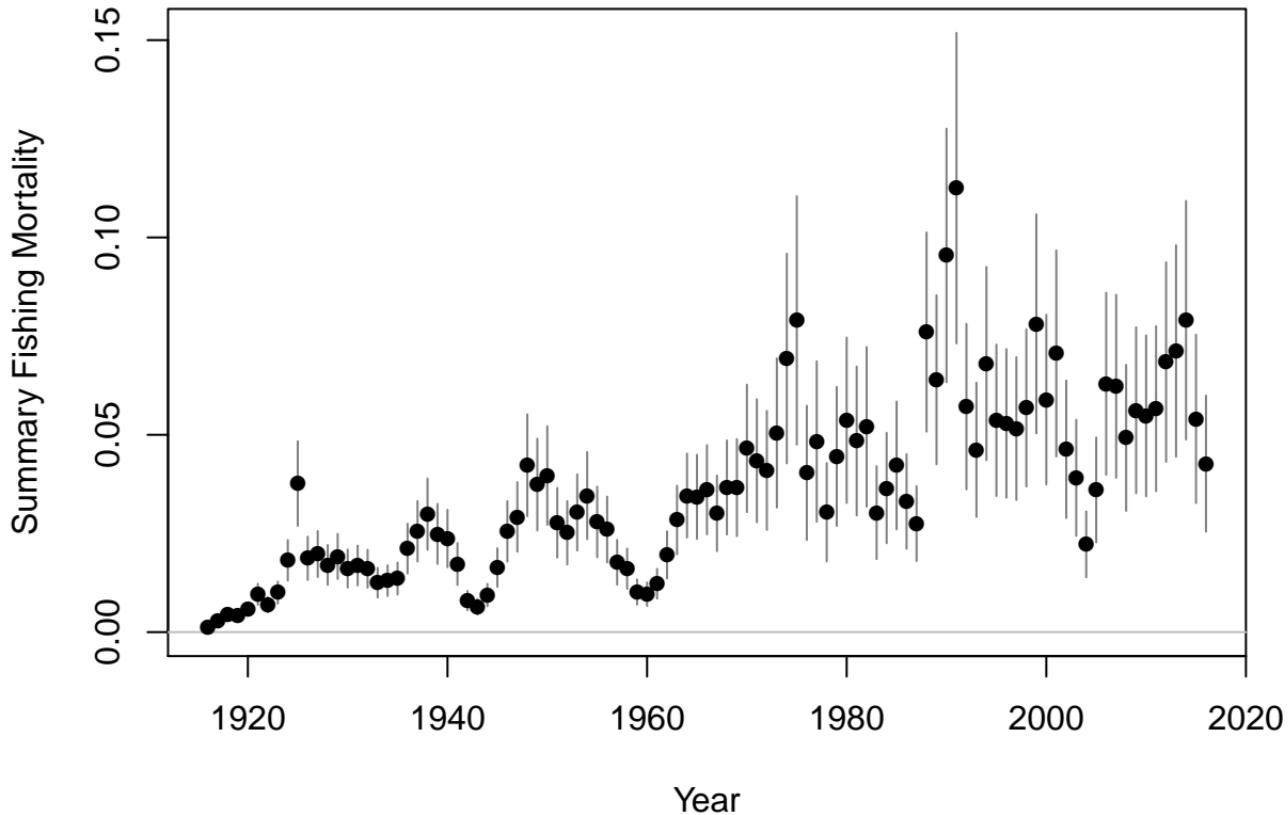


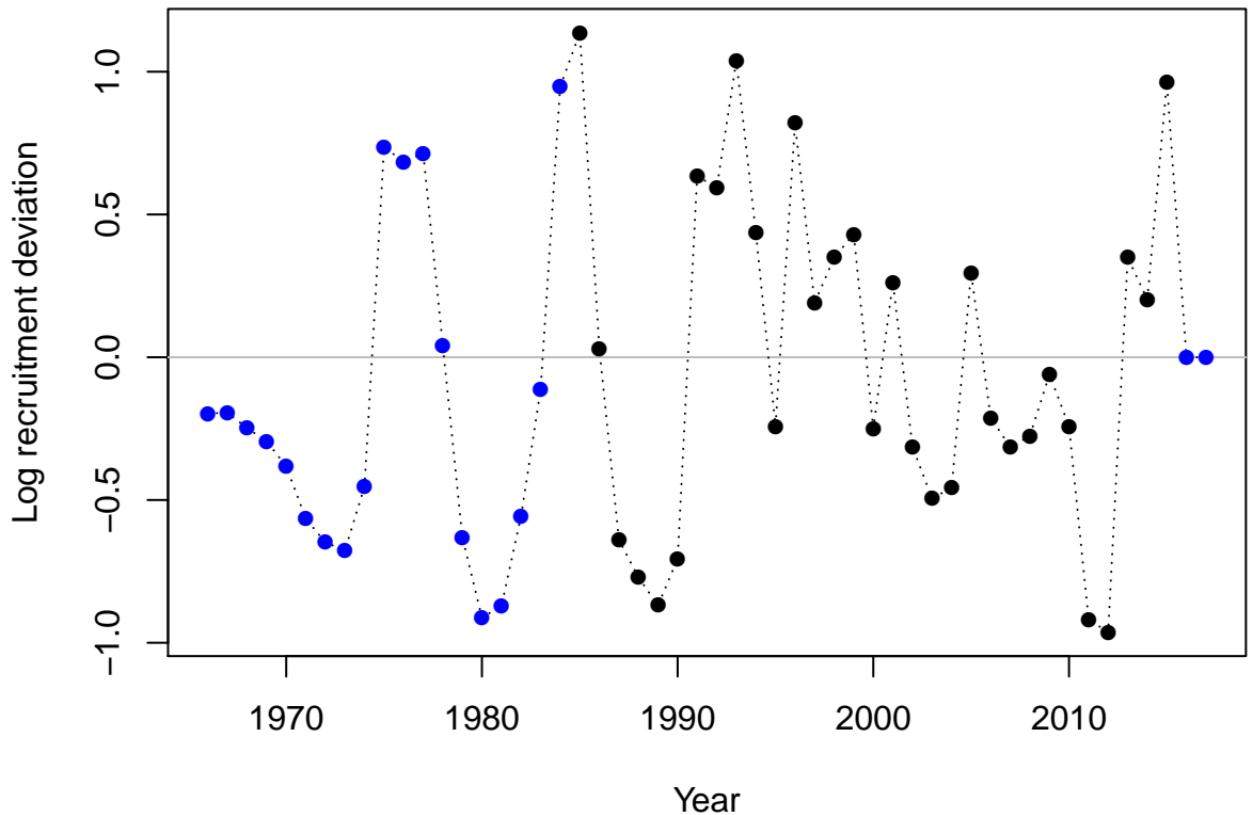
## Age-0 recruits (1,000s)

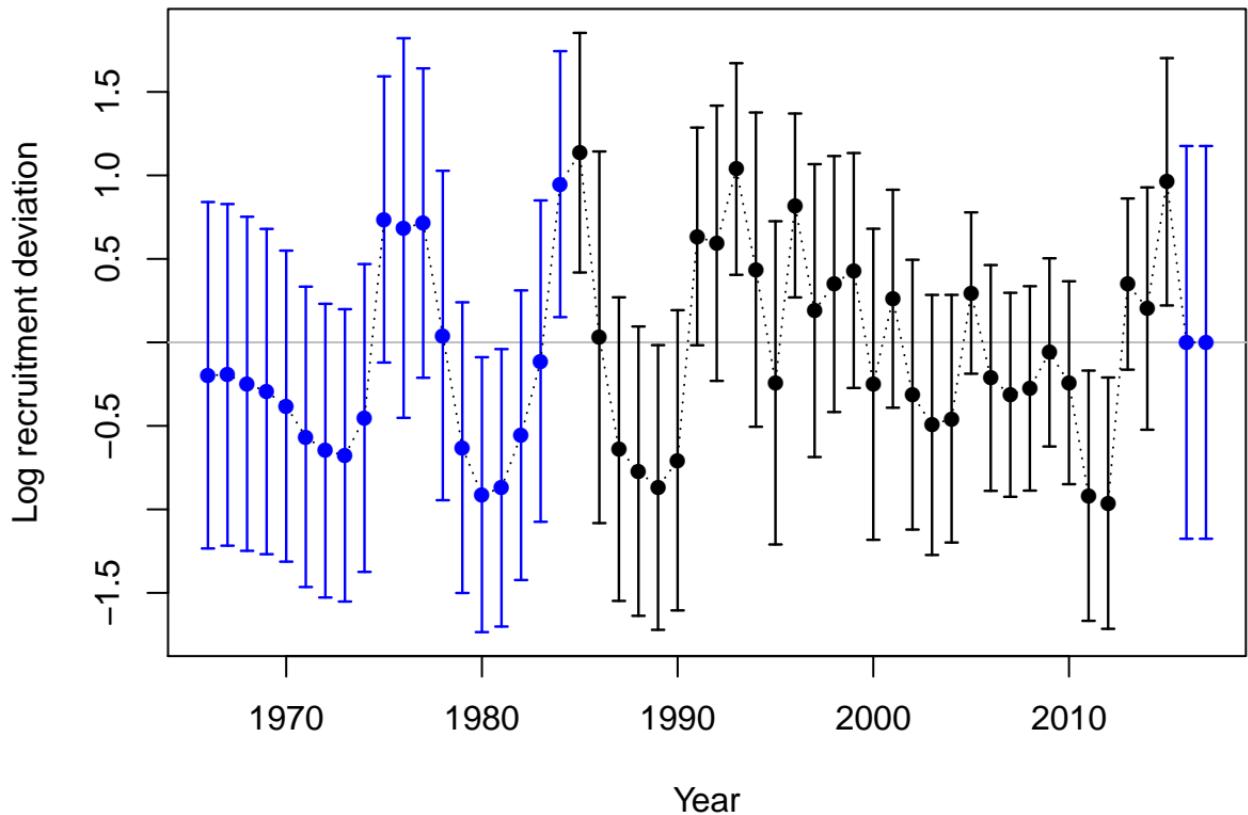


## Age-0 recruits (1,000s) with ~95% asymptotic intervals

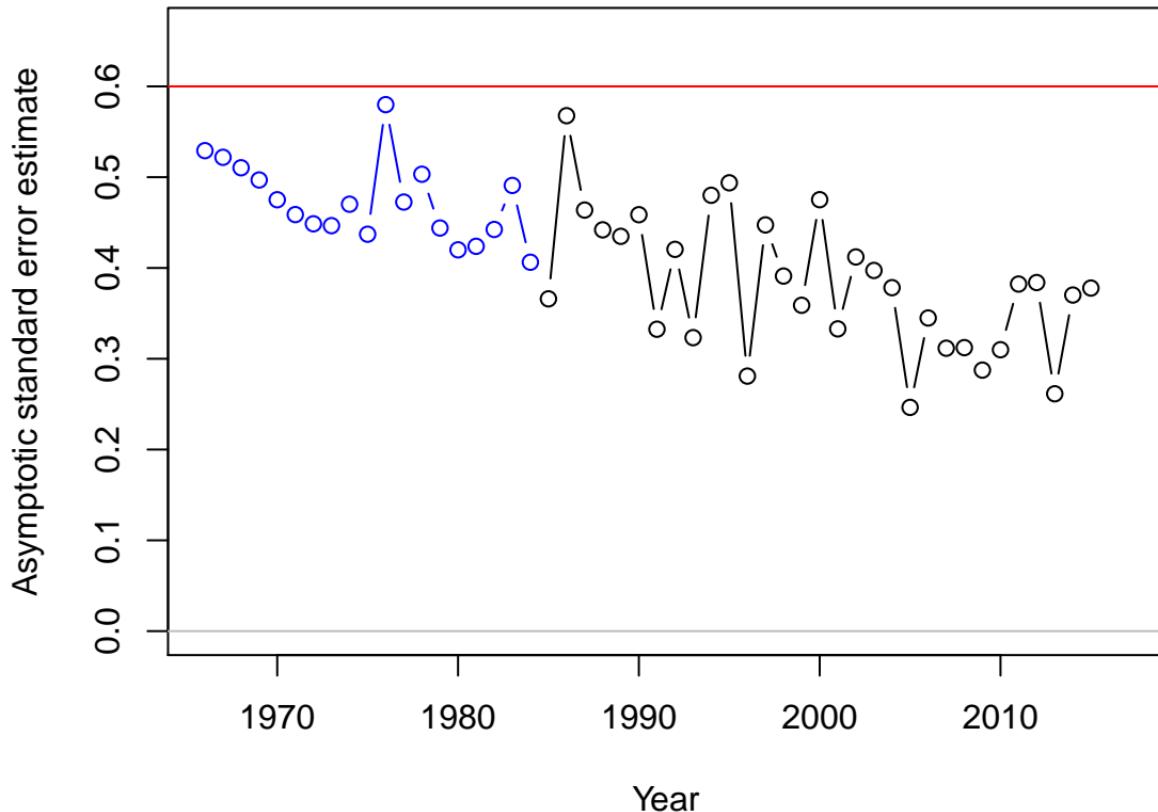


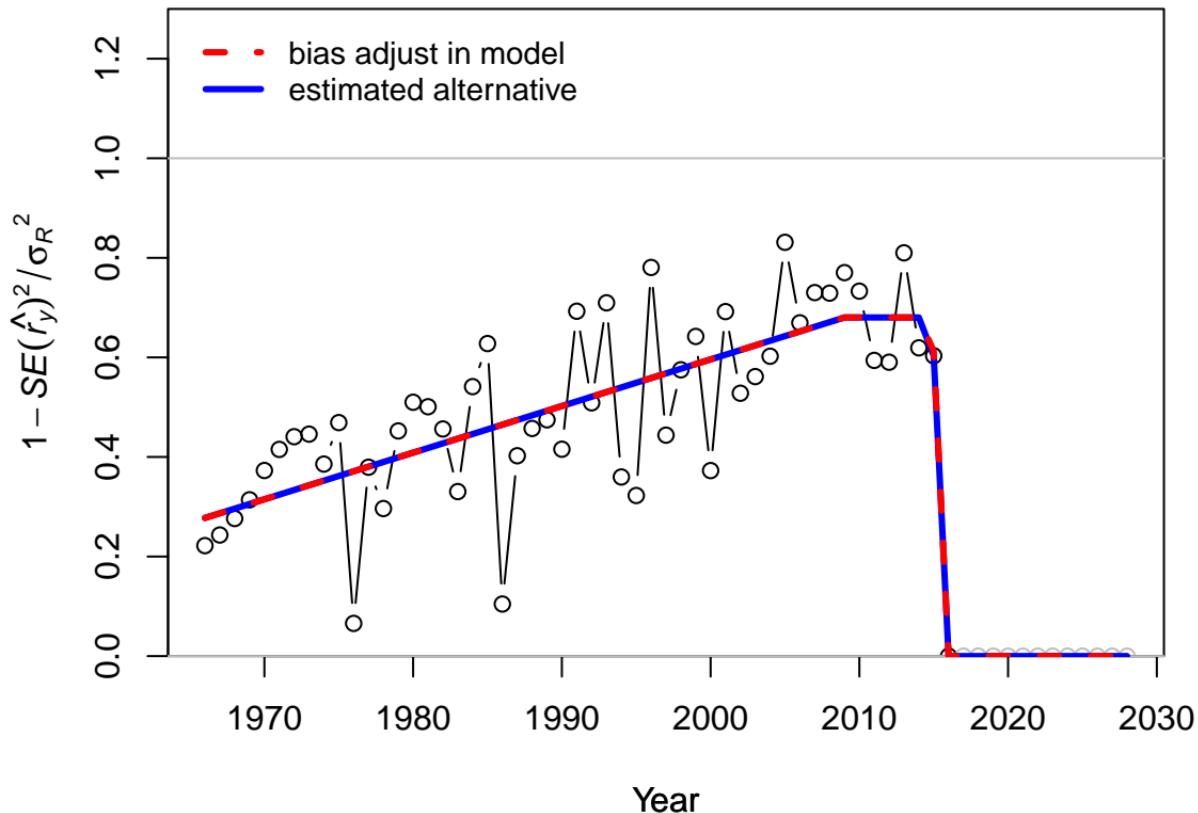


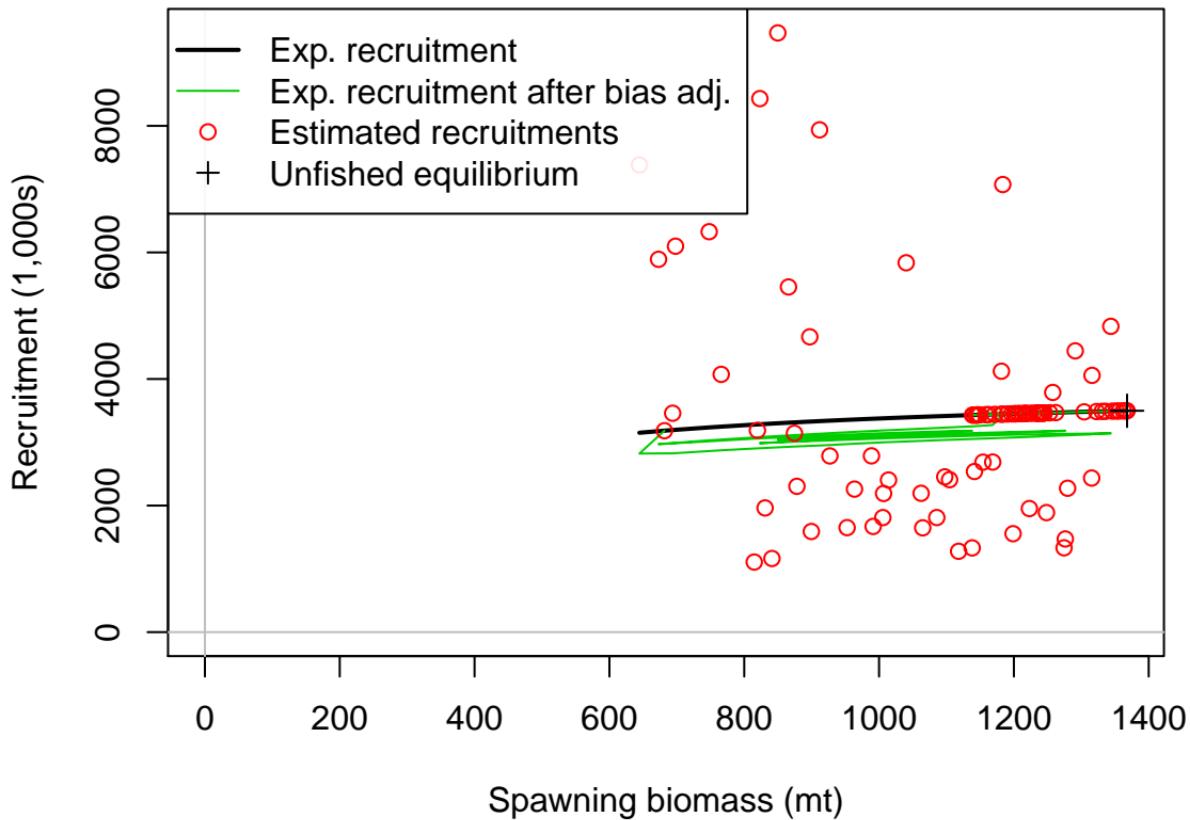


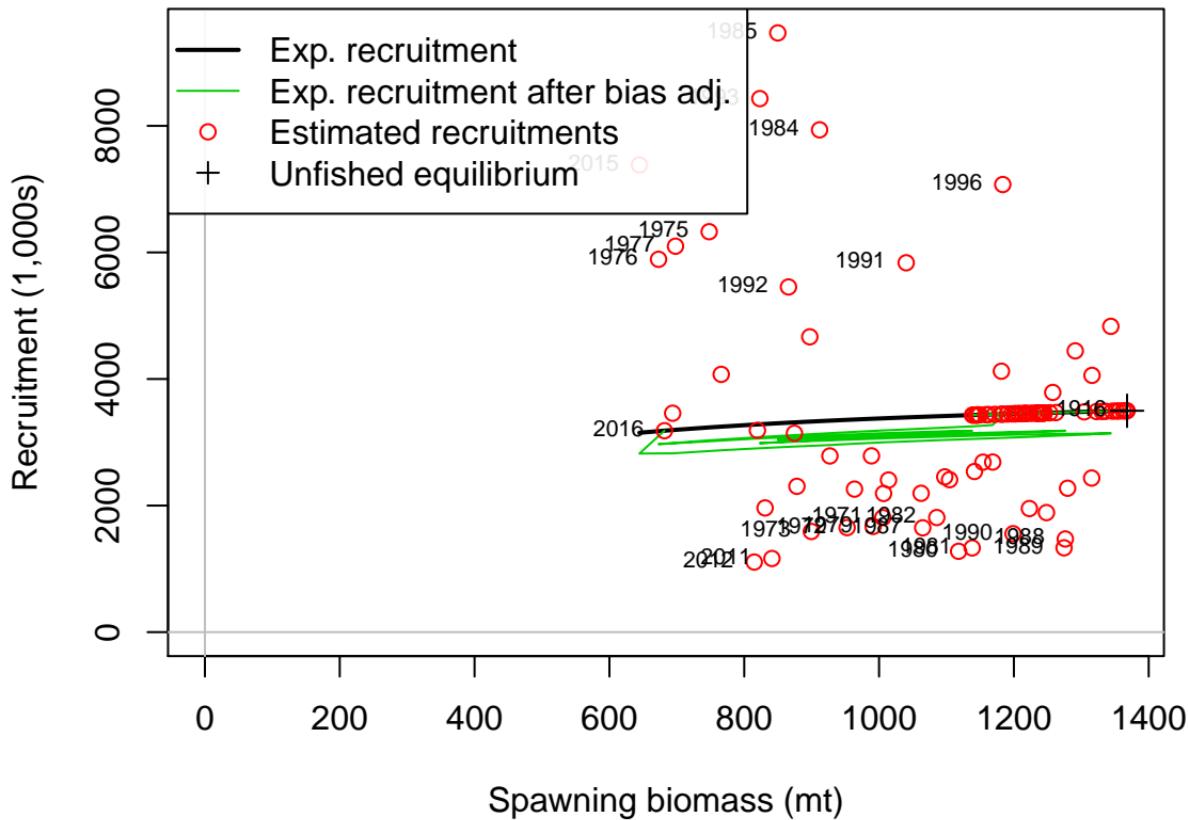


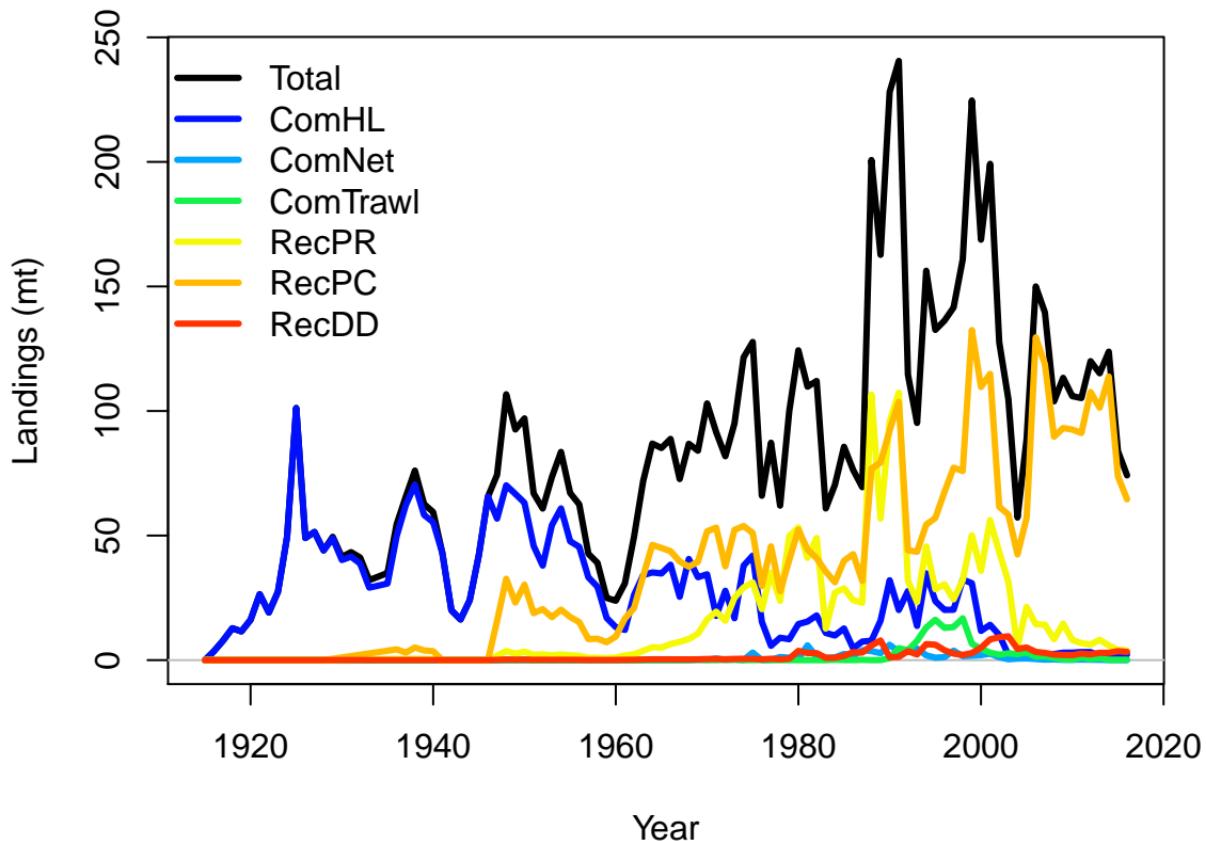
## Recruitment deviation variance

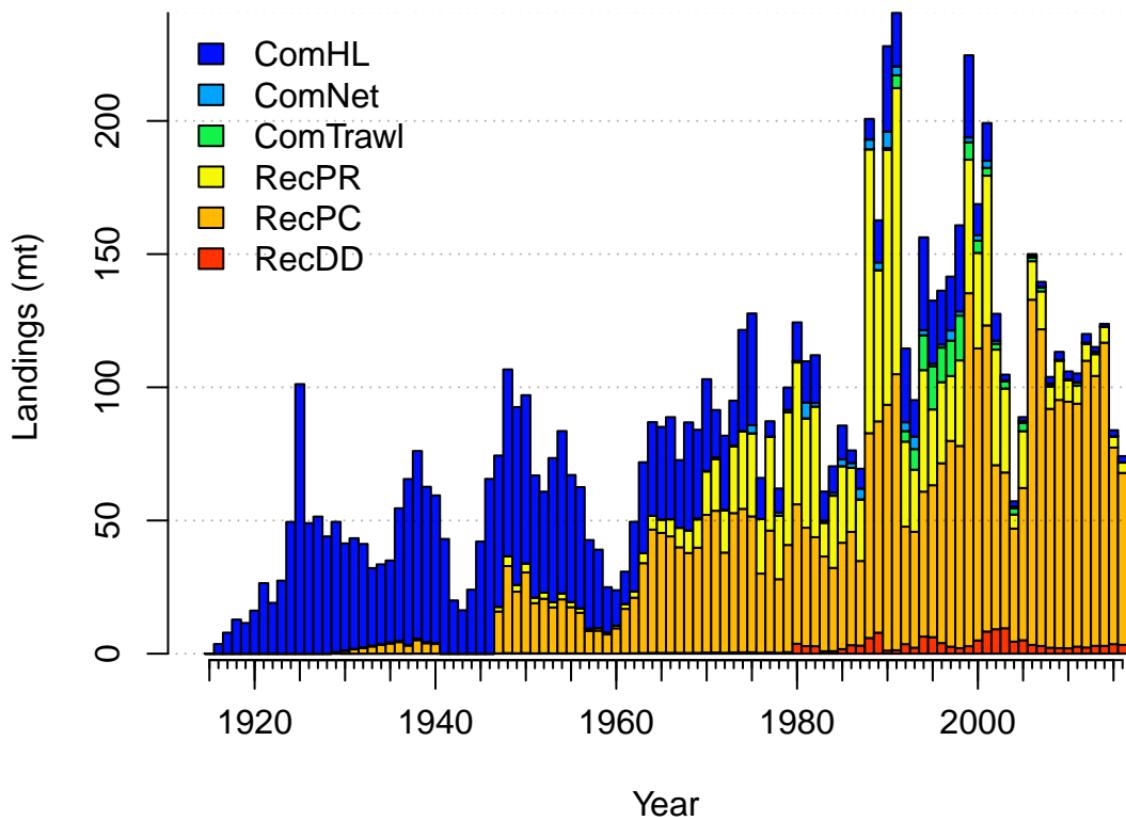


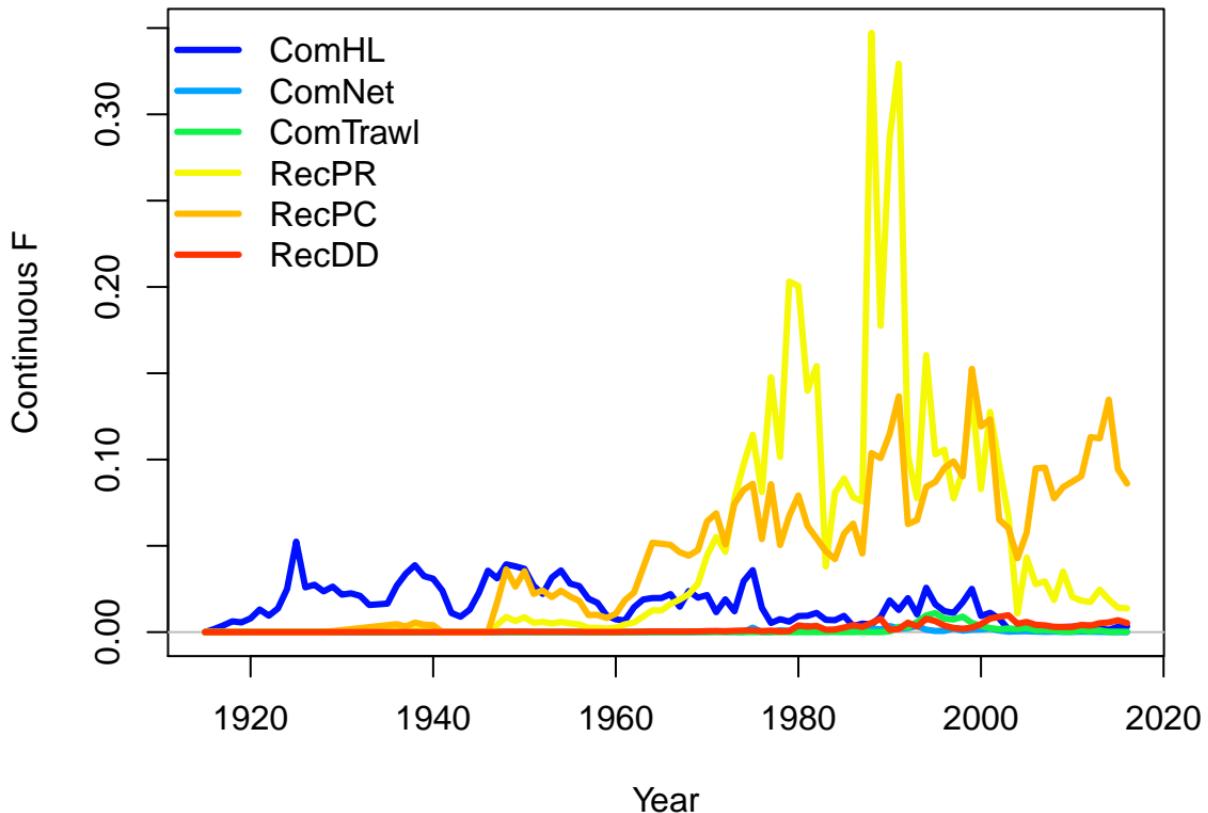


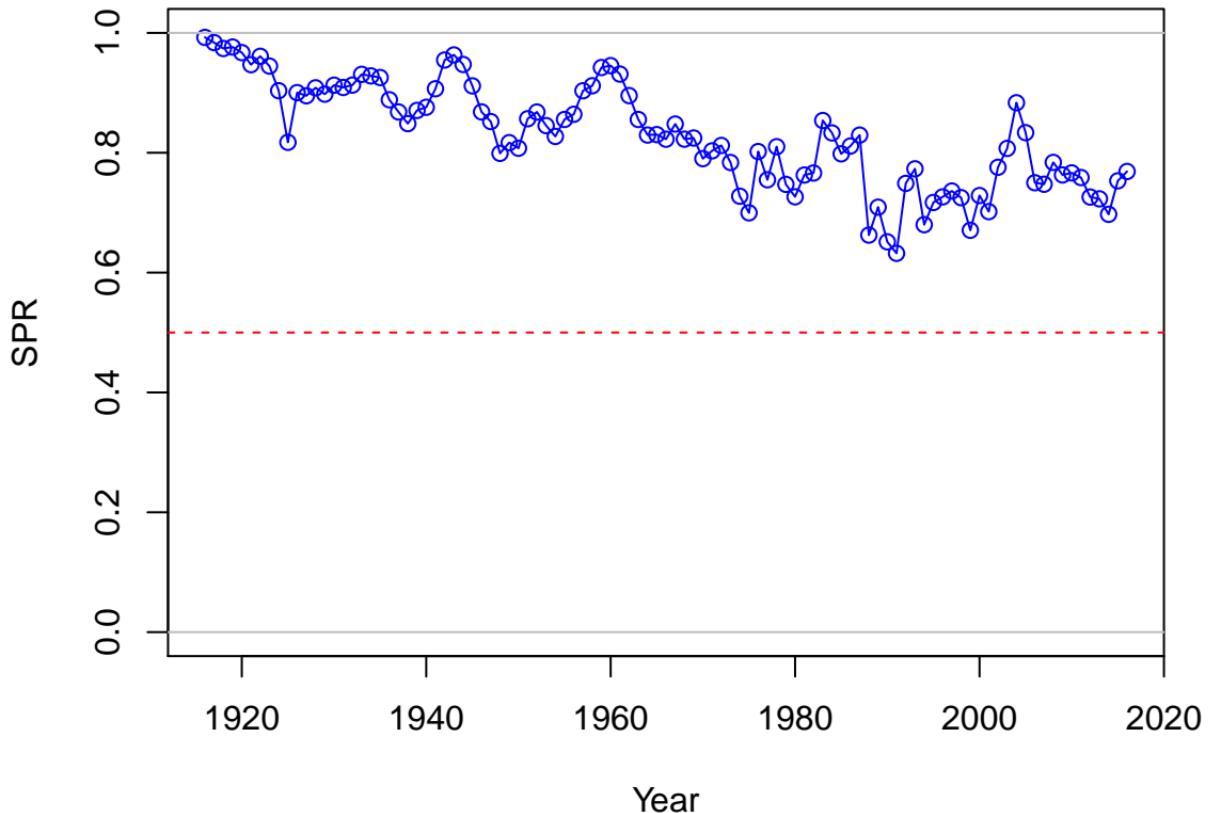


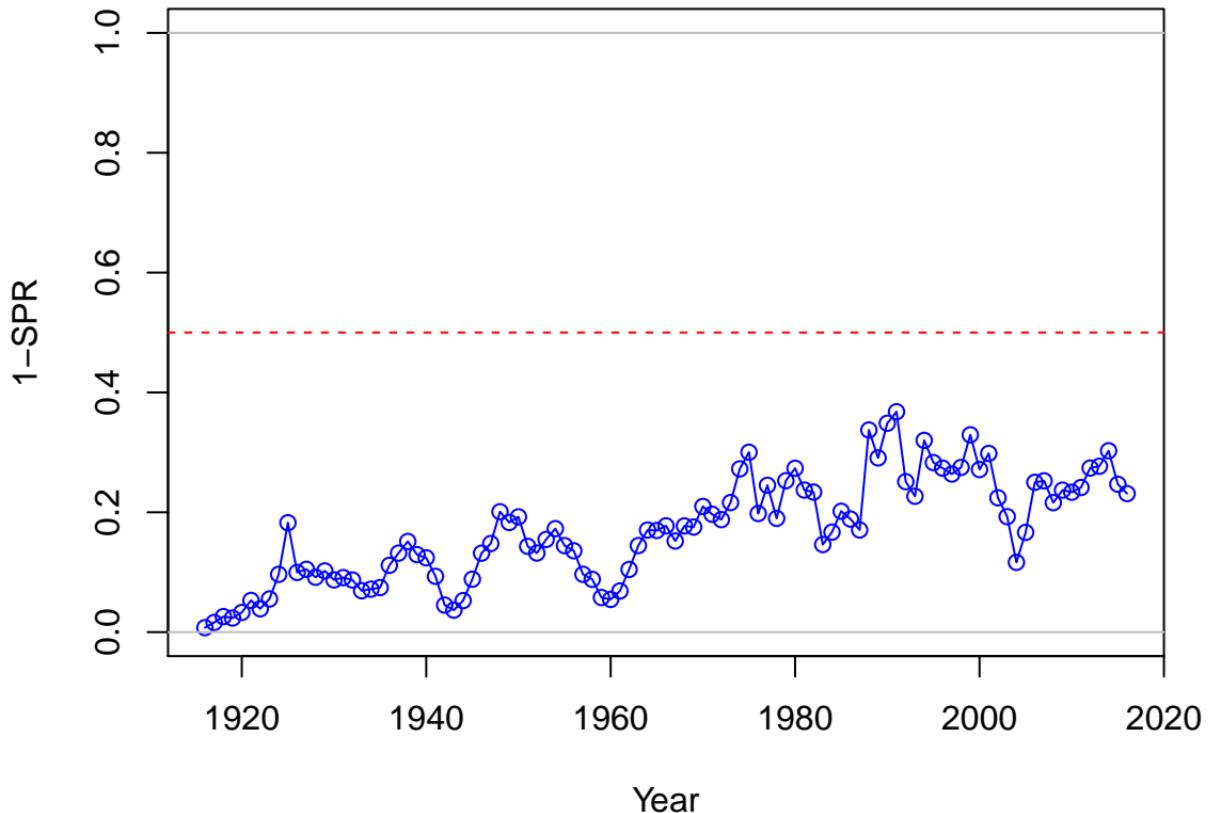


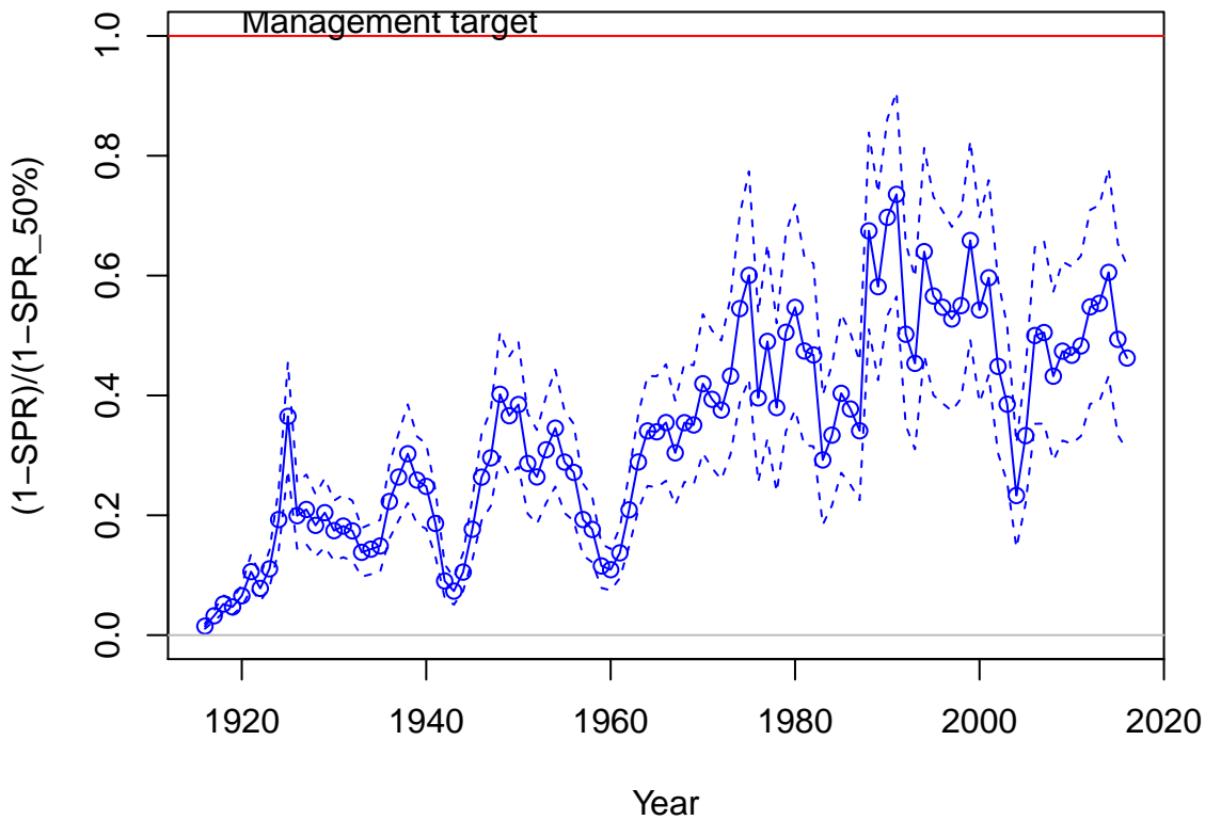


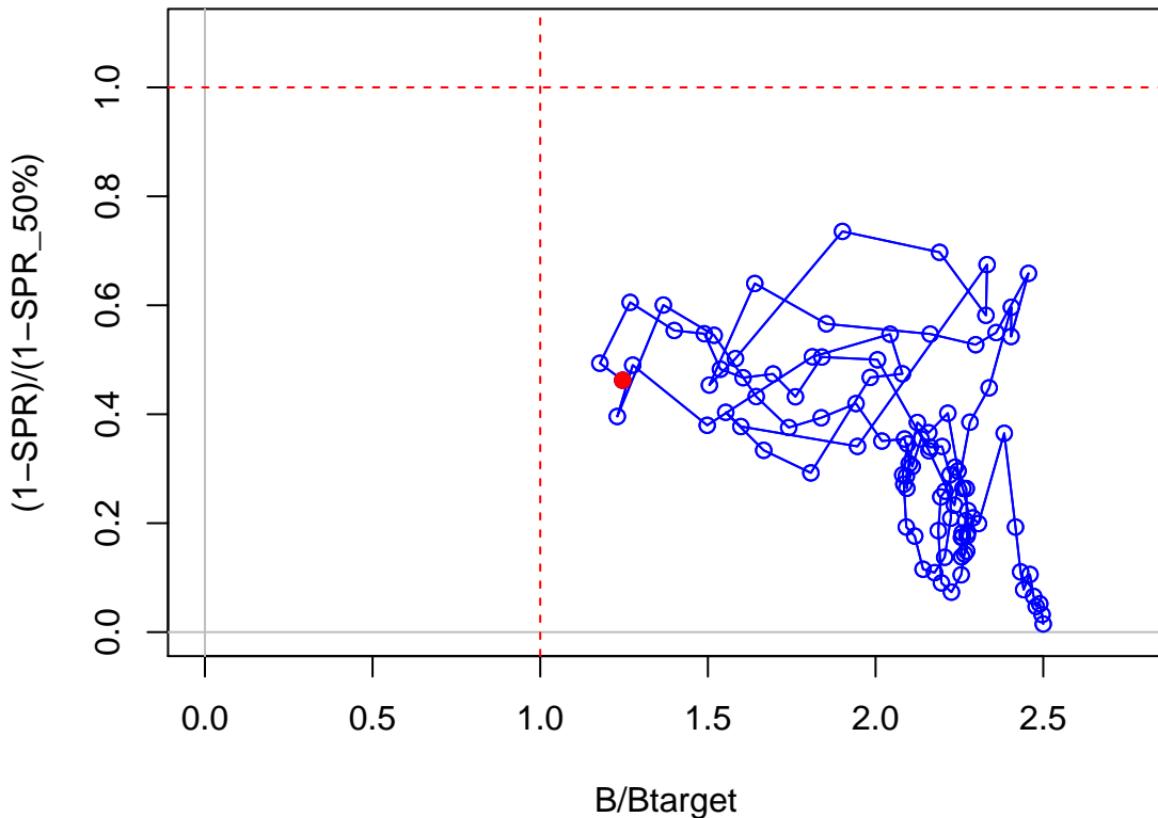




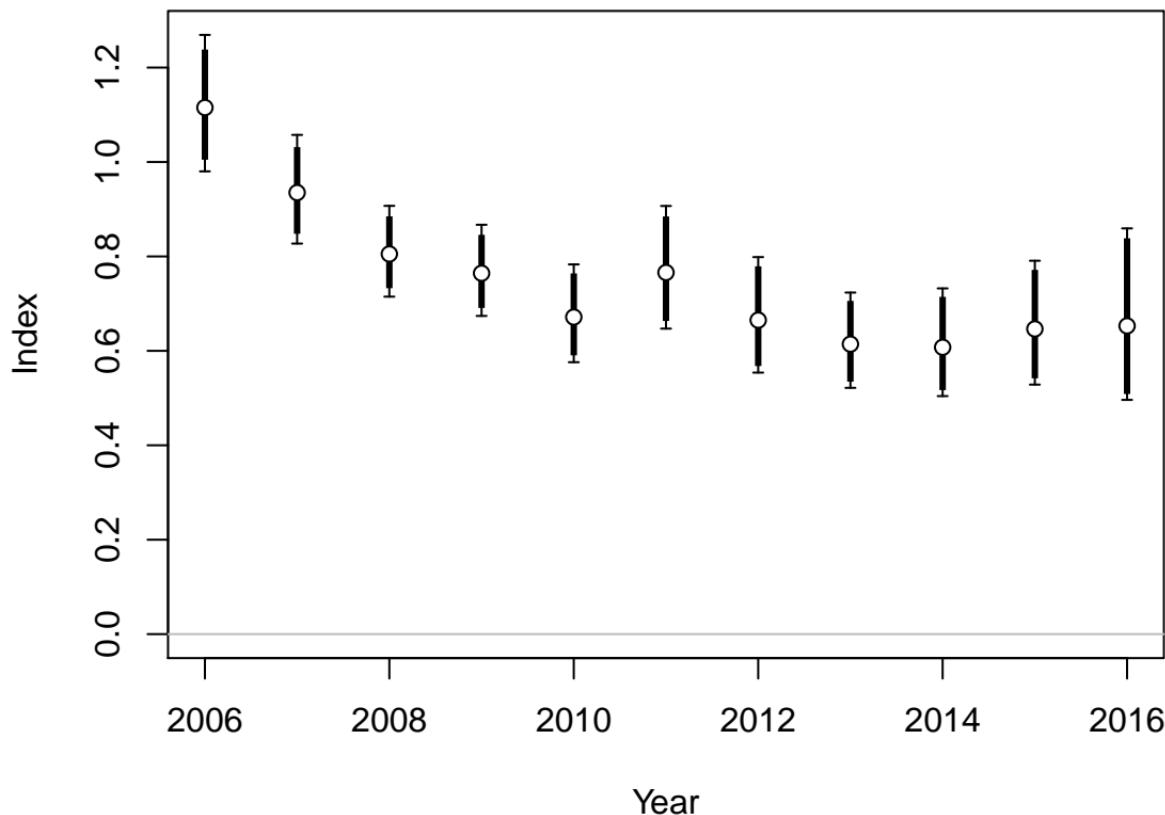




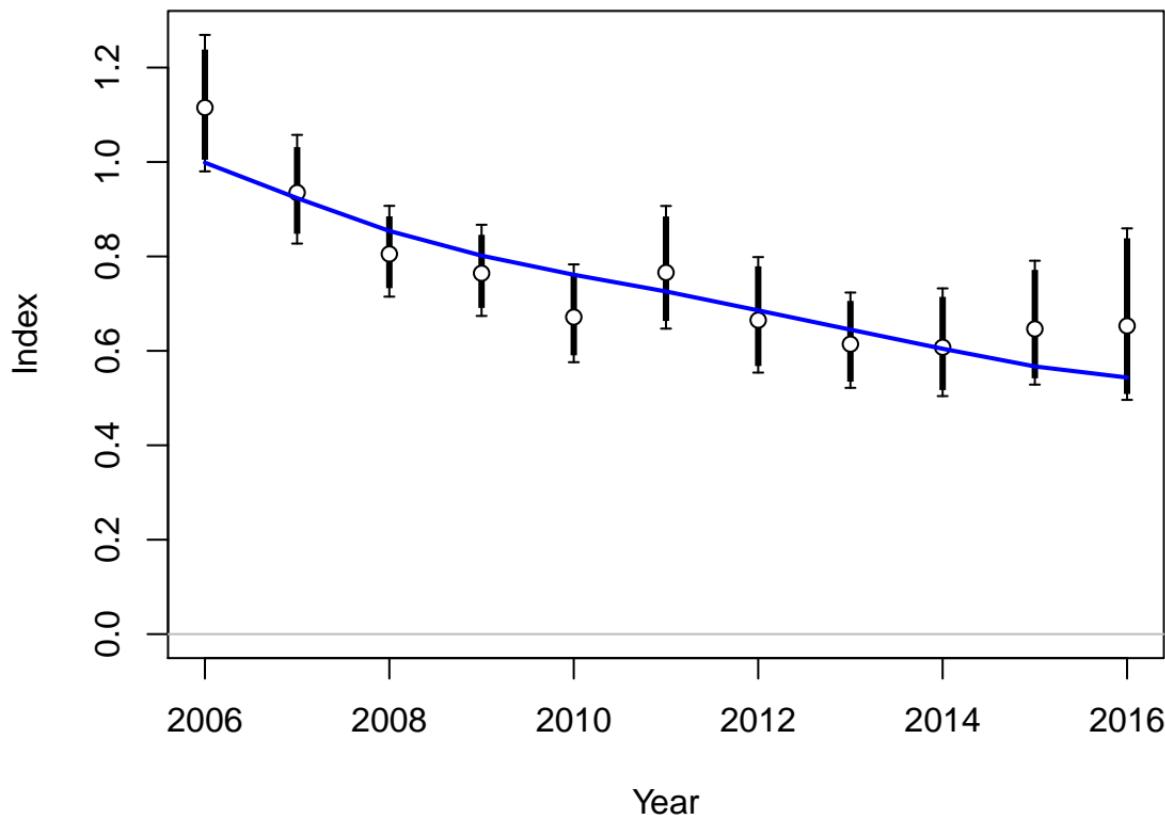




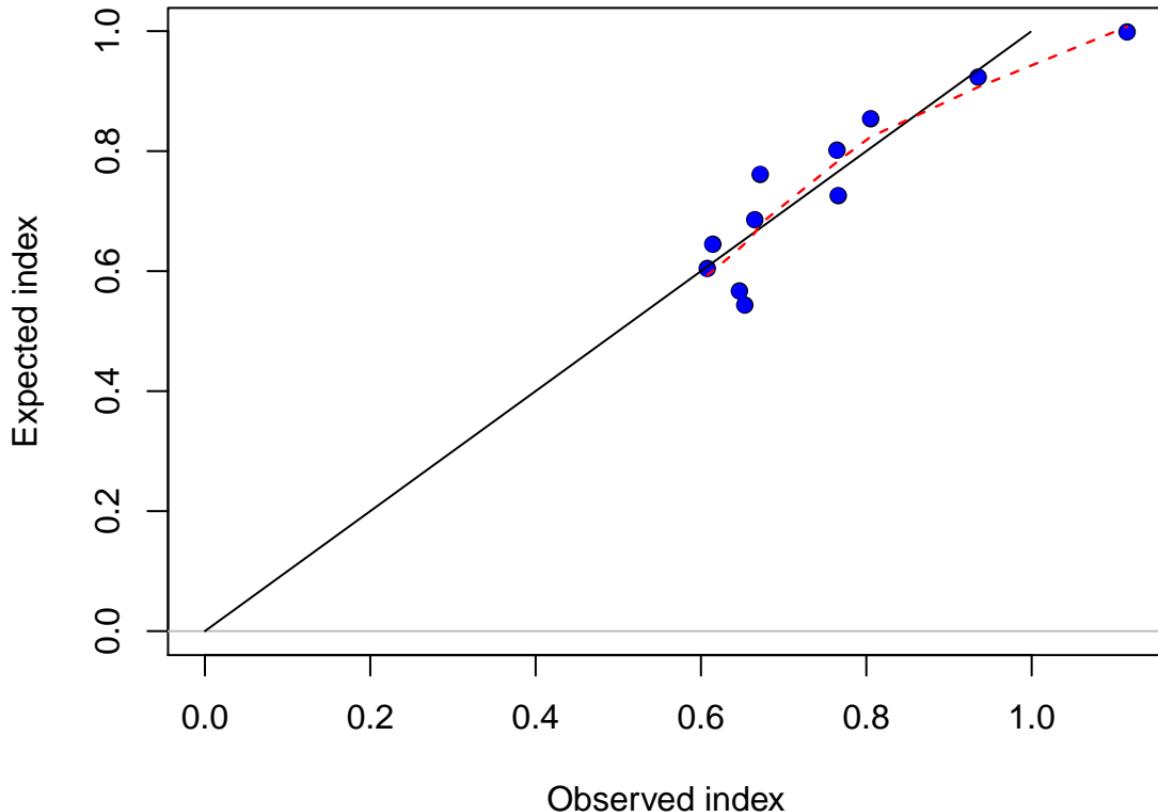
## Index RecPR



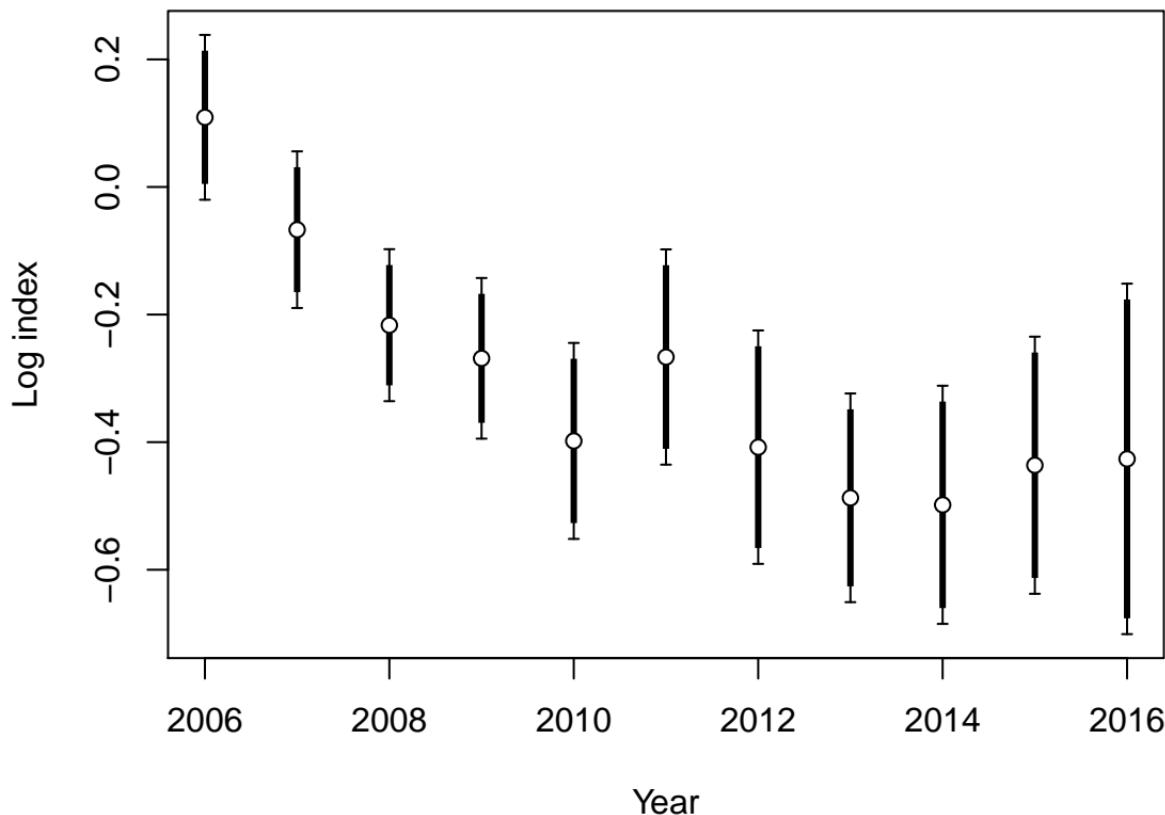
## Index RecPR



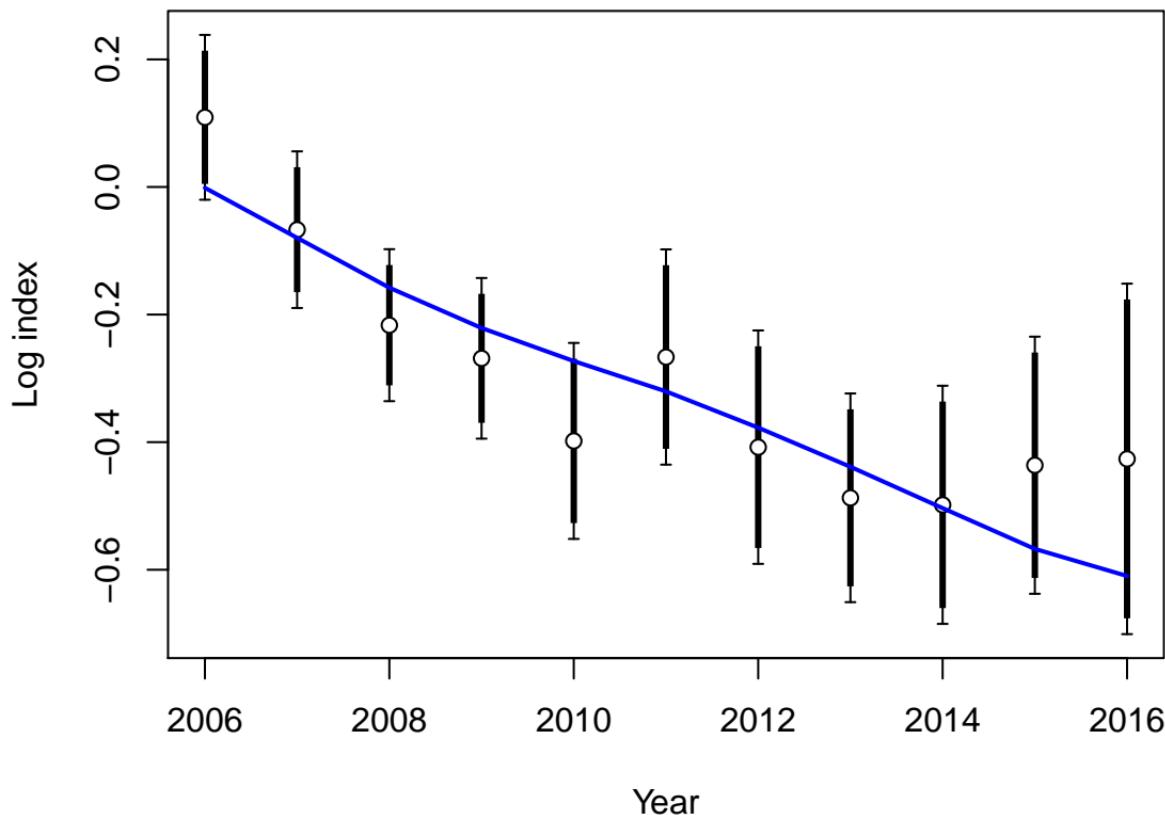
## Index RecPR



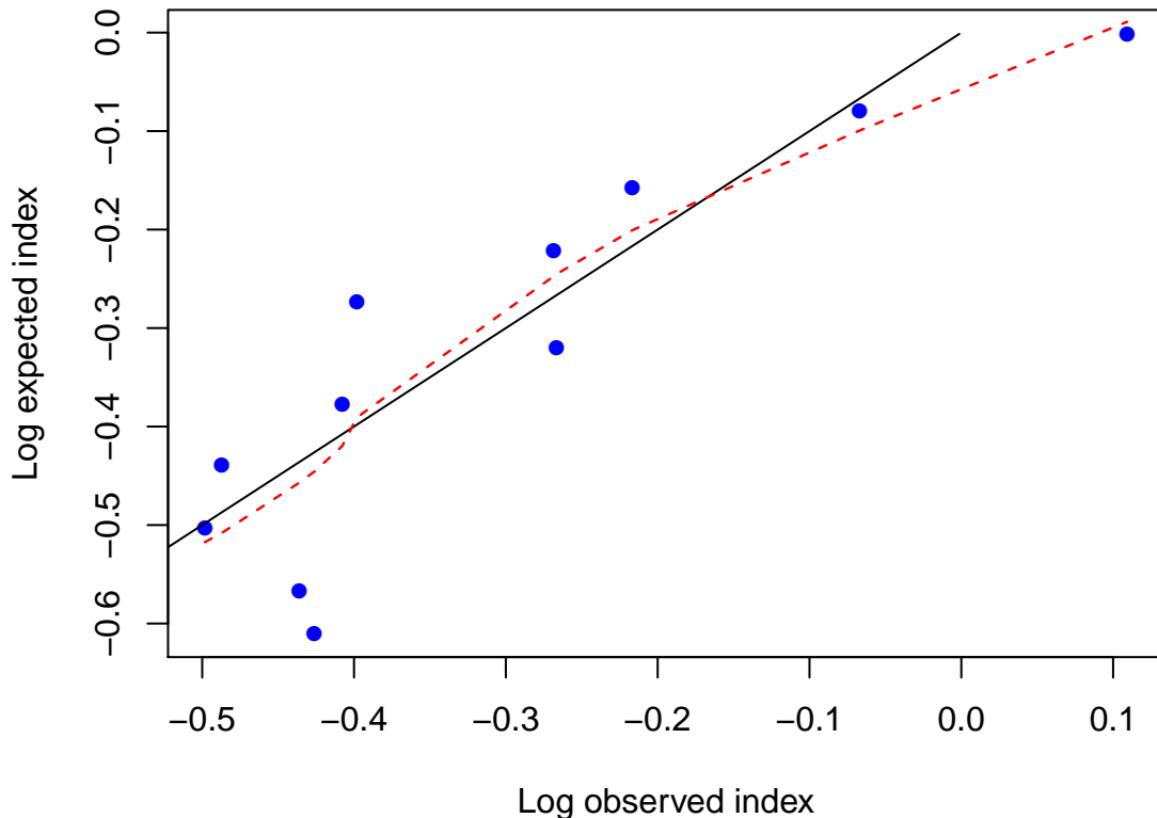
## Log index RecPR



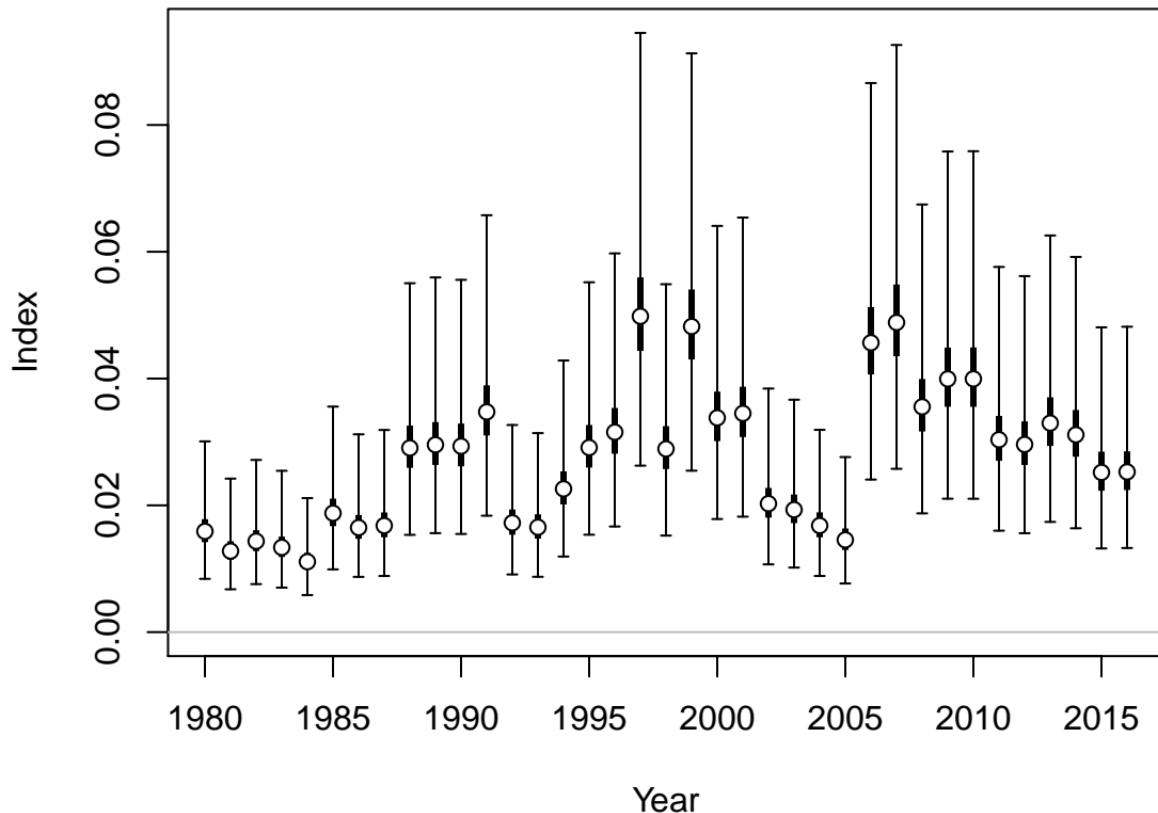
## Log index RecPR



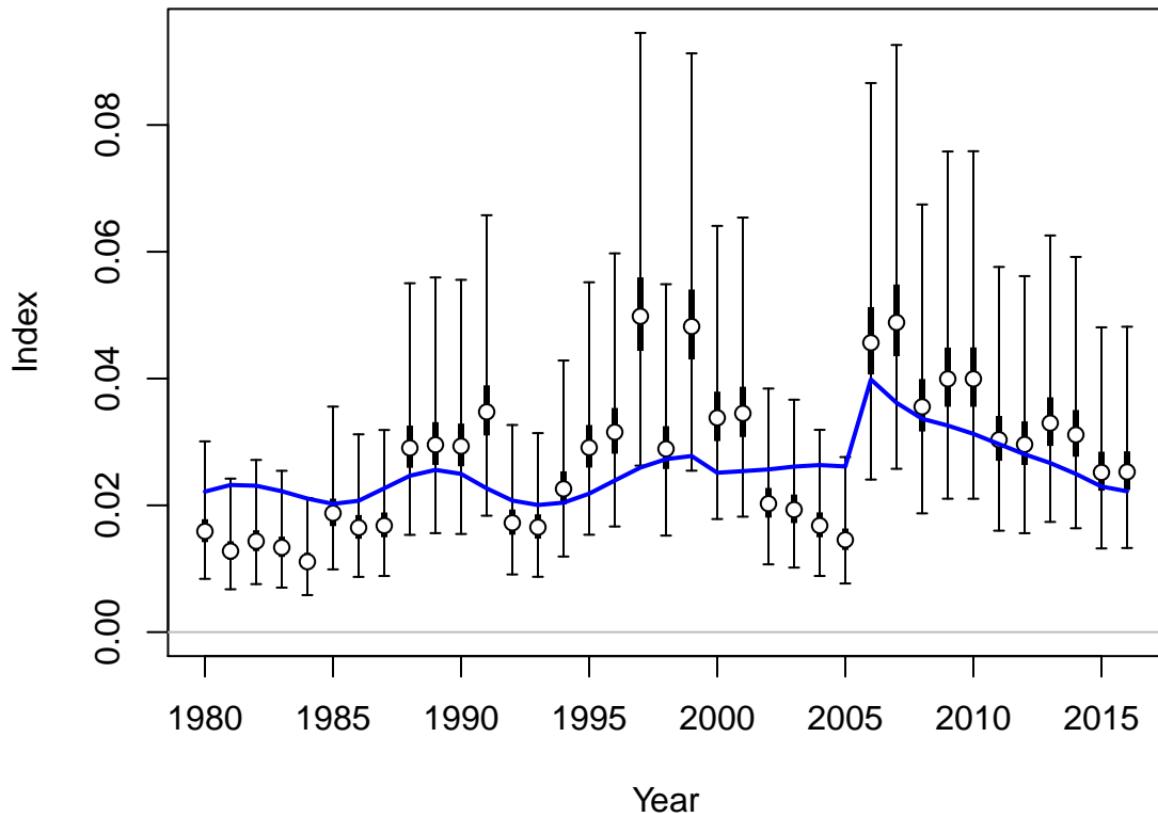
### Log index RecPR



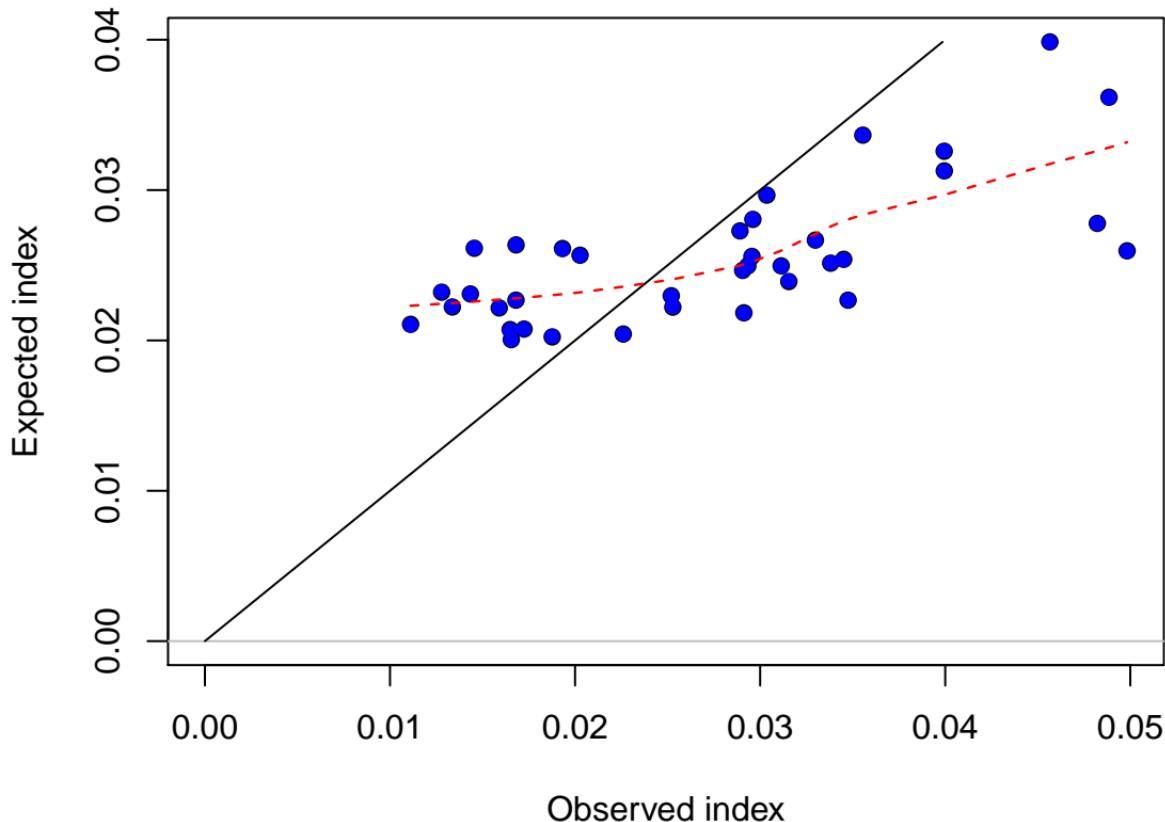
## Index RecPC



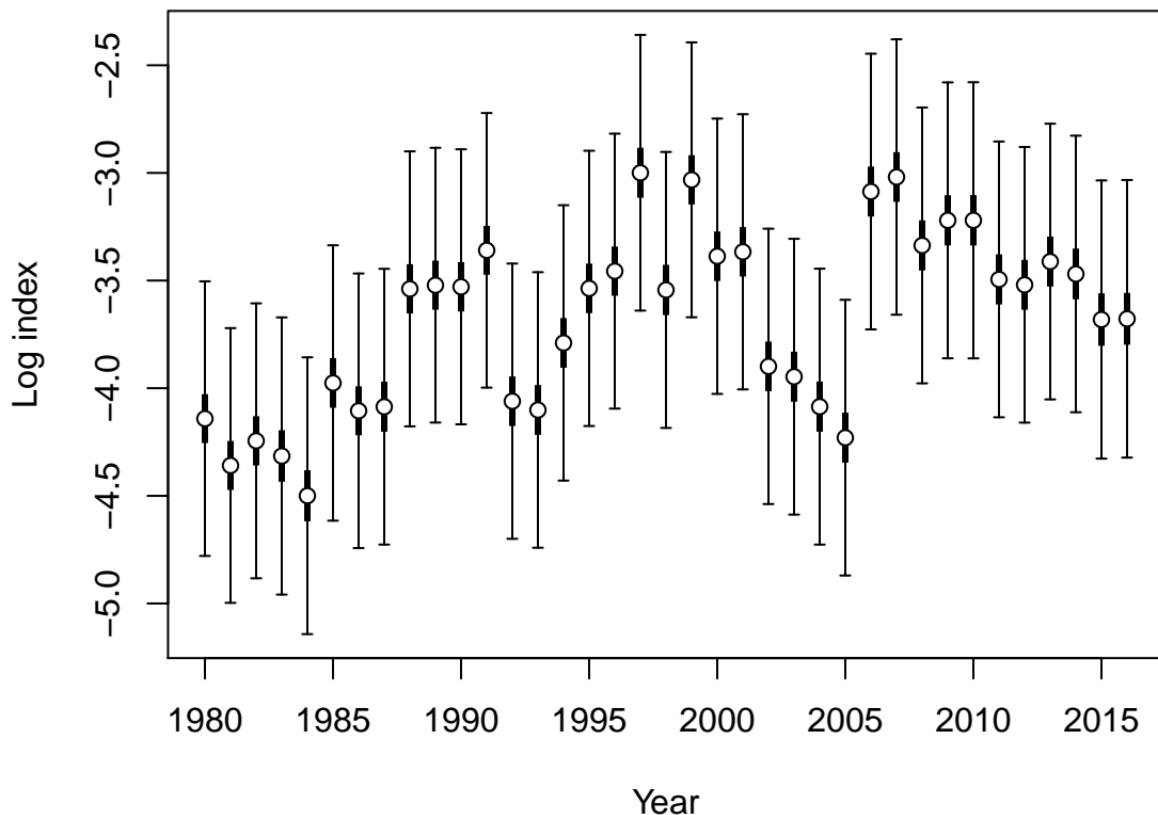
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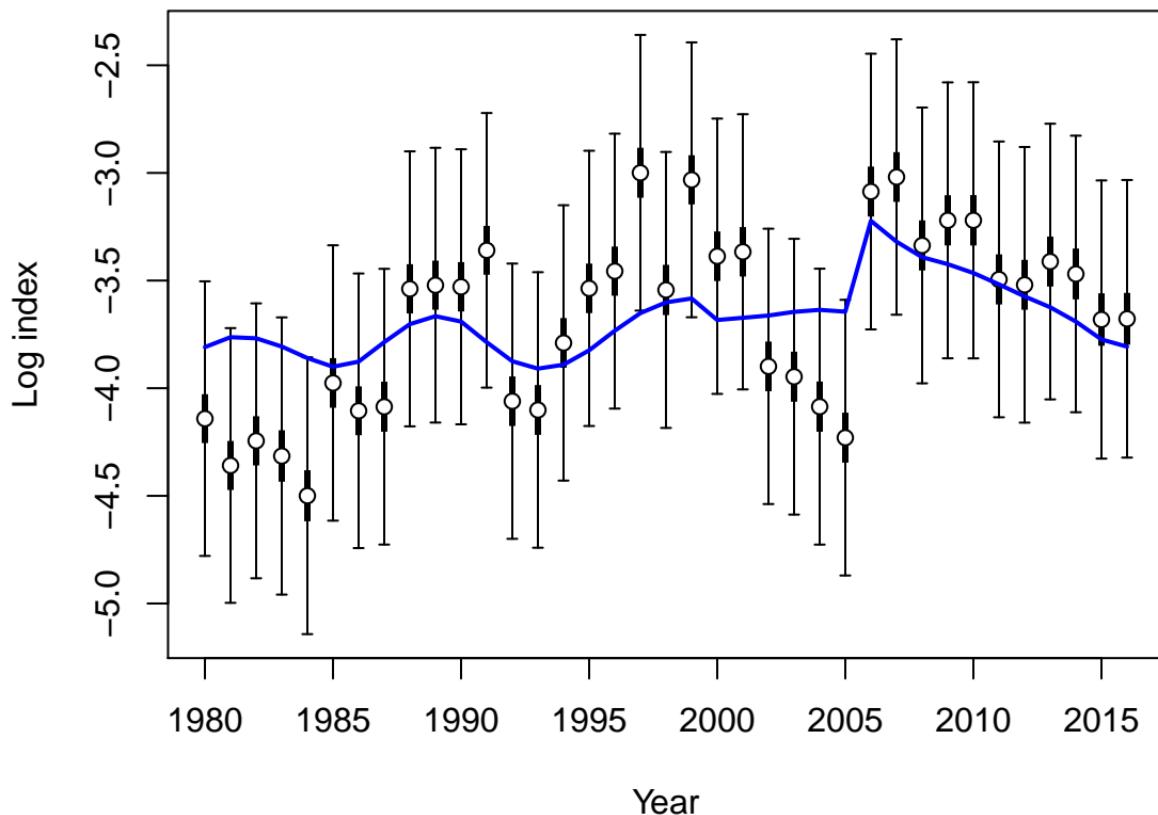
## Index RecPC



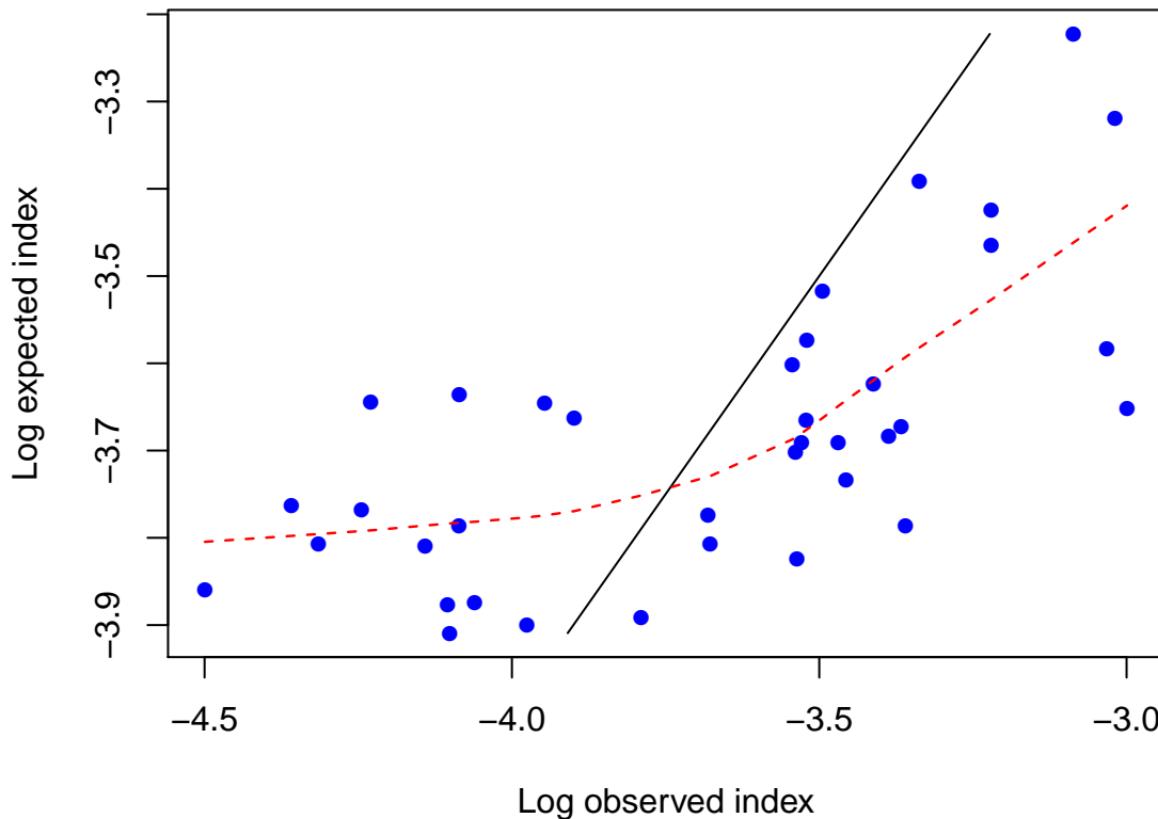
## Log index RecPC



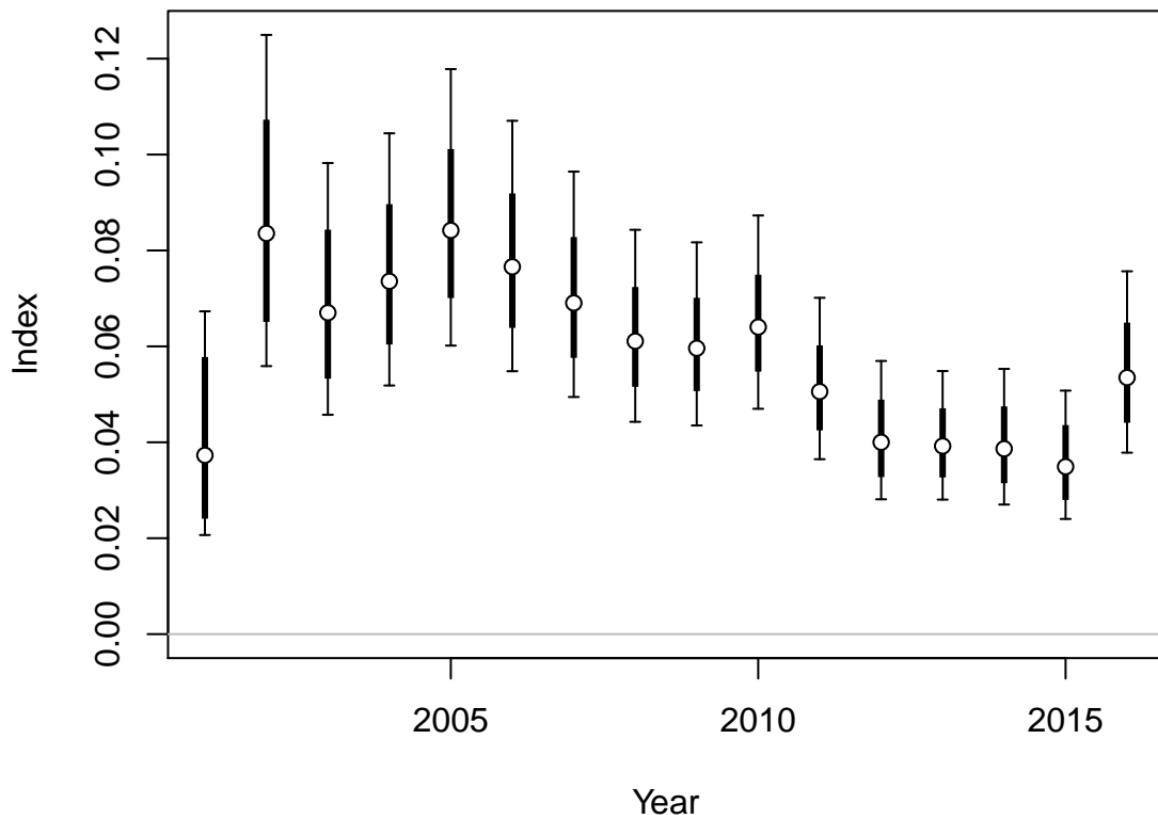
## Log index RecPC



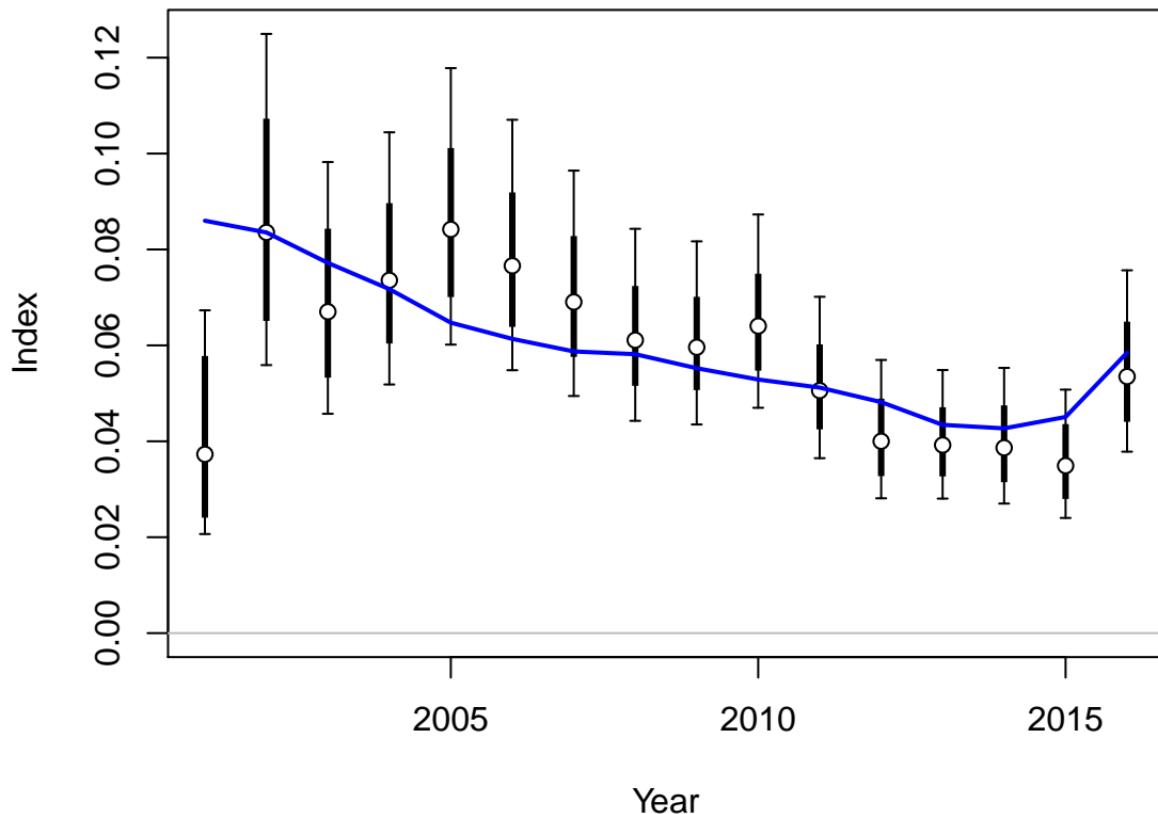
### Log index RecPC



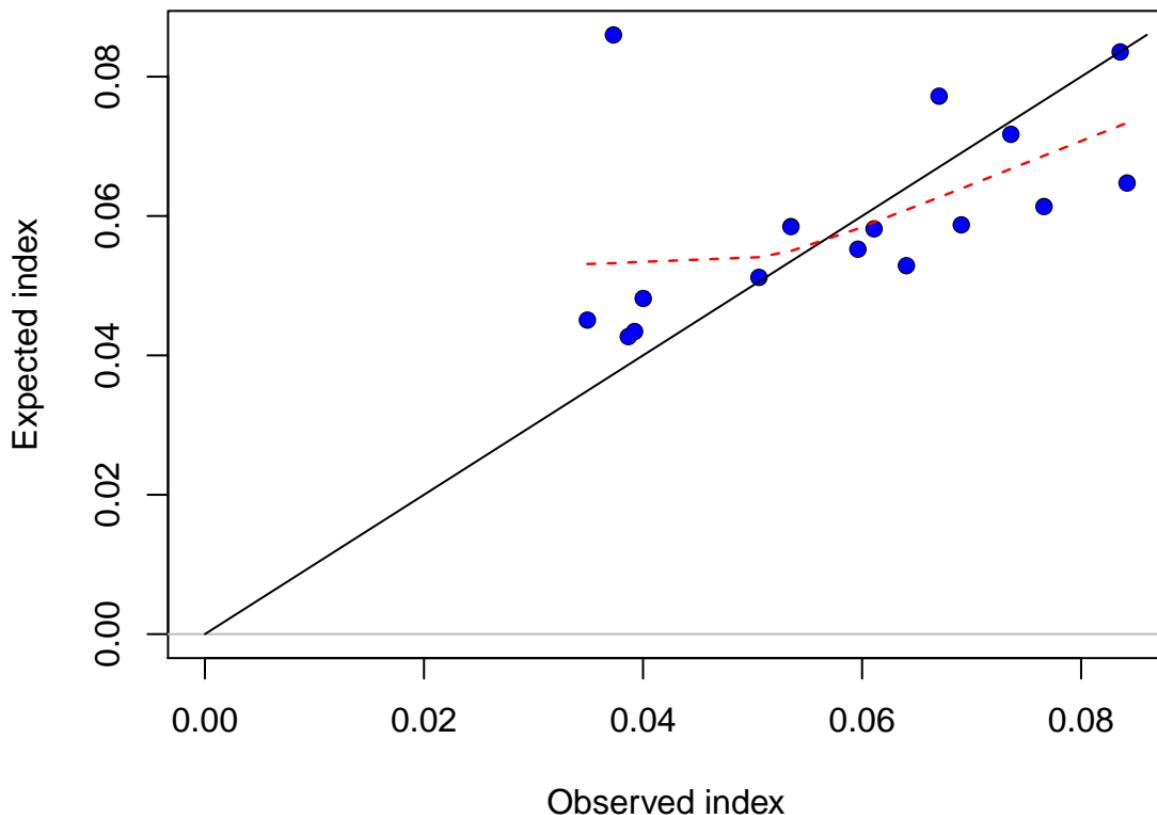
## Index RecDD



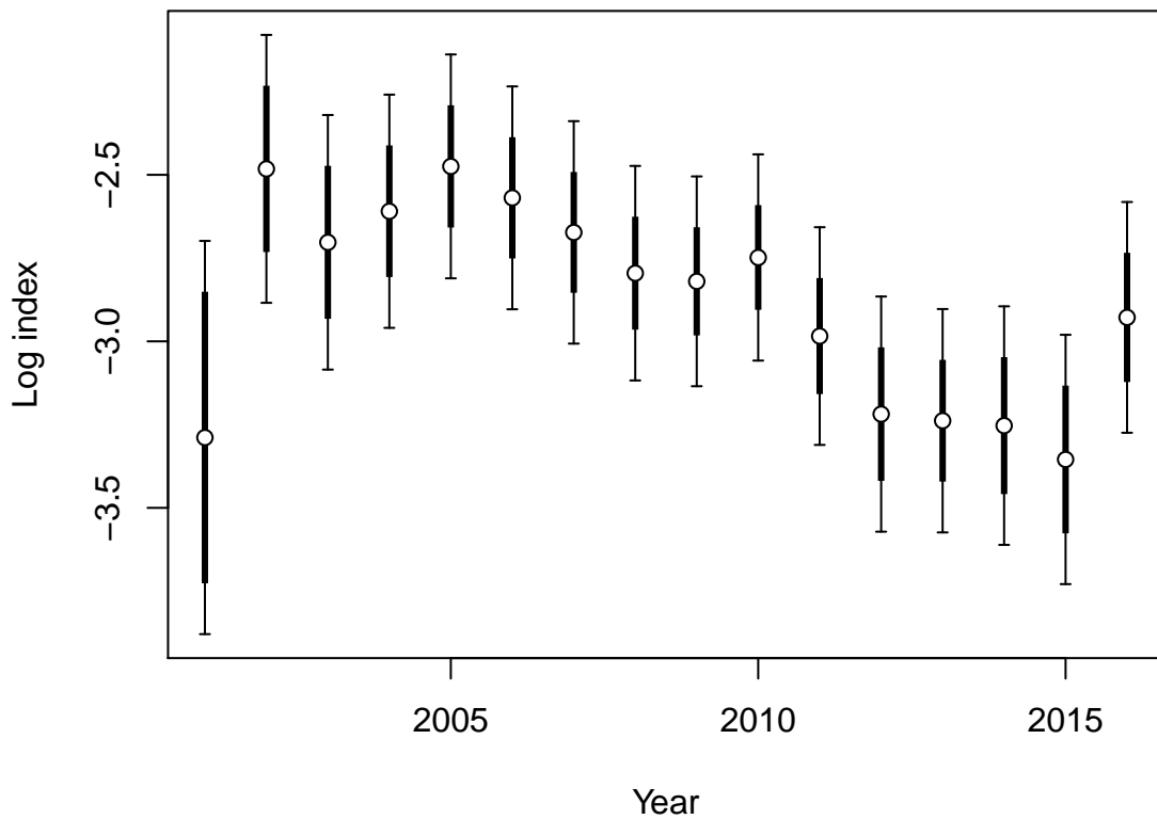
## Index RecDD



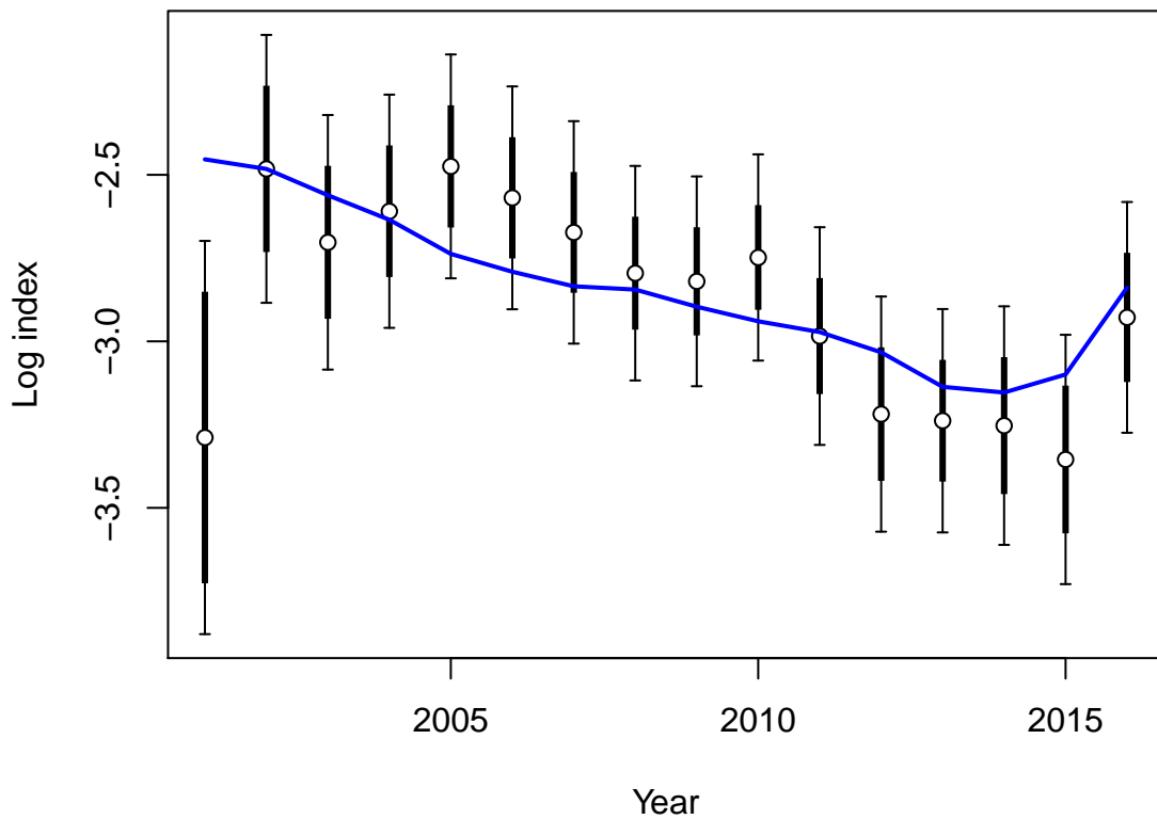
## Index RecDD



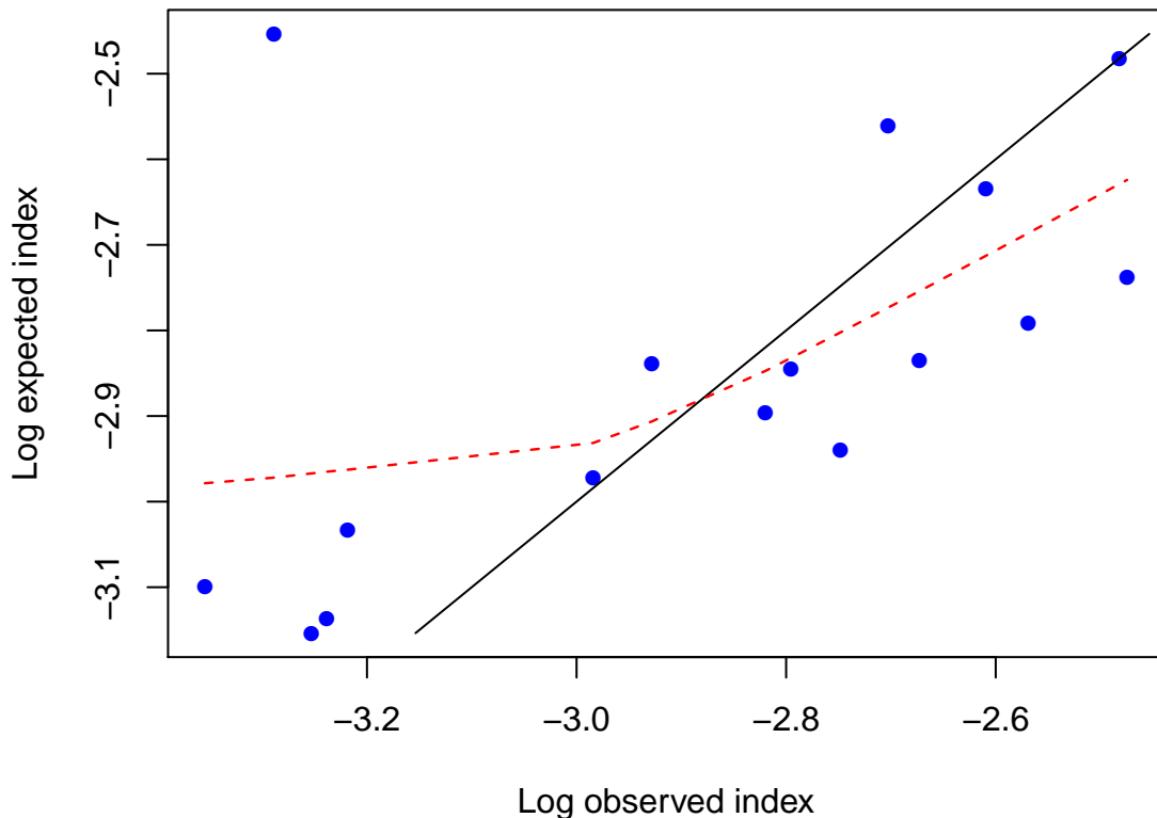
## Log index RecDD



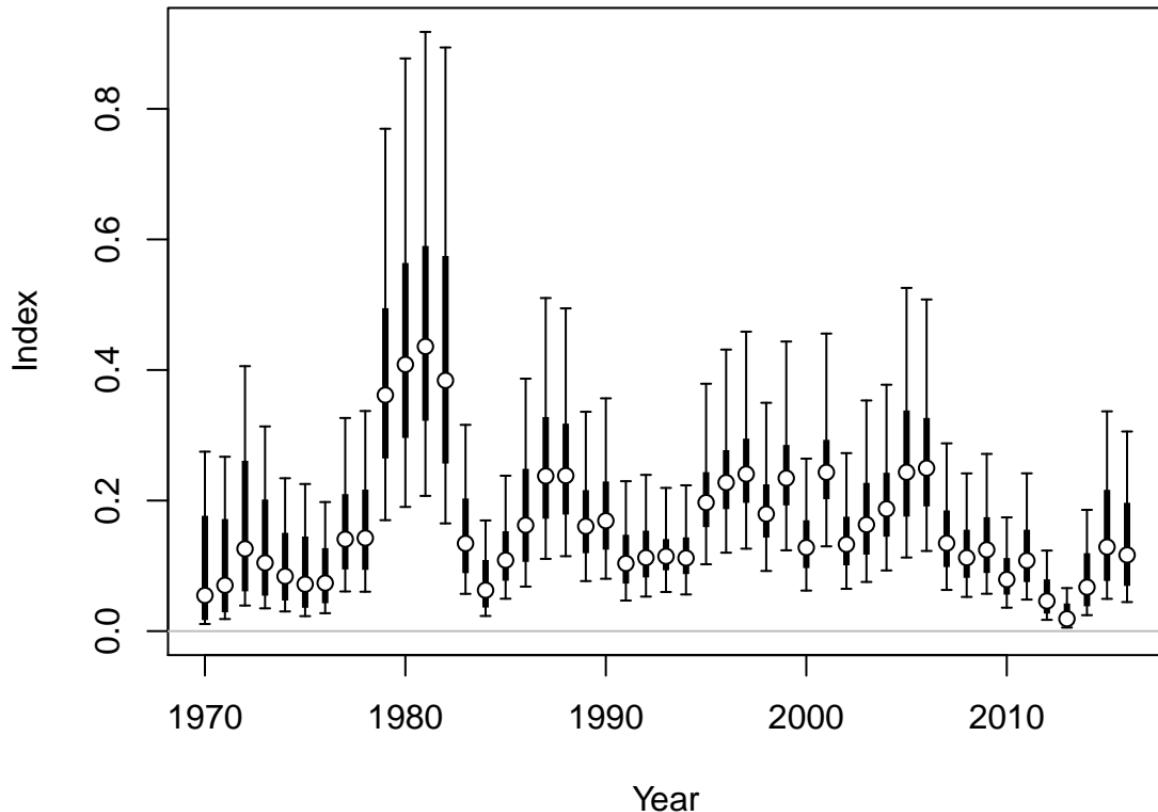
## Log index RecDD



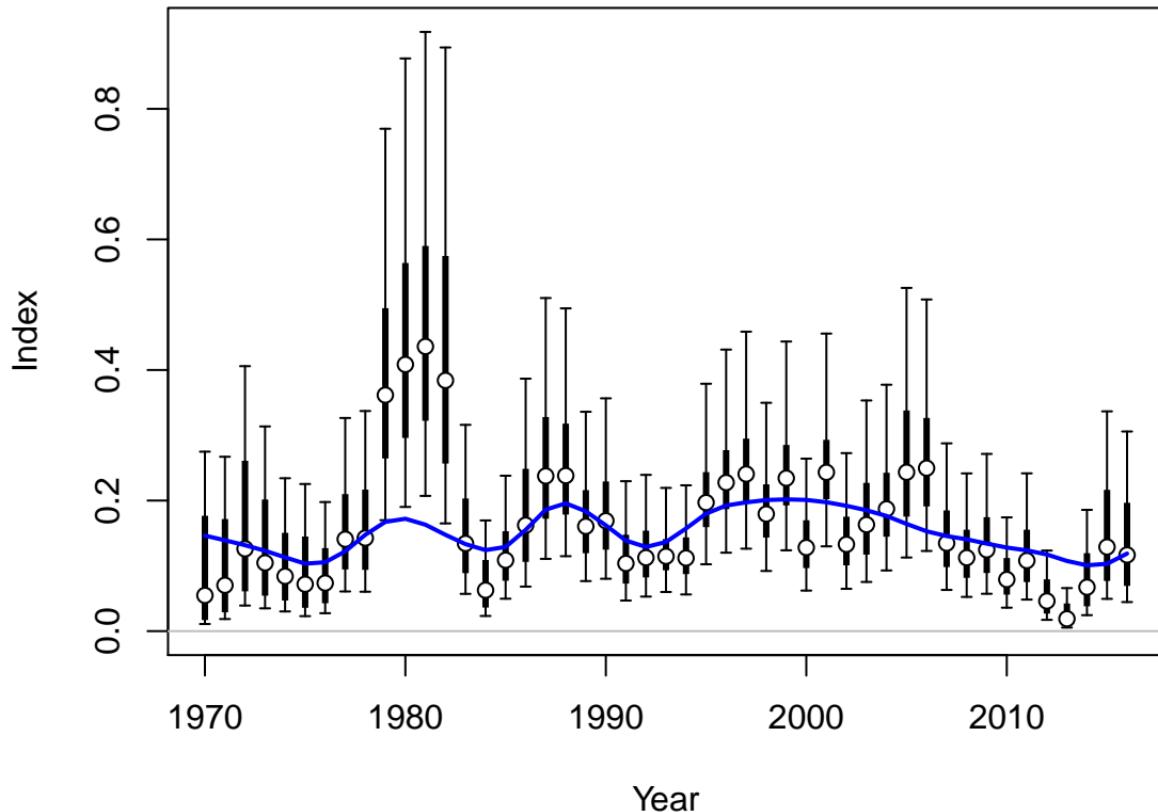
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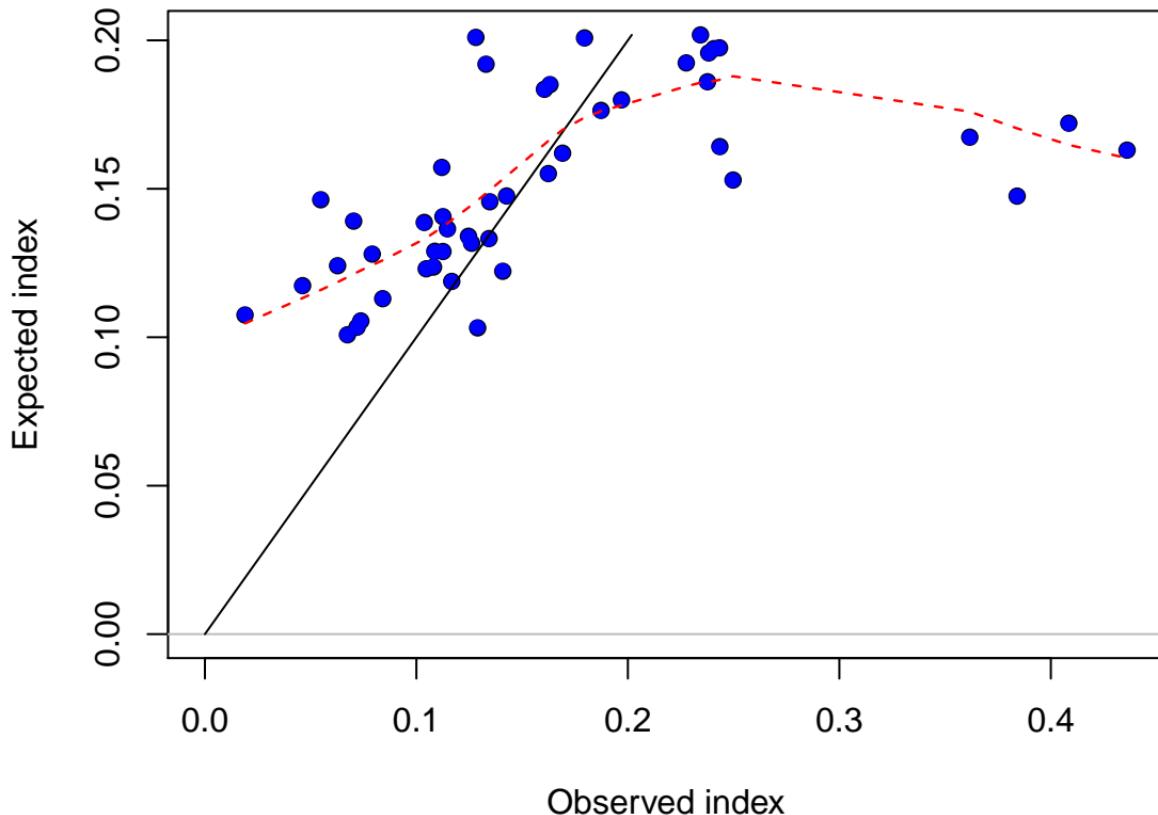
## Index Sanitation



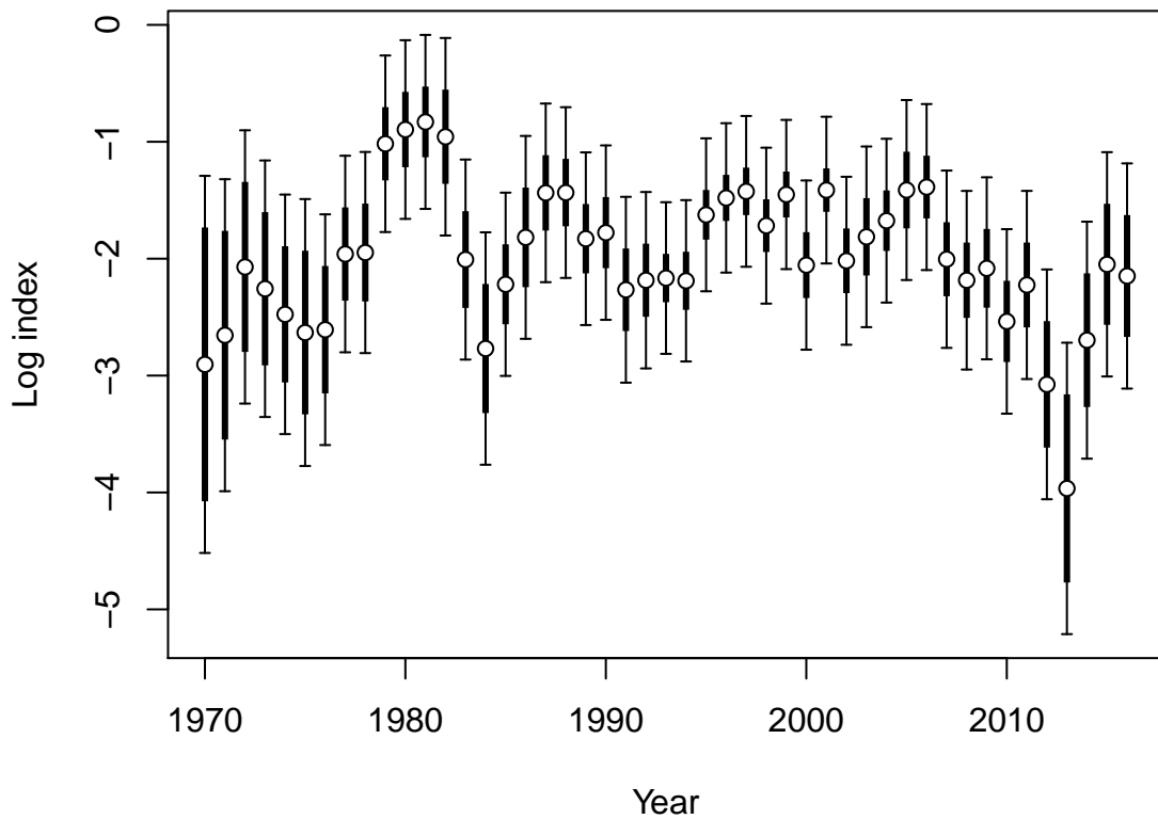
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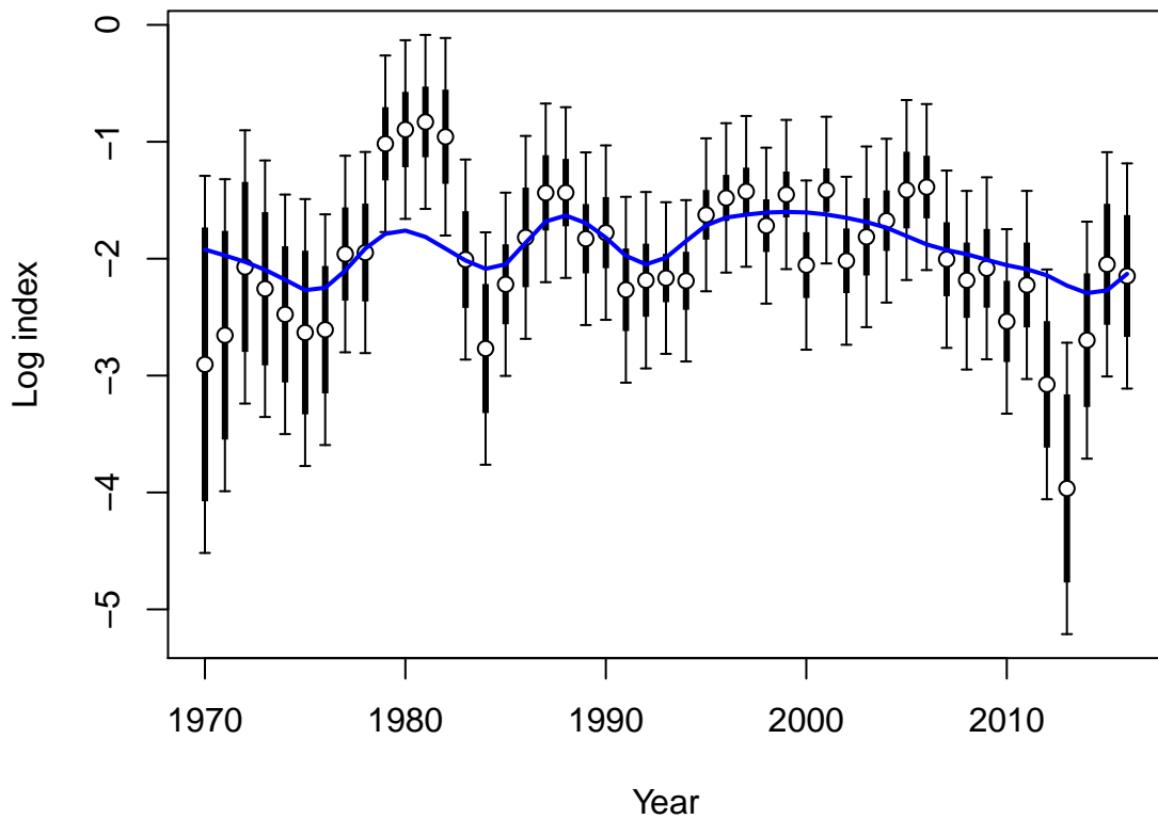
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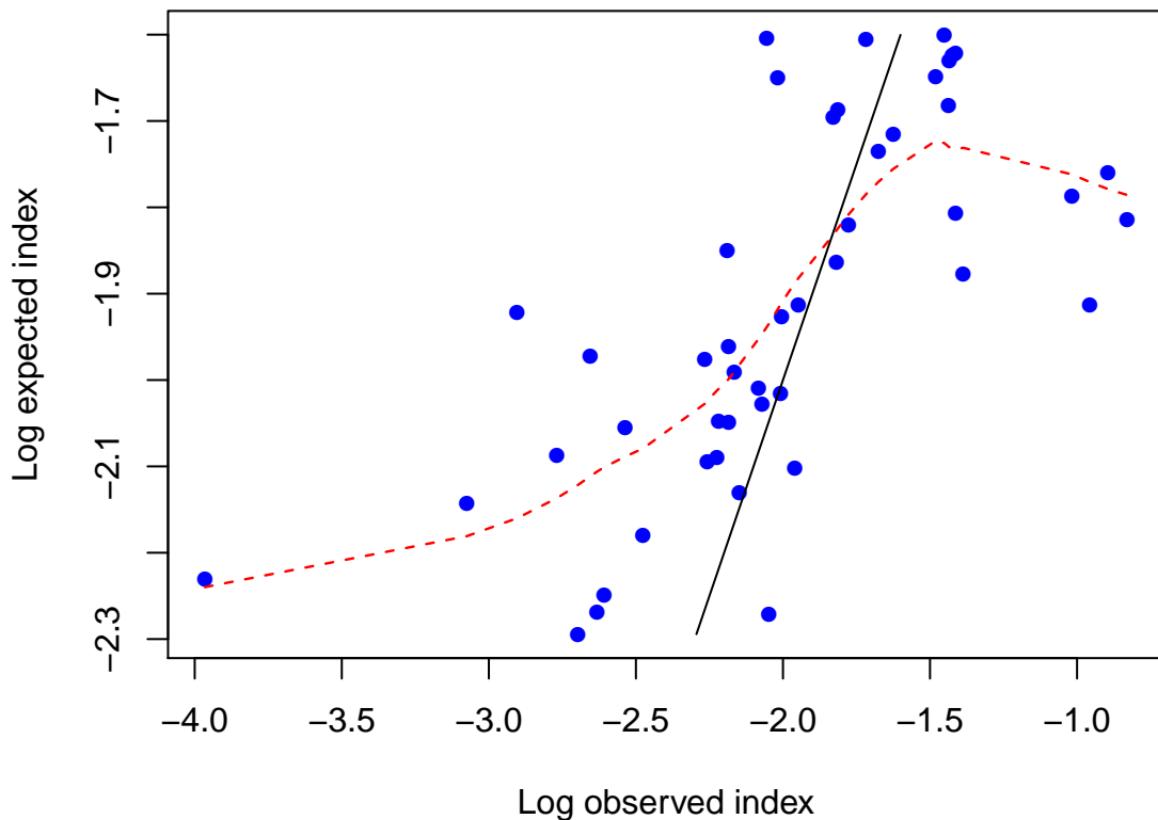
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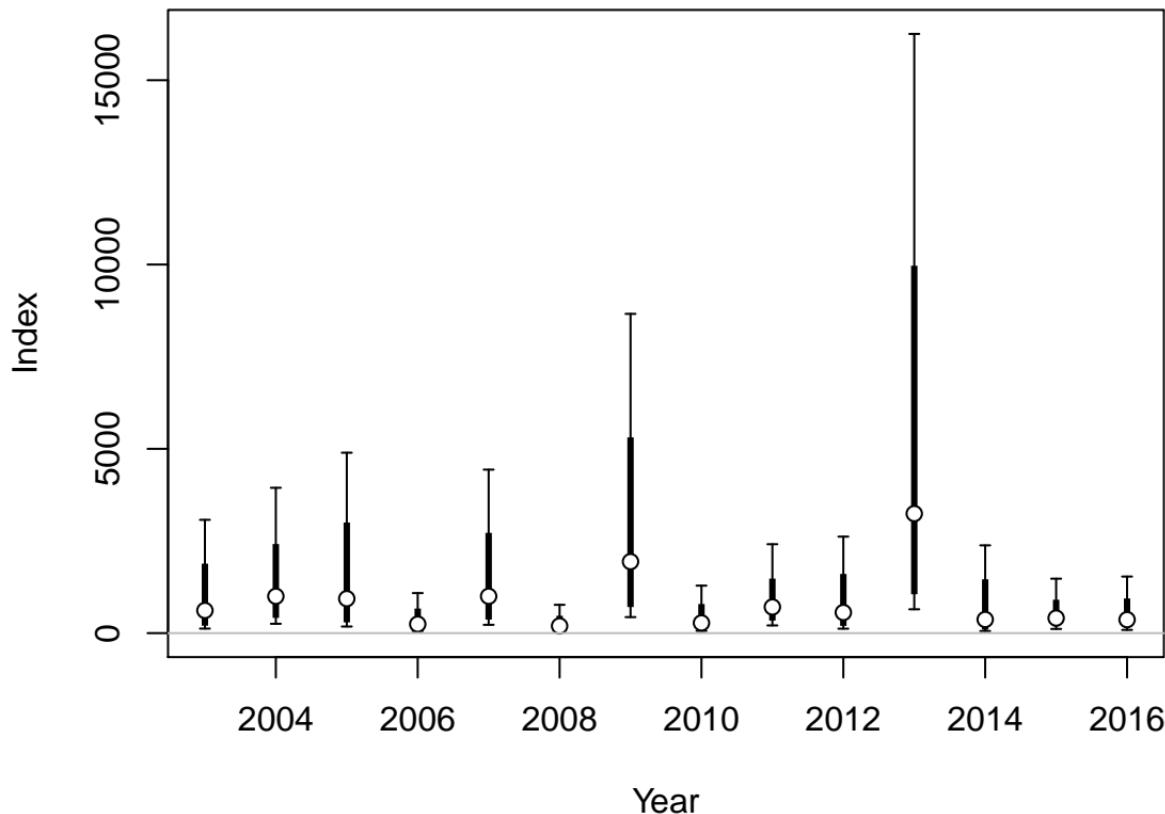
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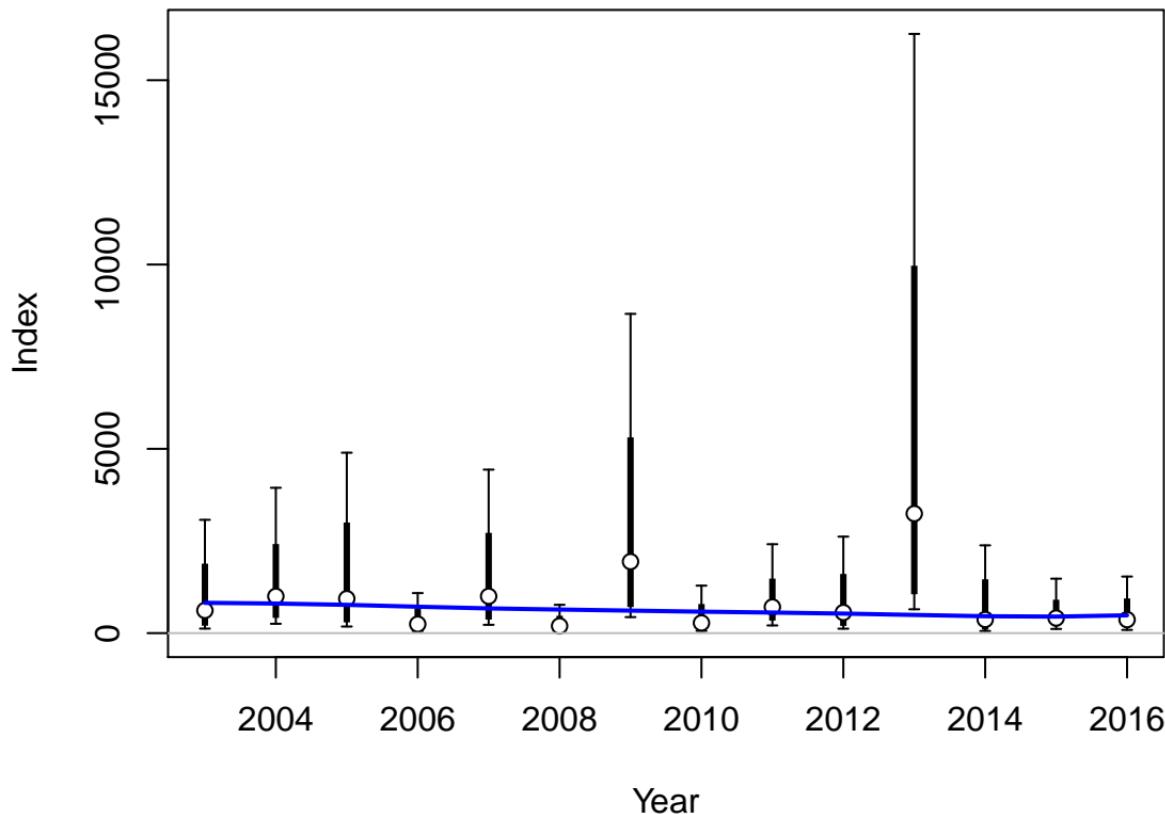
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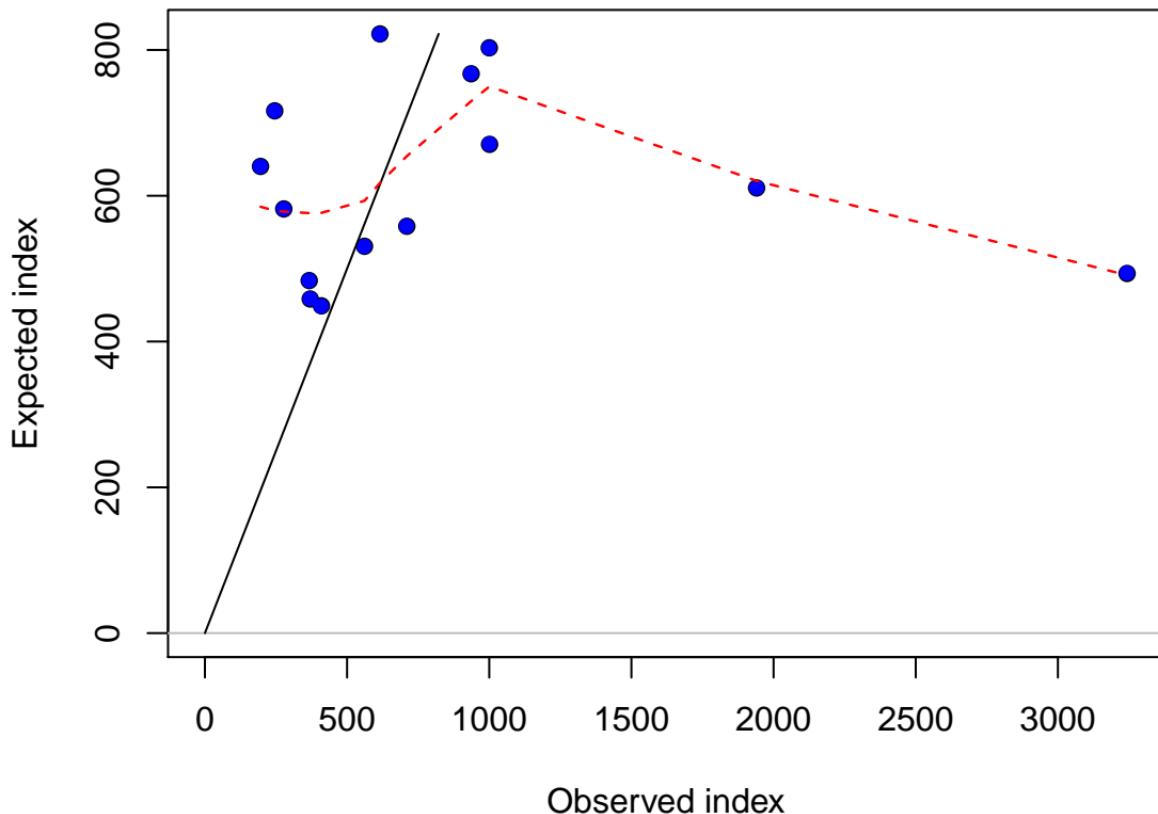
## Index NWFSC Trawl



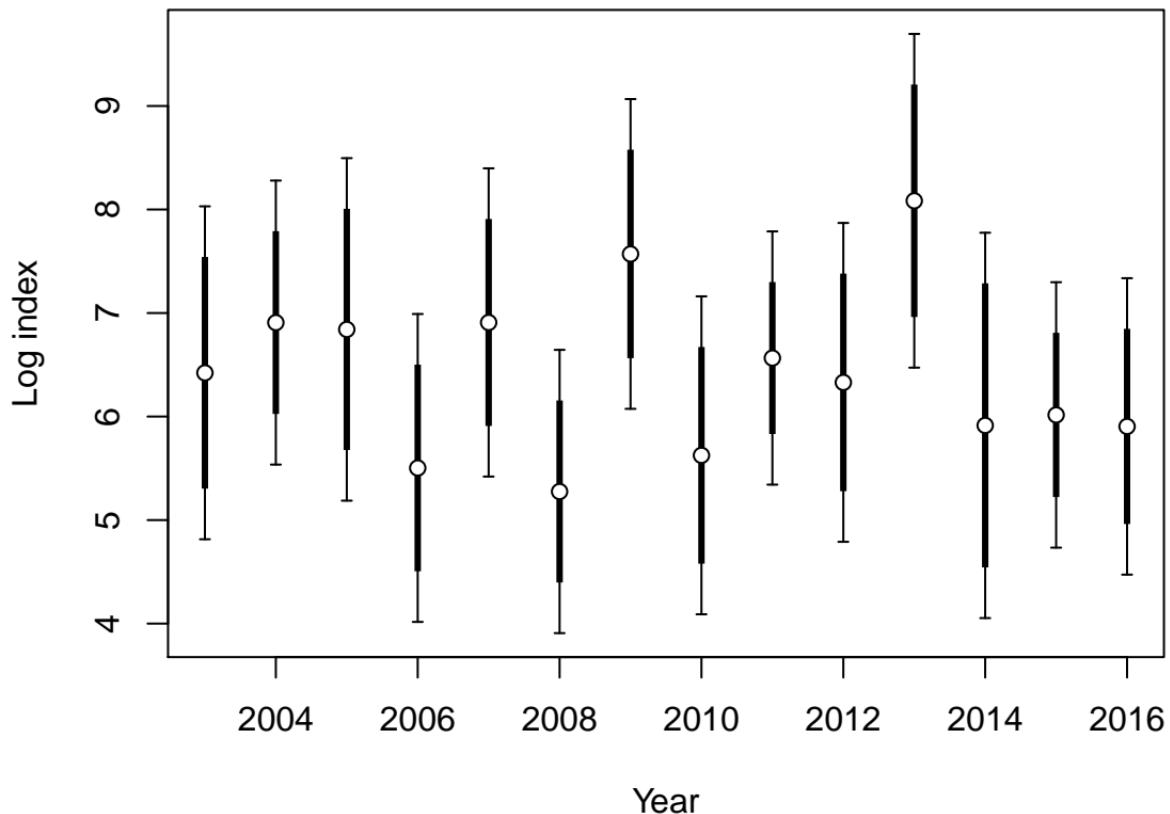
## Index NWFSC Trawl



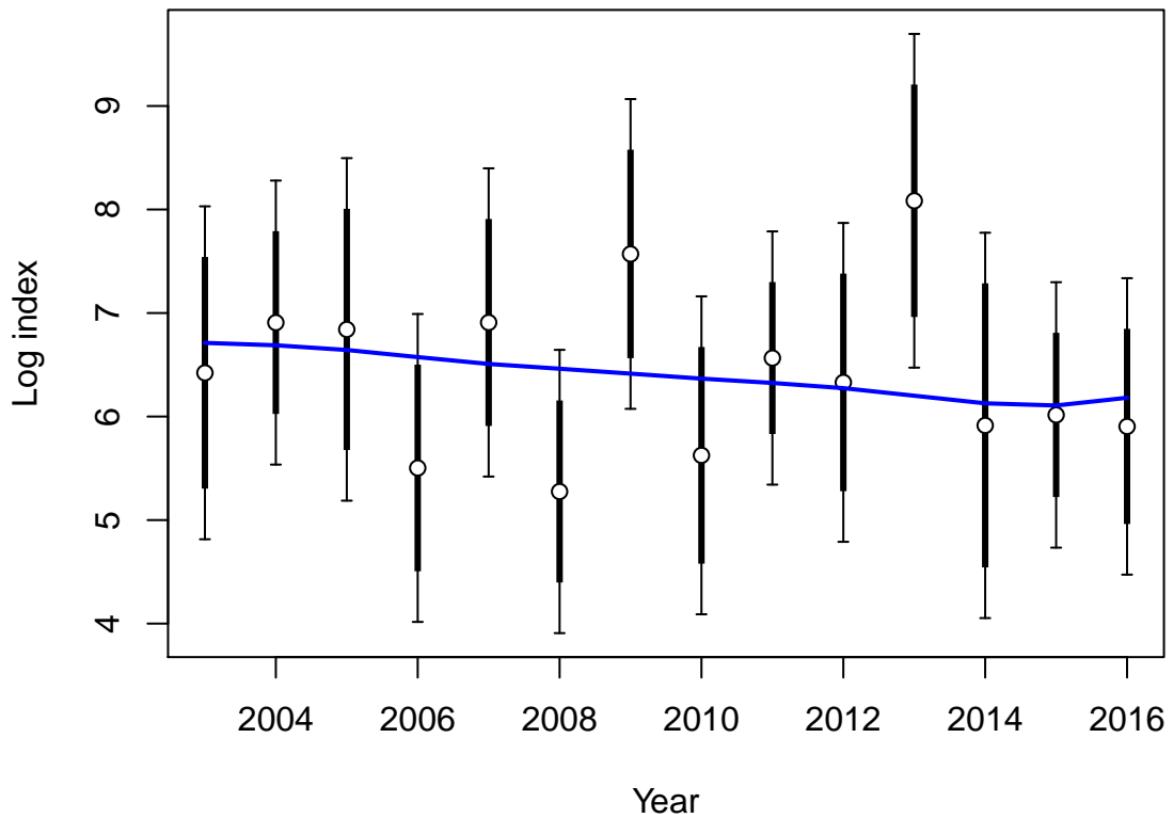
### Index NWFSC Trawl



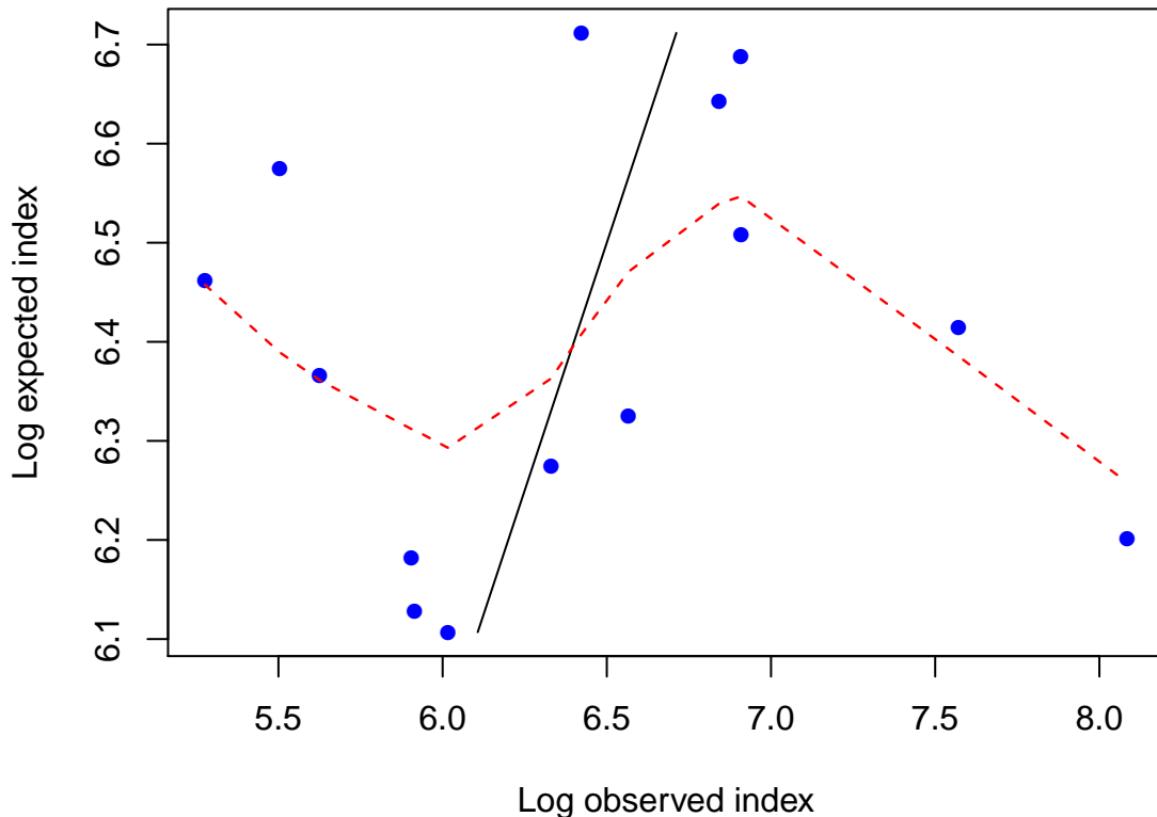
## Log index NWFSC Trawl



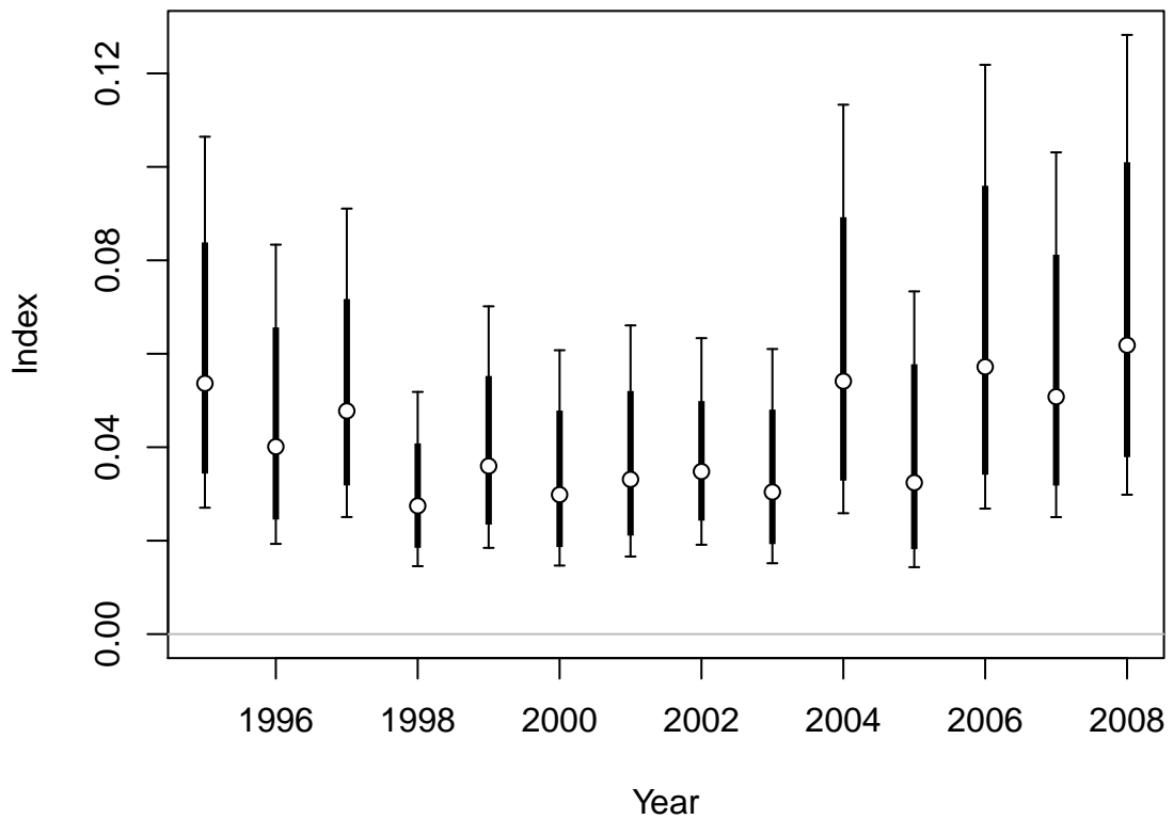
## Log index NWFSC Trawl



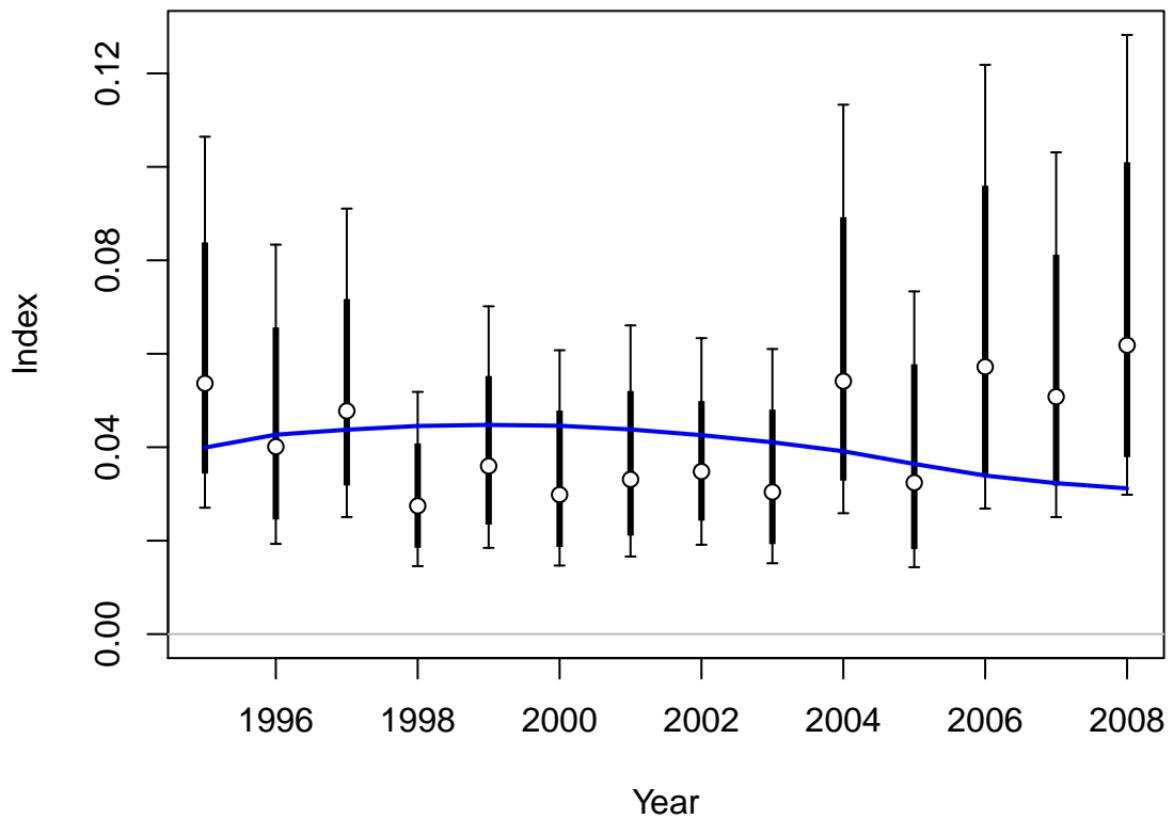
## Log index NWFSC Trawl



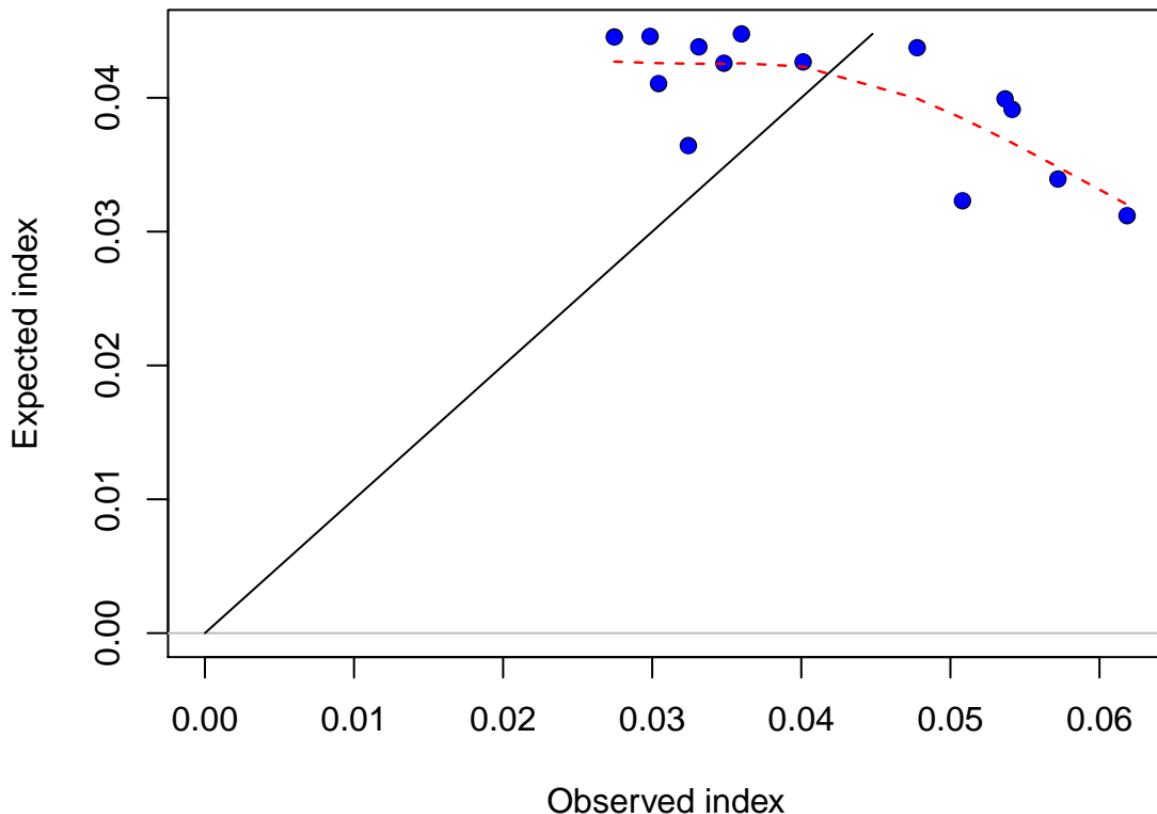
## Index GillnetSurvey



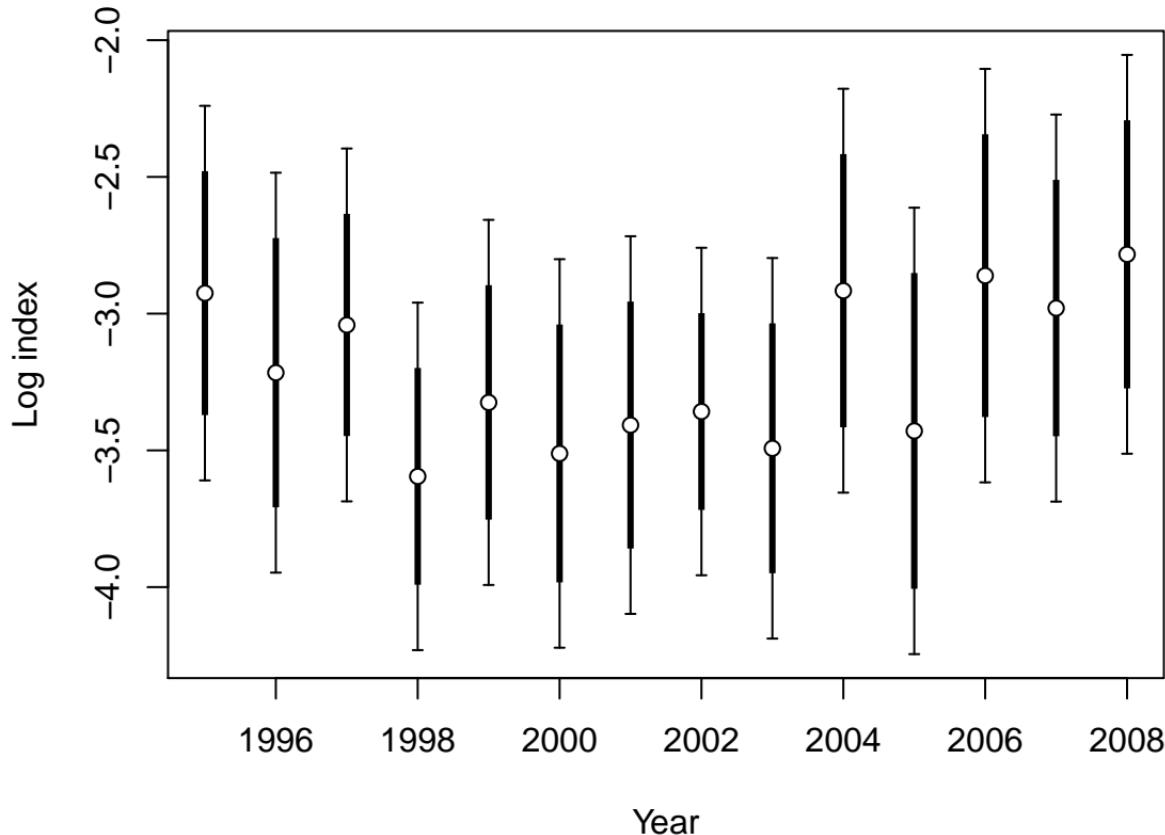
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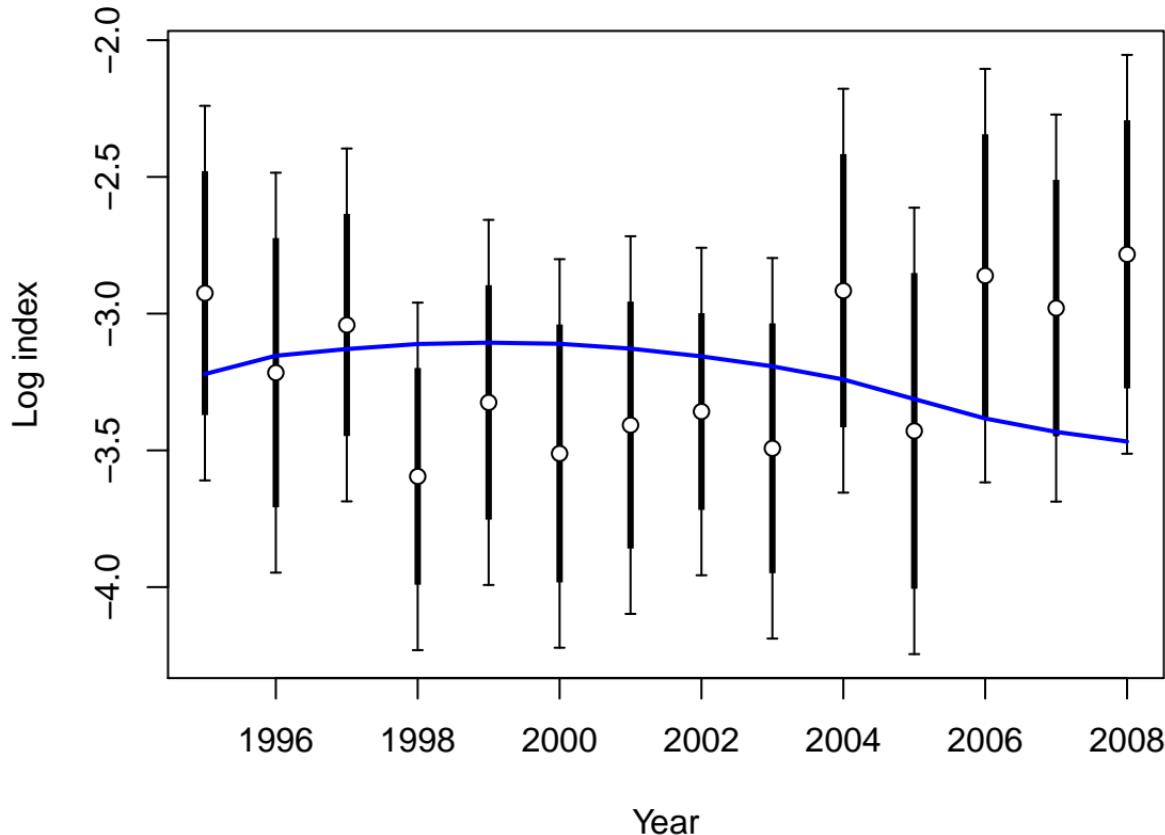
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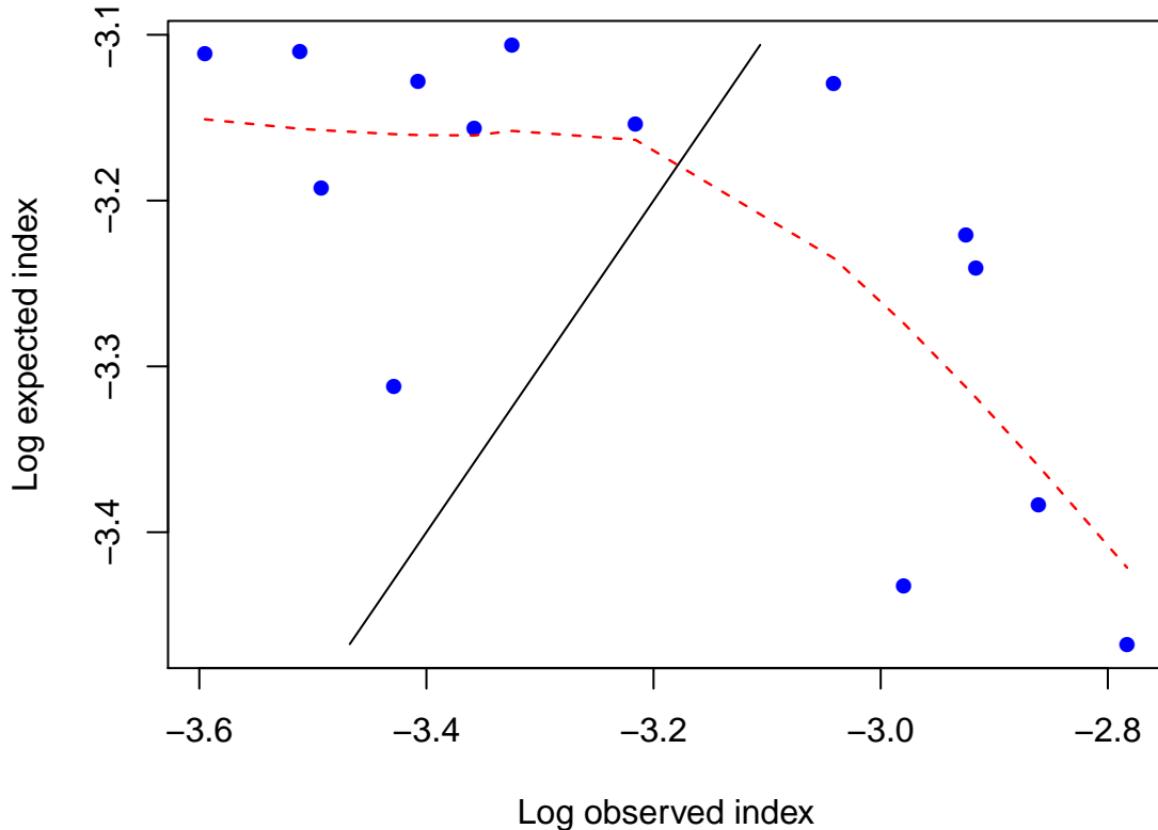
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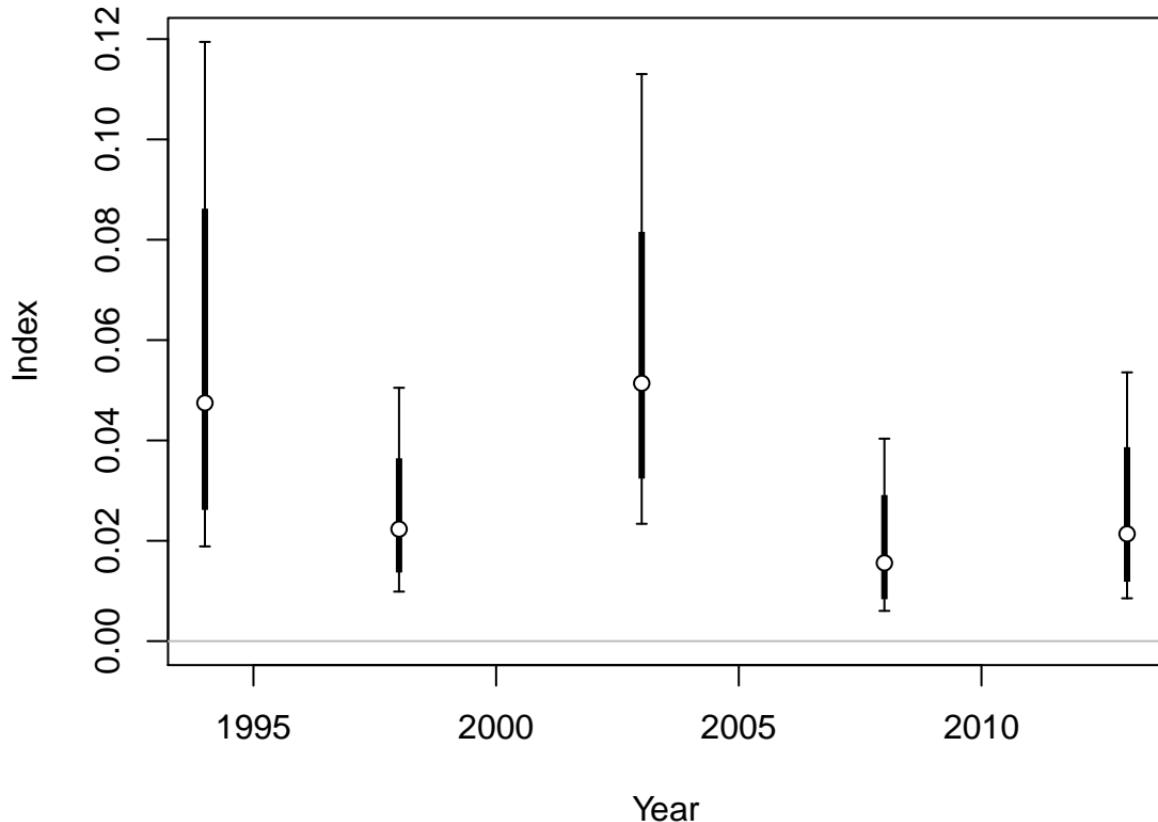
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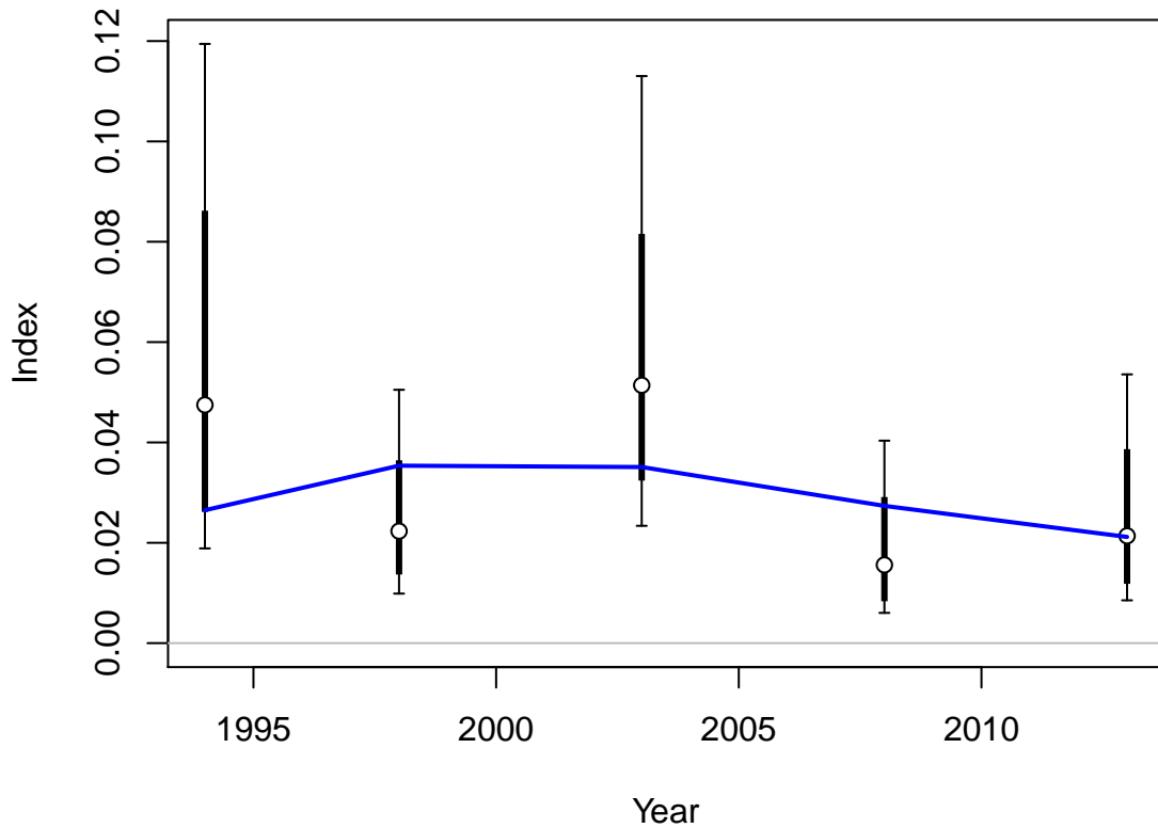
## Log index GillnetSurvey



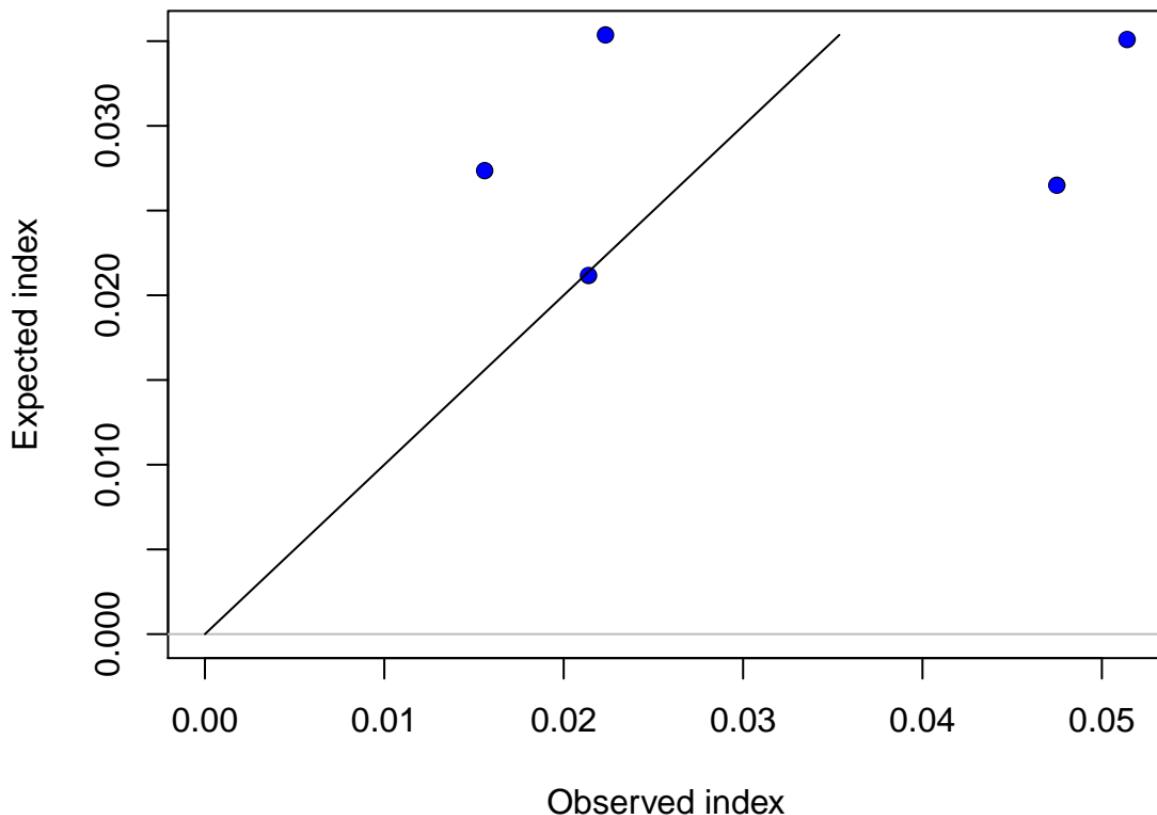
## Index SCBSurvey



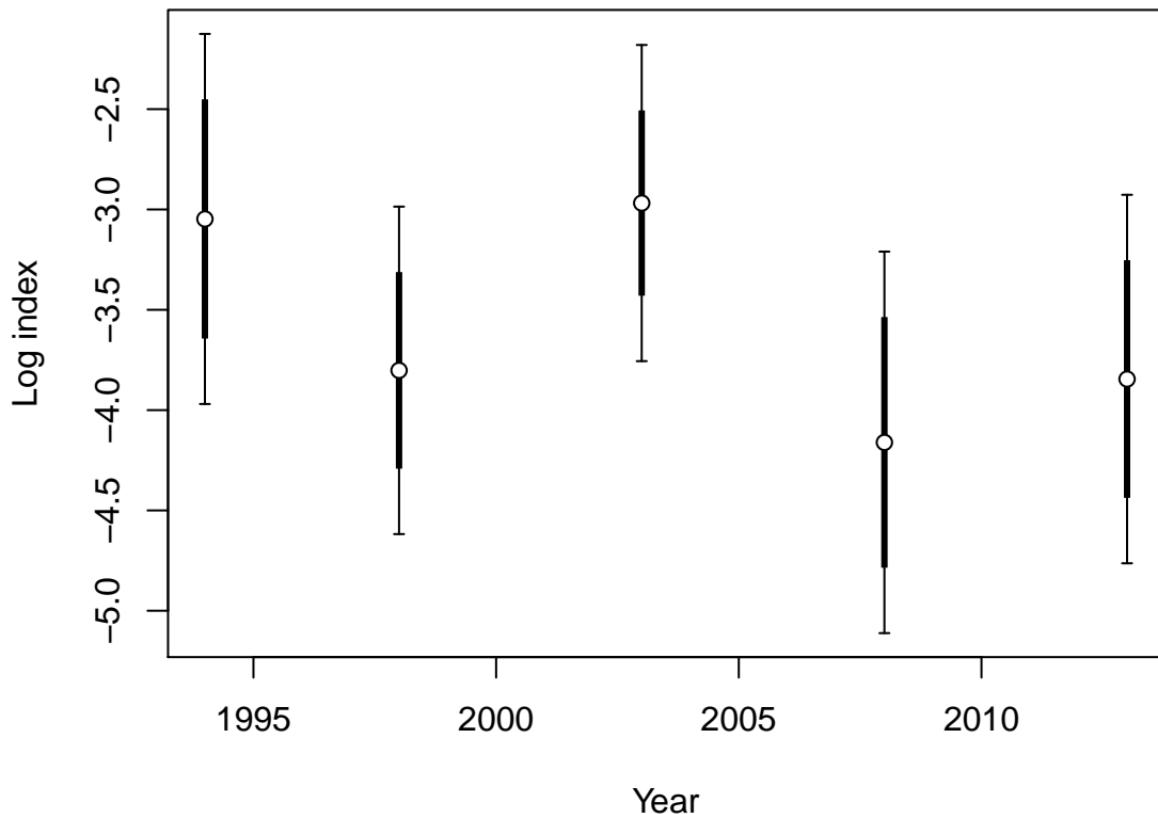
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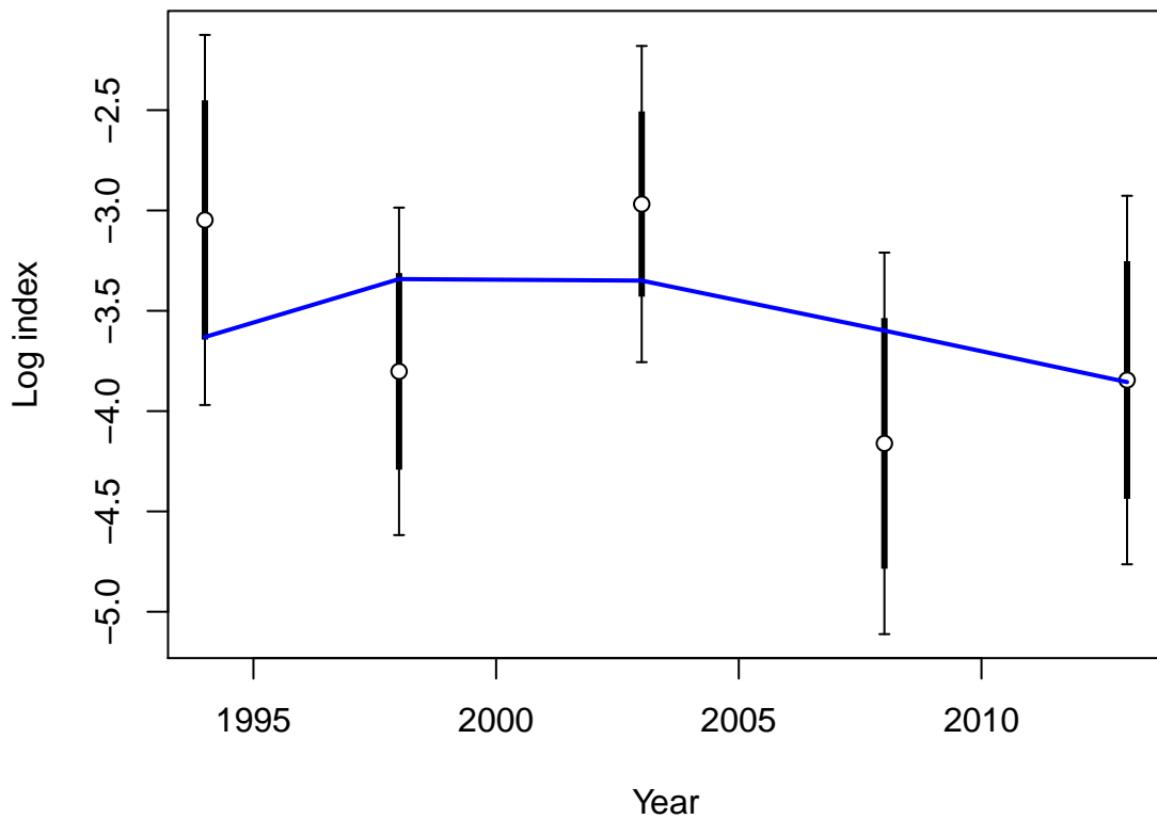
## Index SCBSurvey



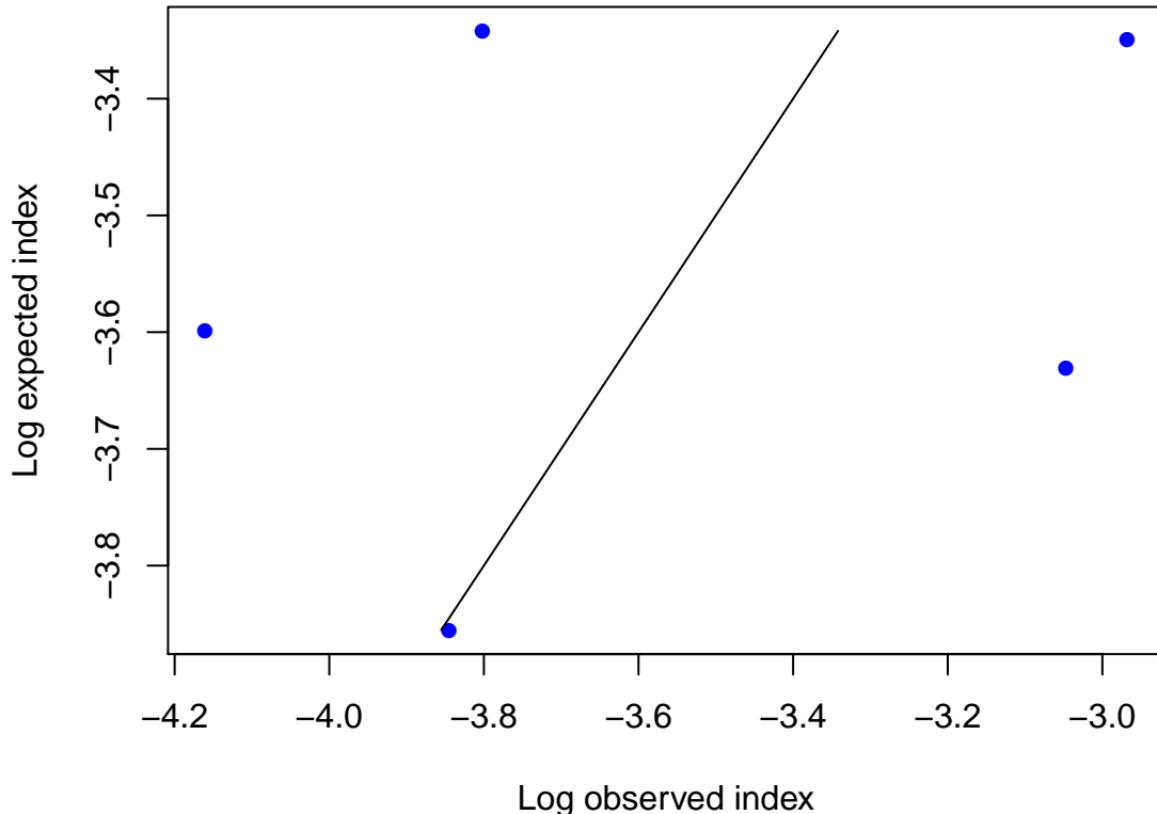
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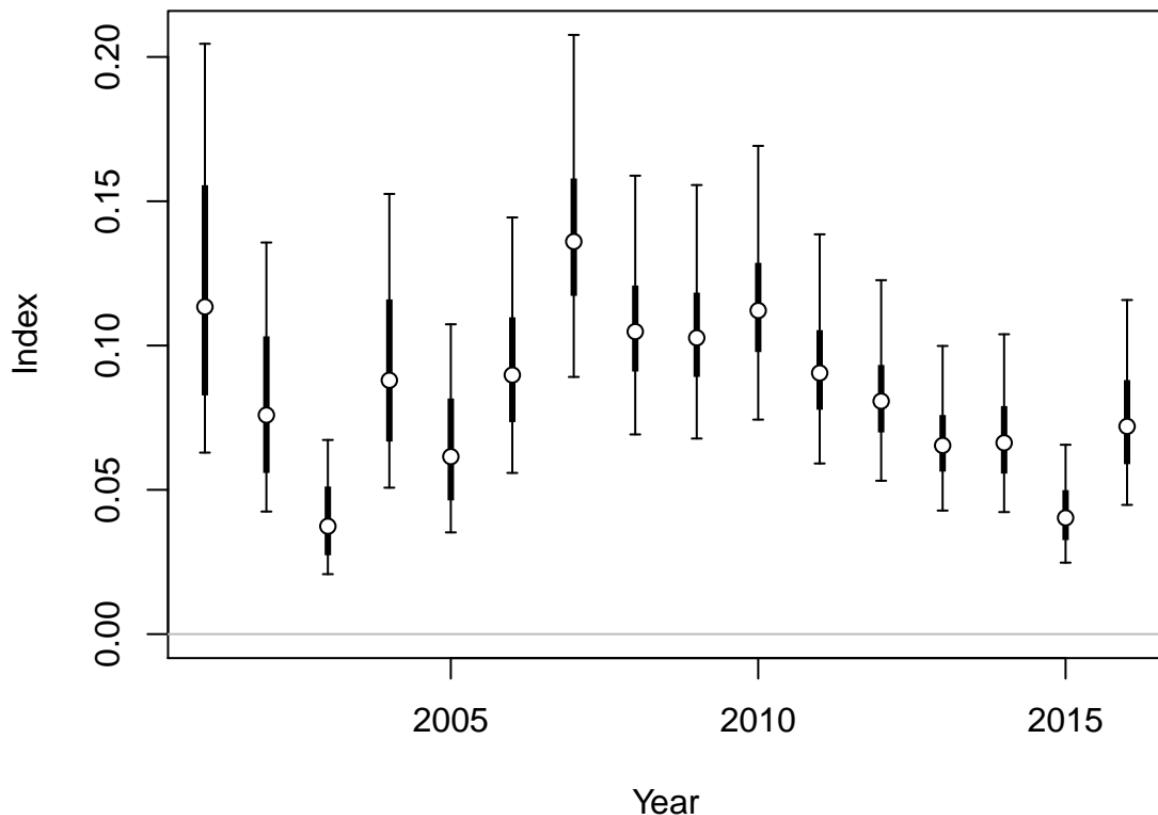
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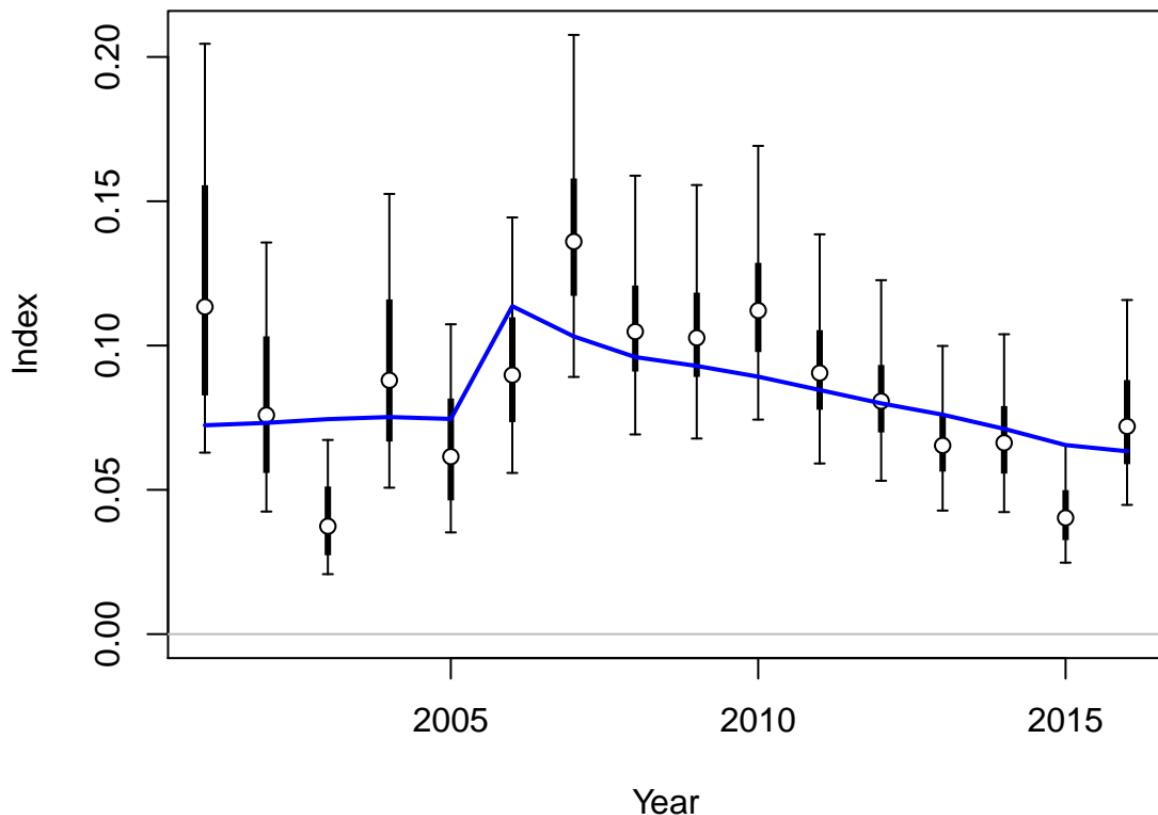
### Log index SCBSurvey



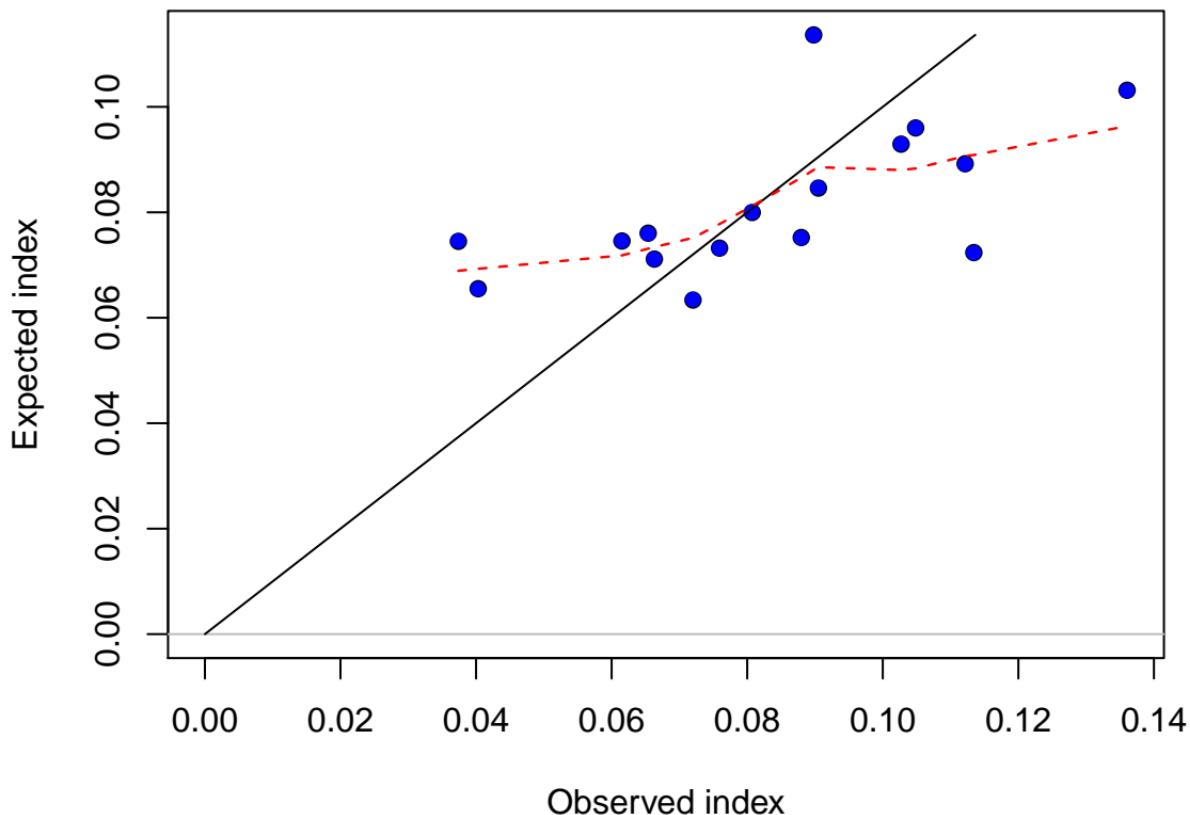
## Index RecPCOBR



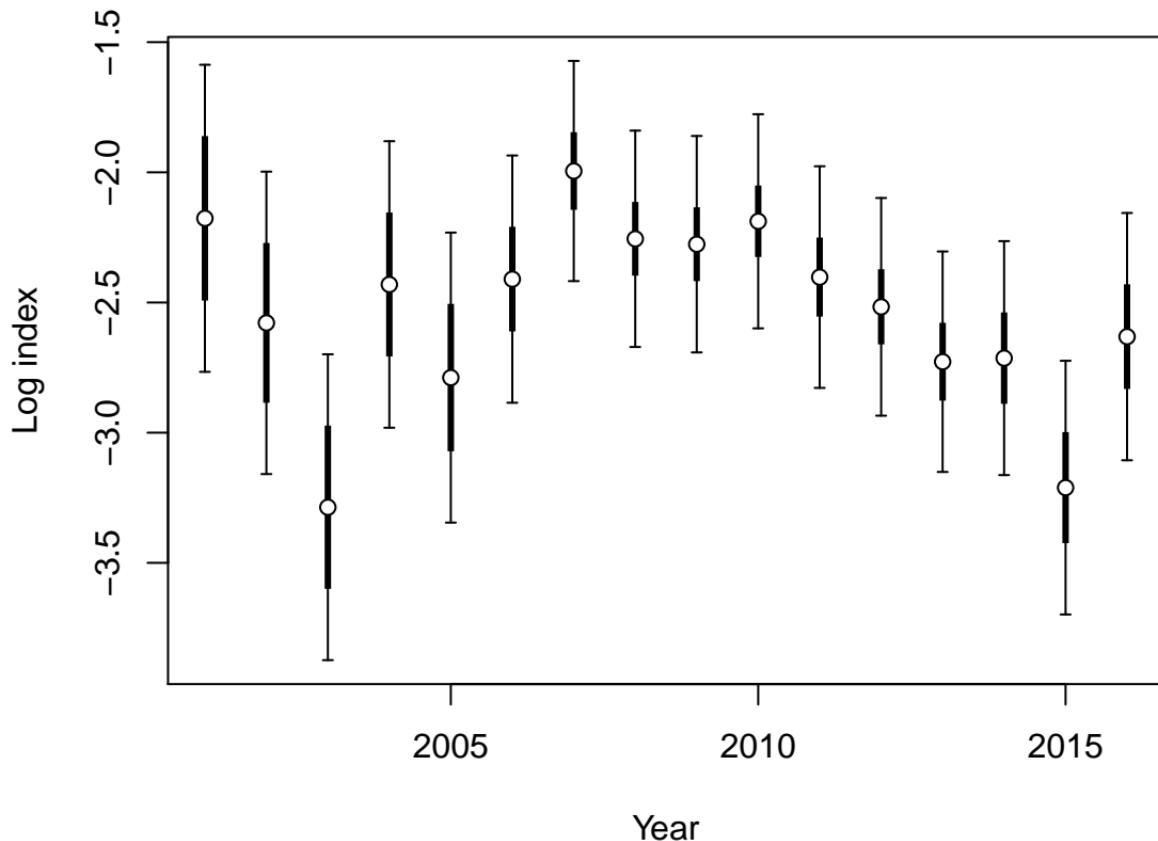
## Index RecPCOBR



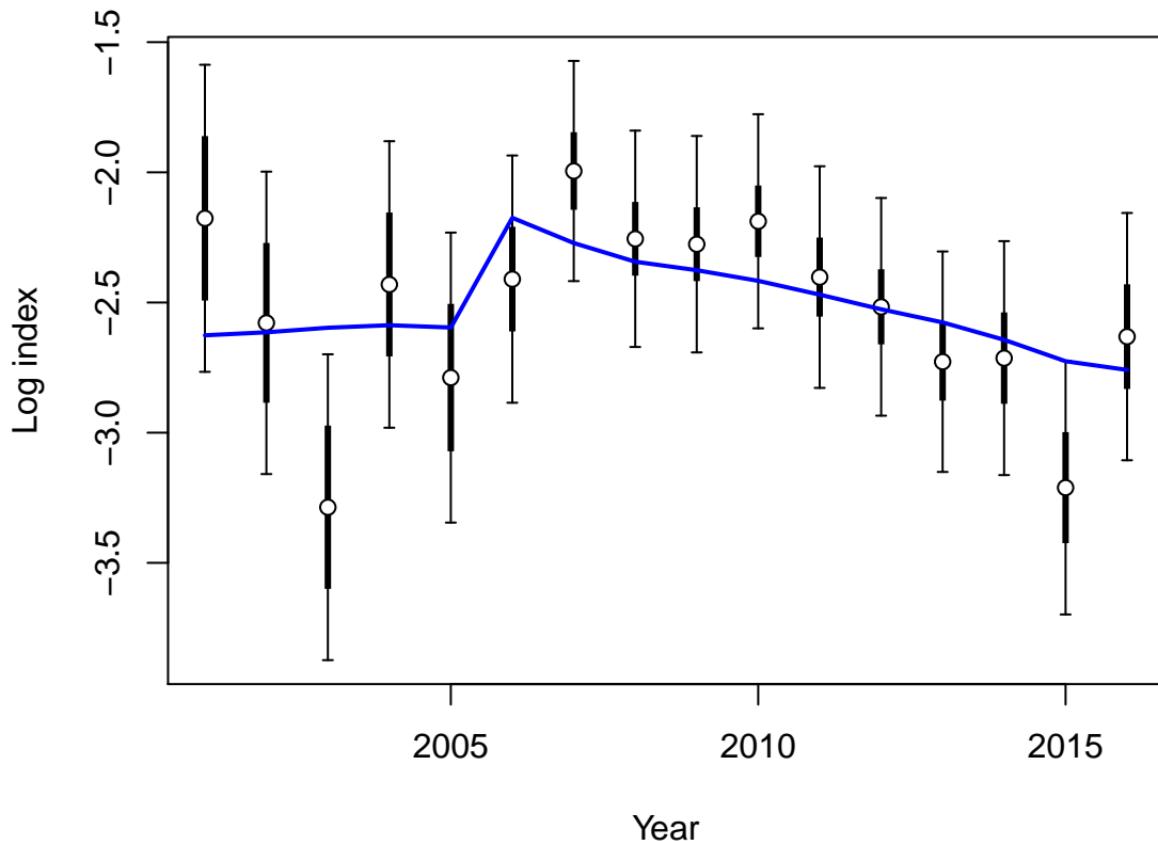
### Index RecPCOBR



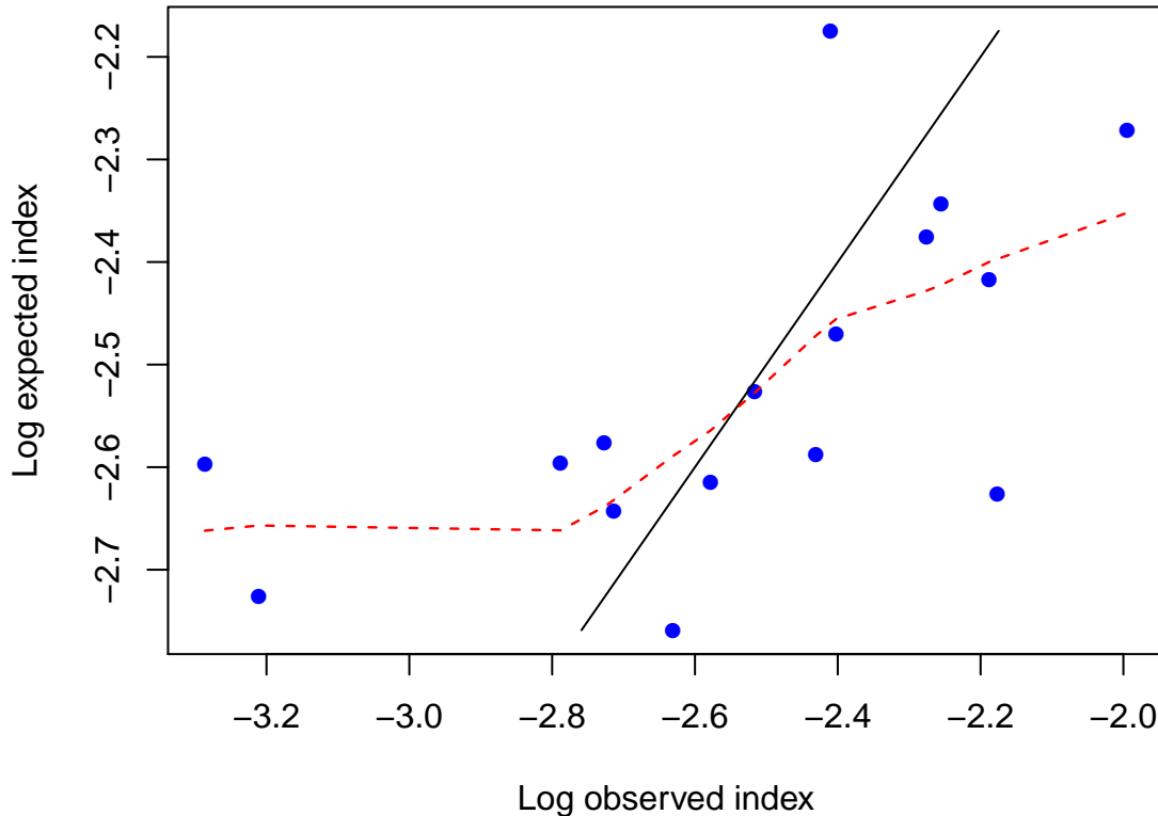
## Log index RecPCOBR



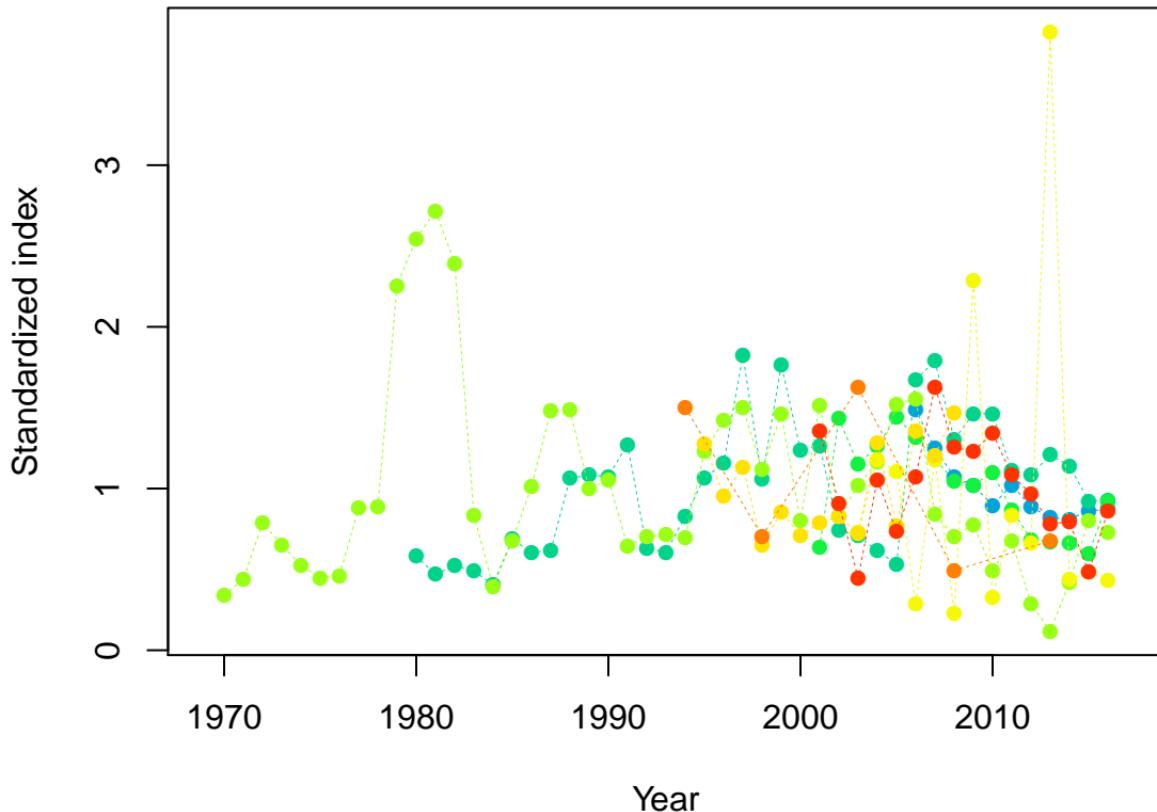
## Log index RecPCOBR



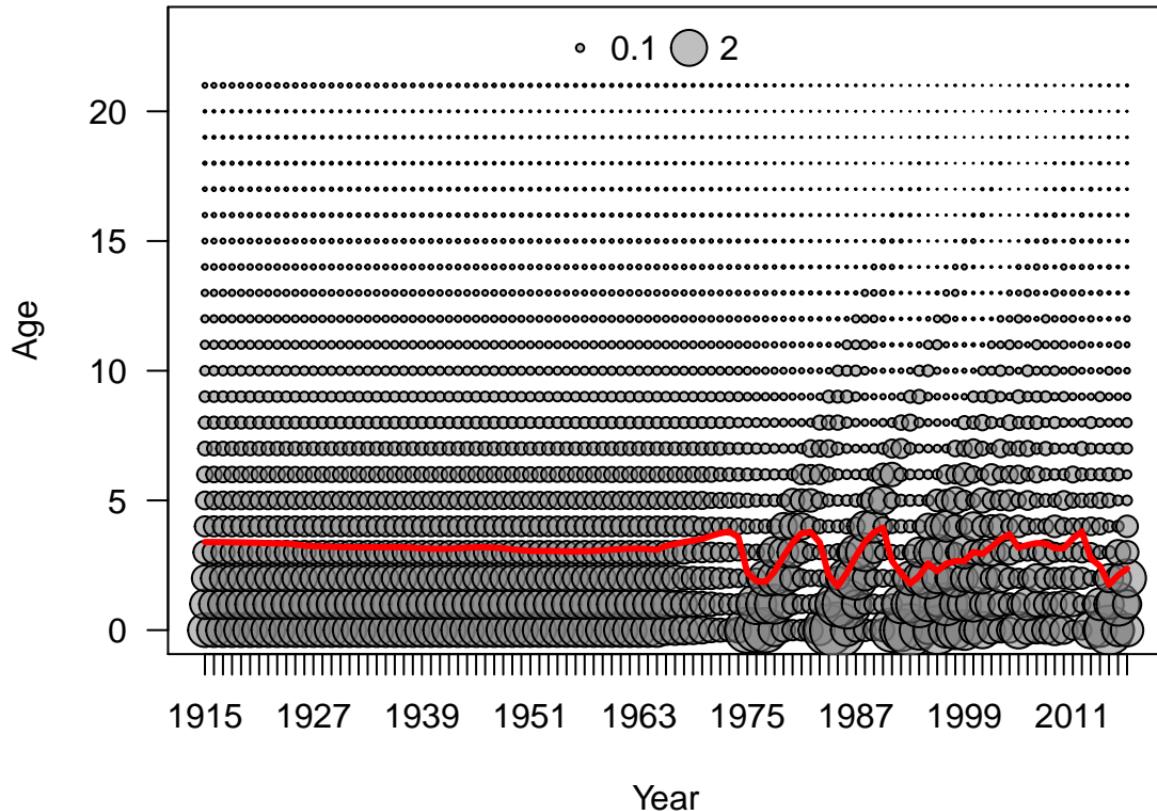
### Log index RecPCOBR



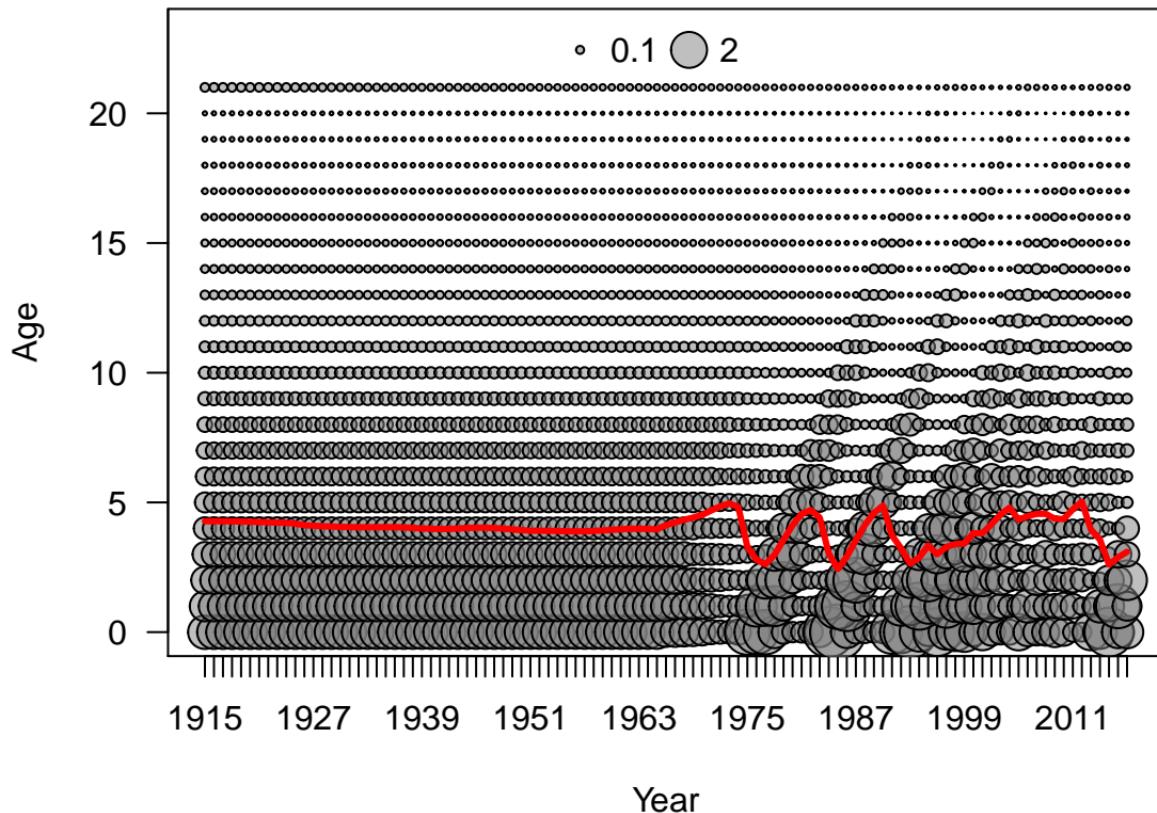
## All cpue plot



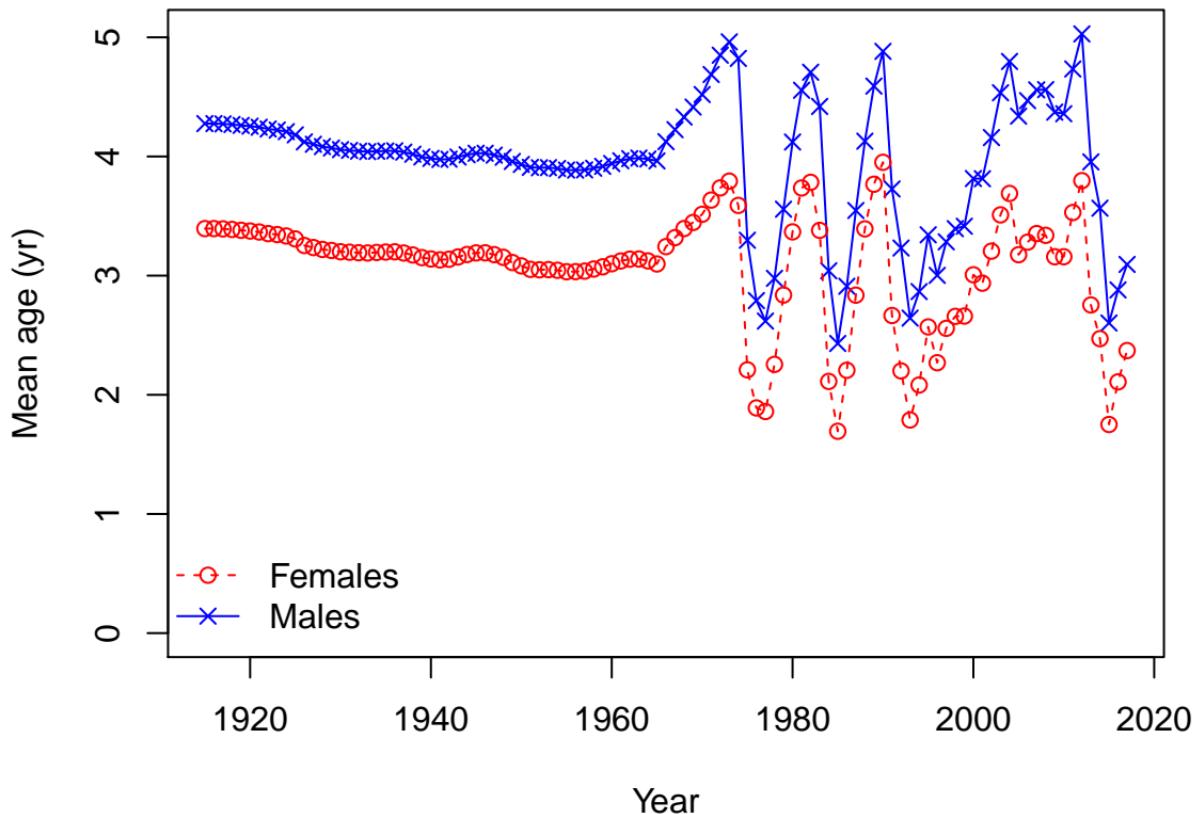
## Beginning of year expected numbers at age of females in (max ~ 4.7 million)



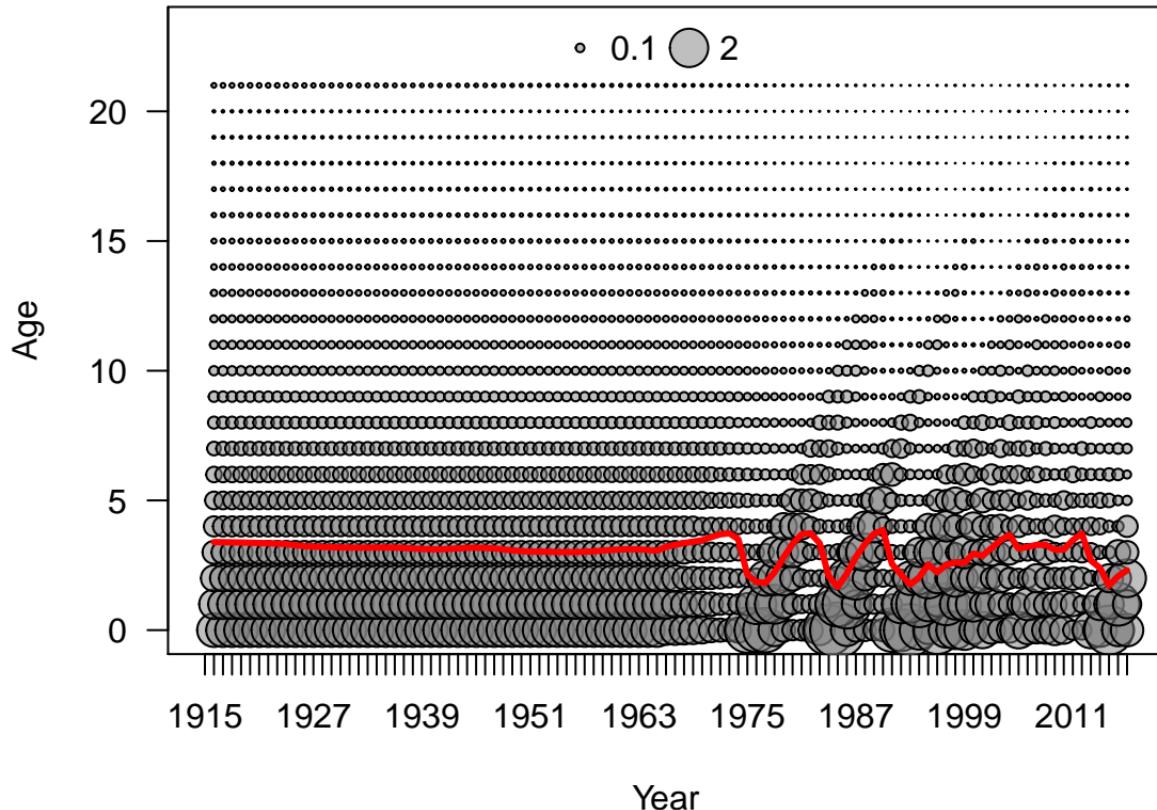
## Beginning of year expected numbers at age of males in (max ~ 4.7 million)



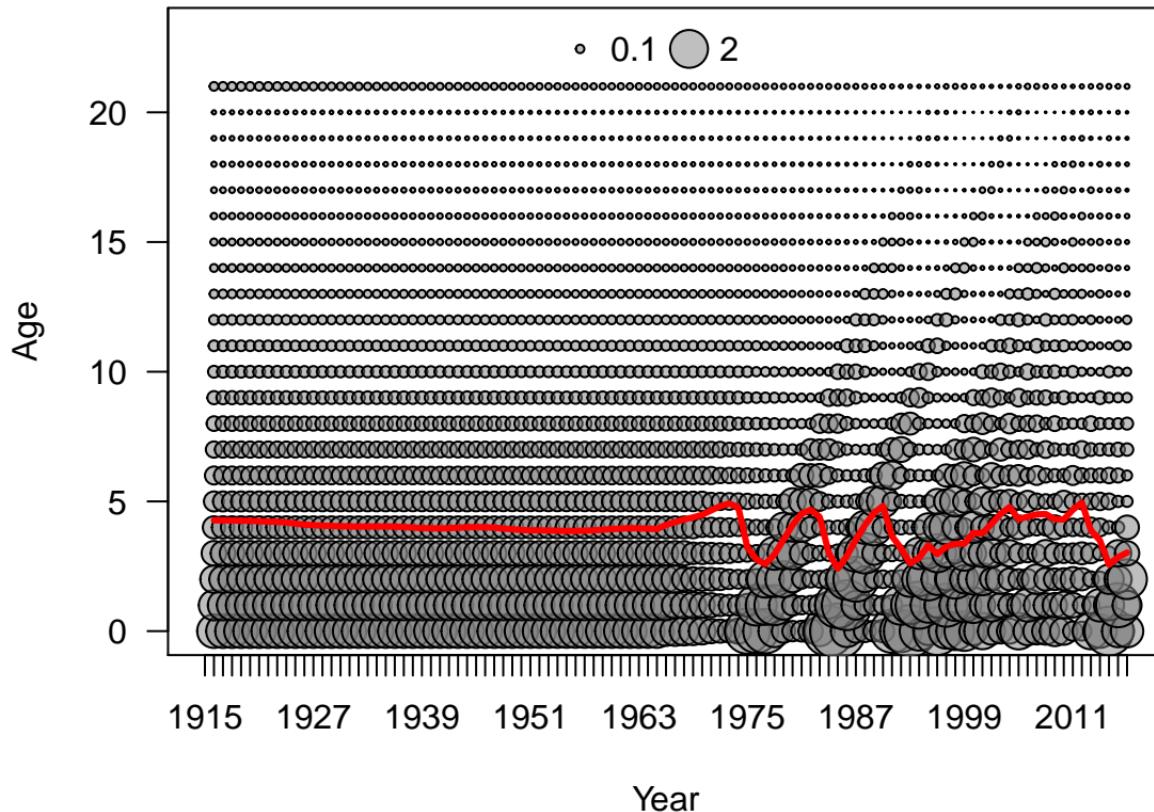
## Beginning of year mean age in the population



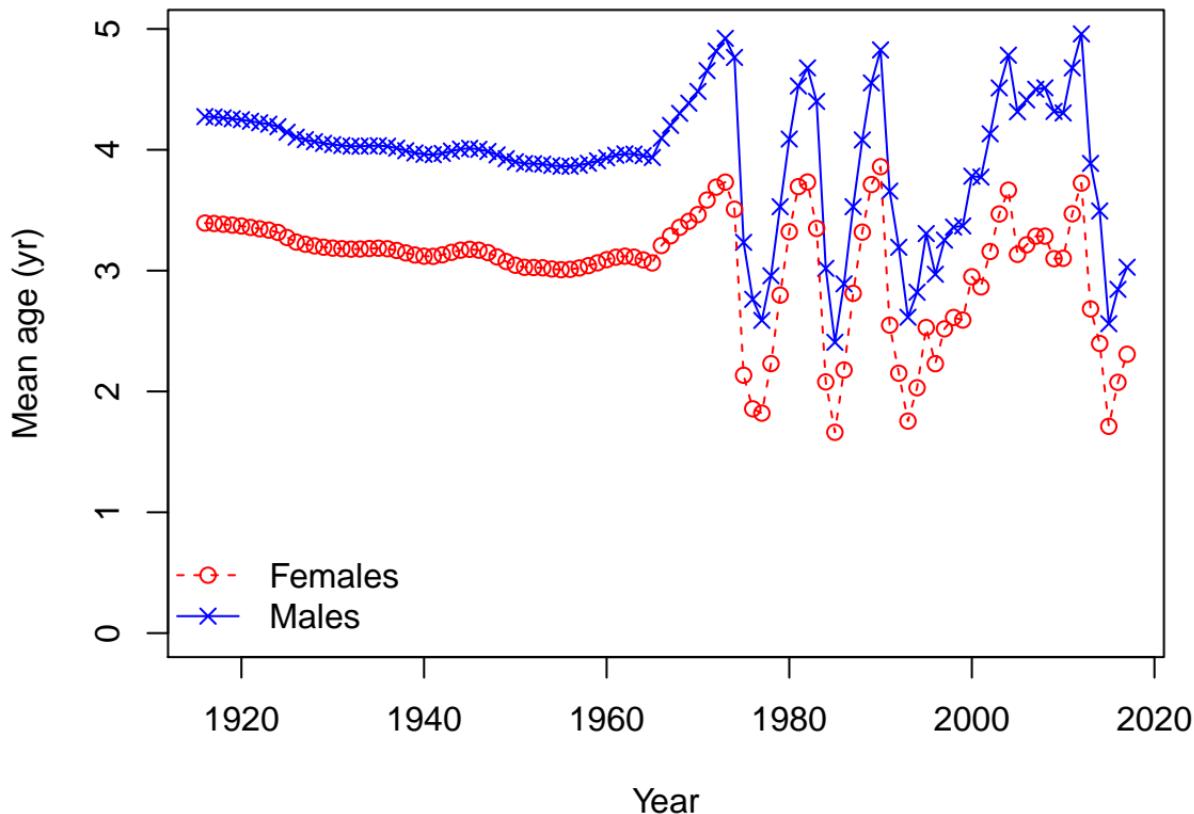
## Middle of year expected numbers at age of females in (max ~ 4.2 million)



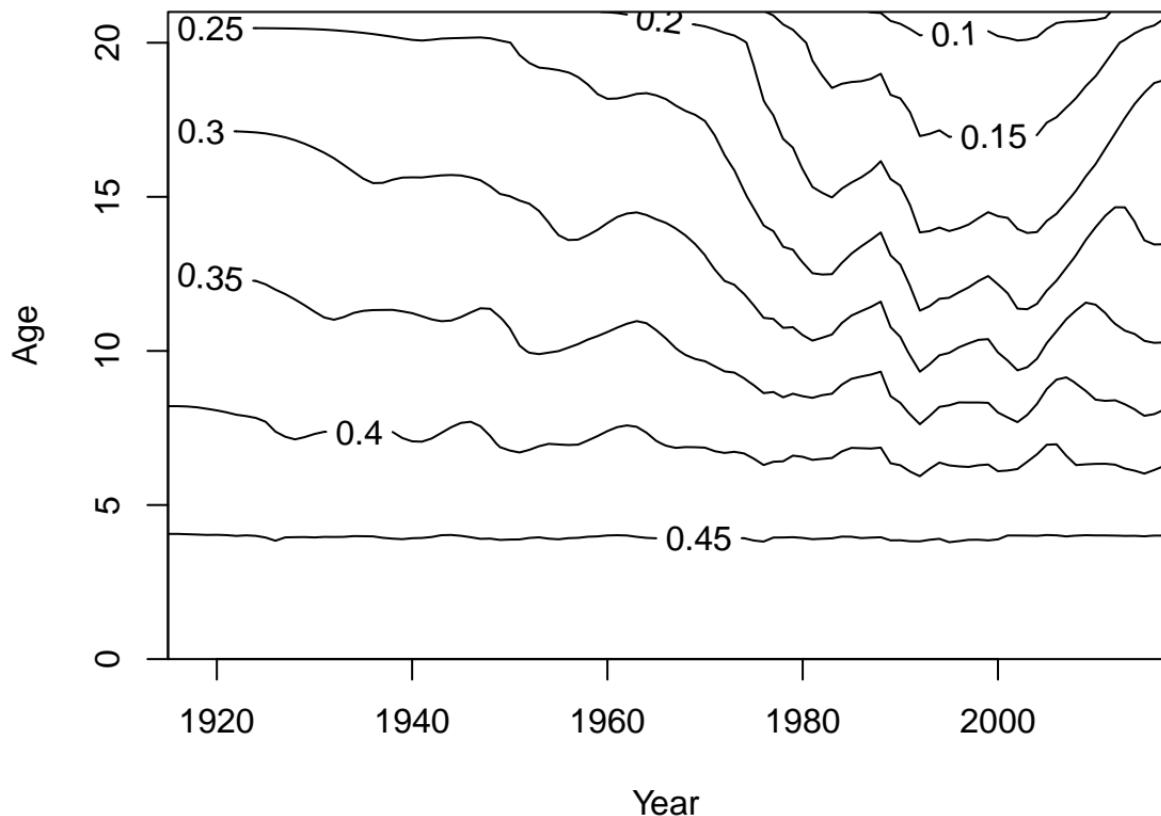
## Middle of year expected numbers at age of males in (max ~ 4.3 million)



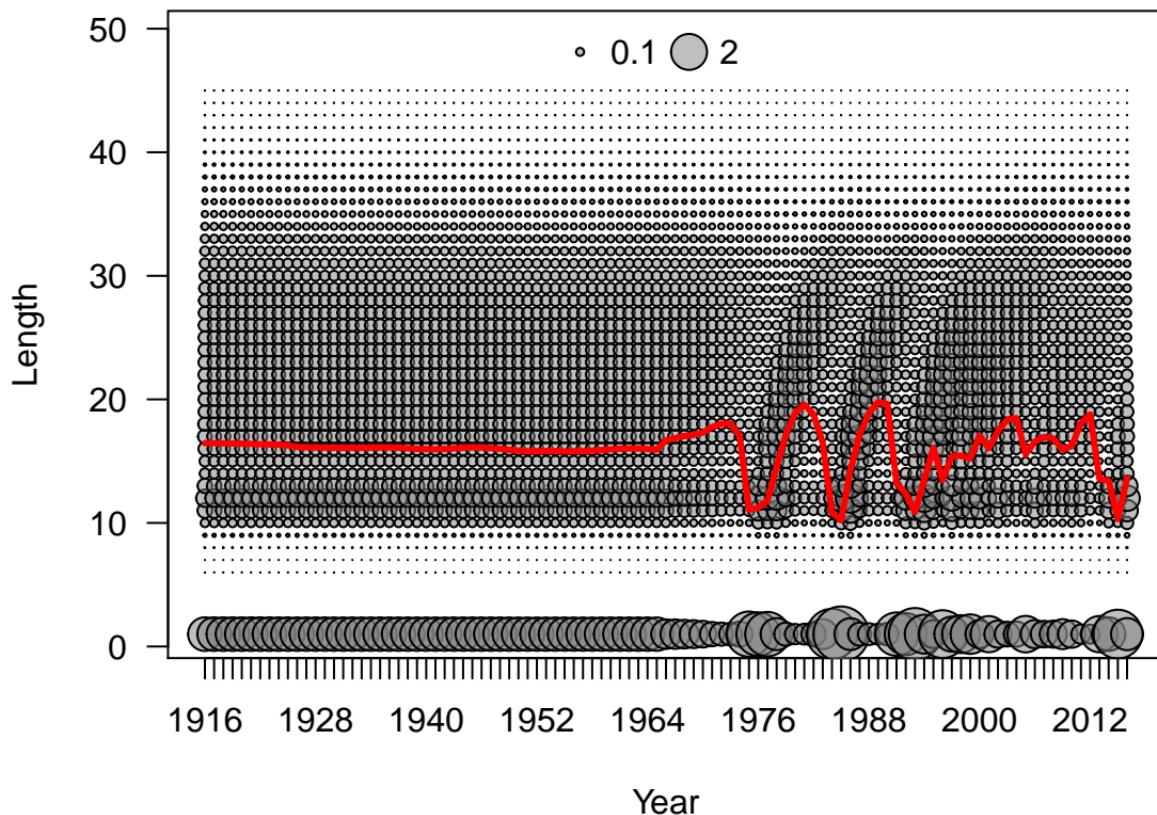
## Middle of year mean age in the population



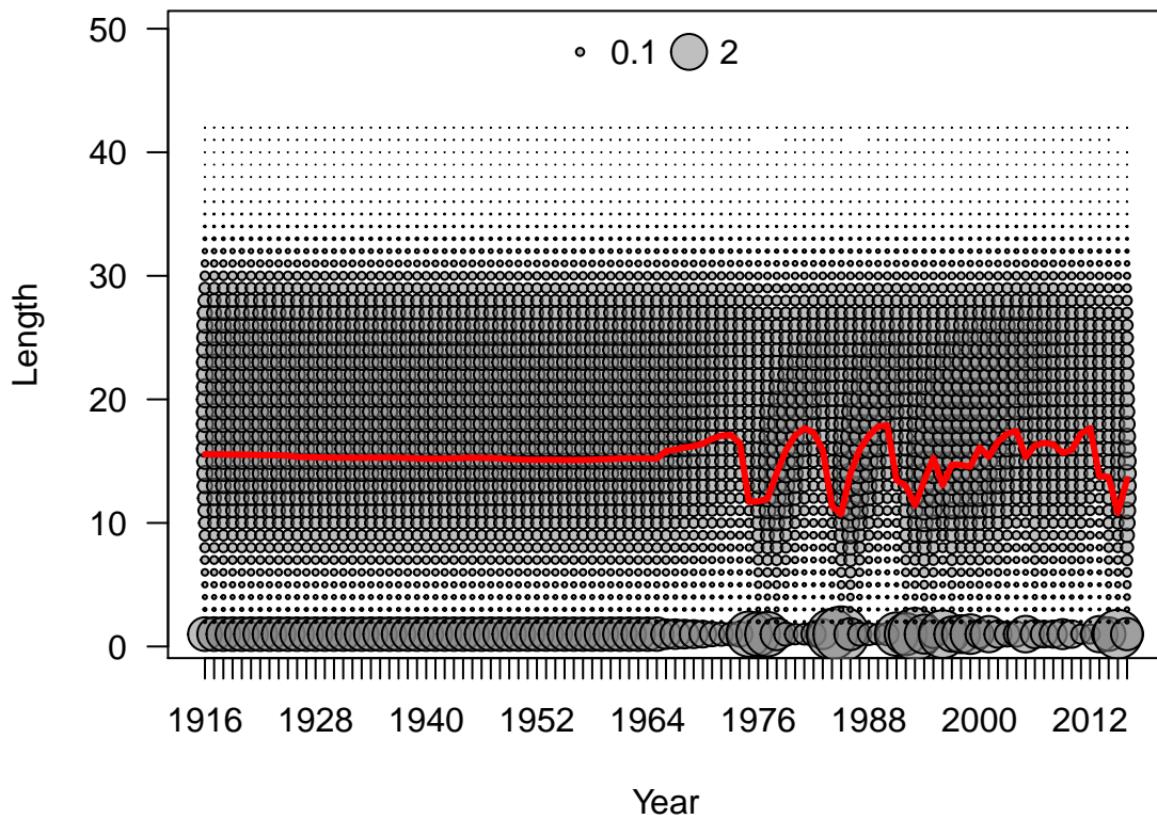
## Fraction female in numbers at age



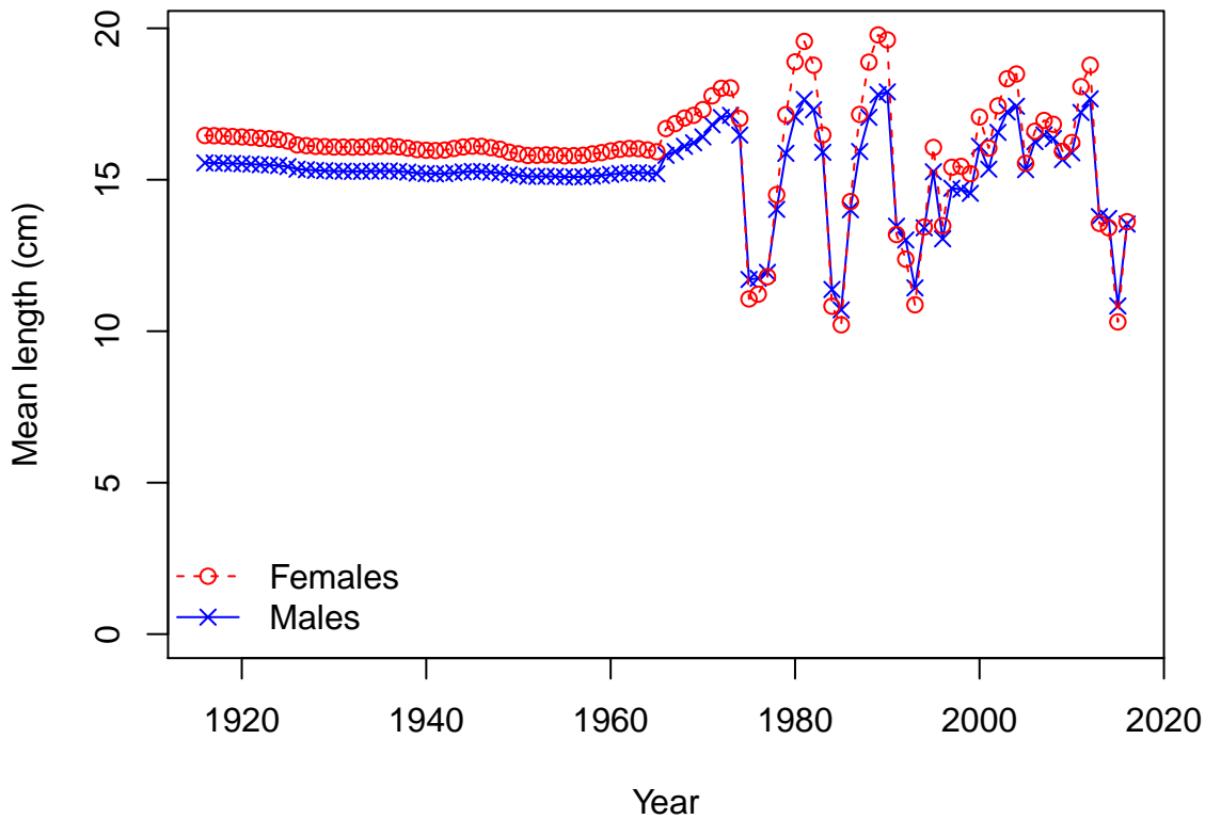
## Beginning of year expected numbers at length of females in (max ~ 4.7 million)



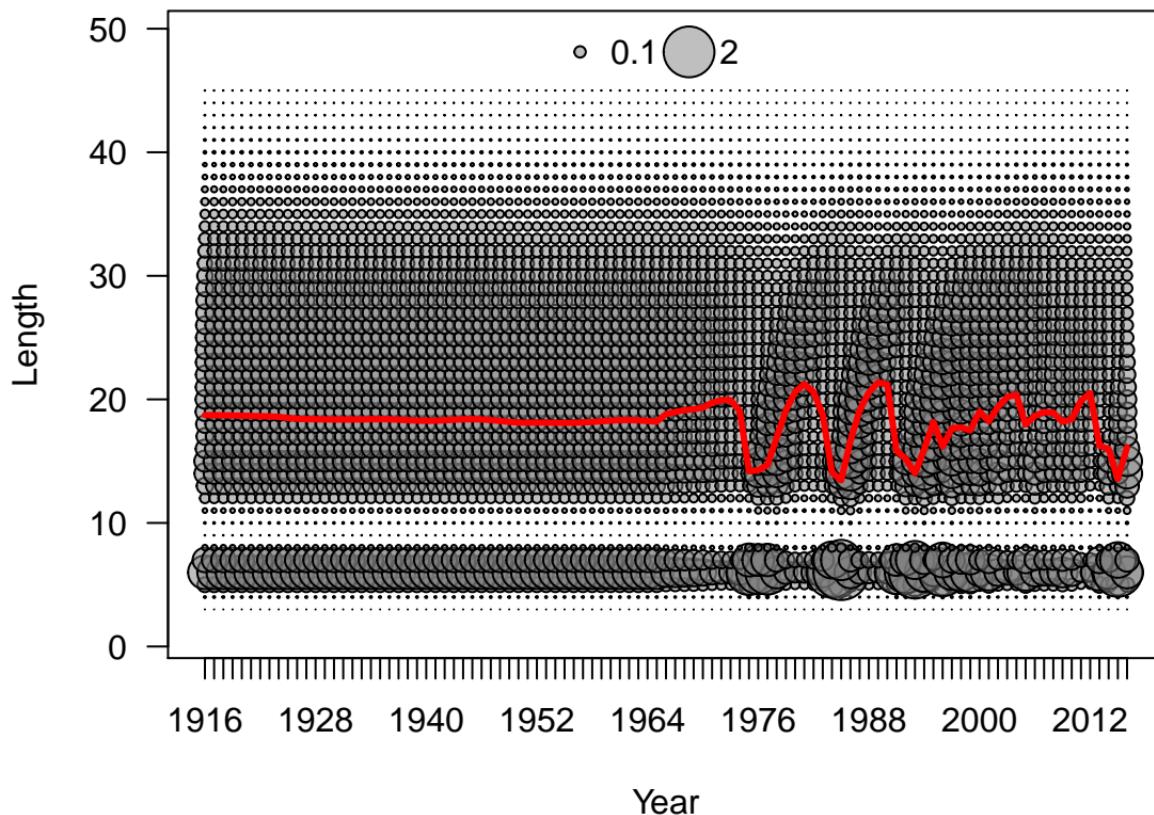
## Beginning of year expected numbers at length of males in (max ~ 4.7 million)



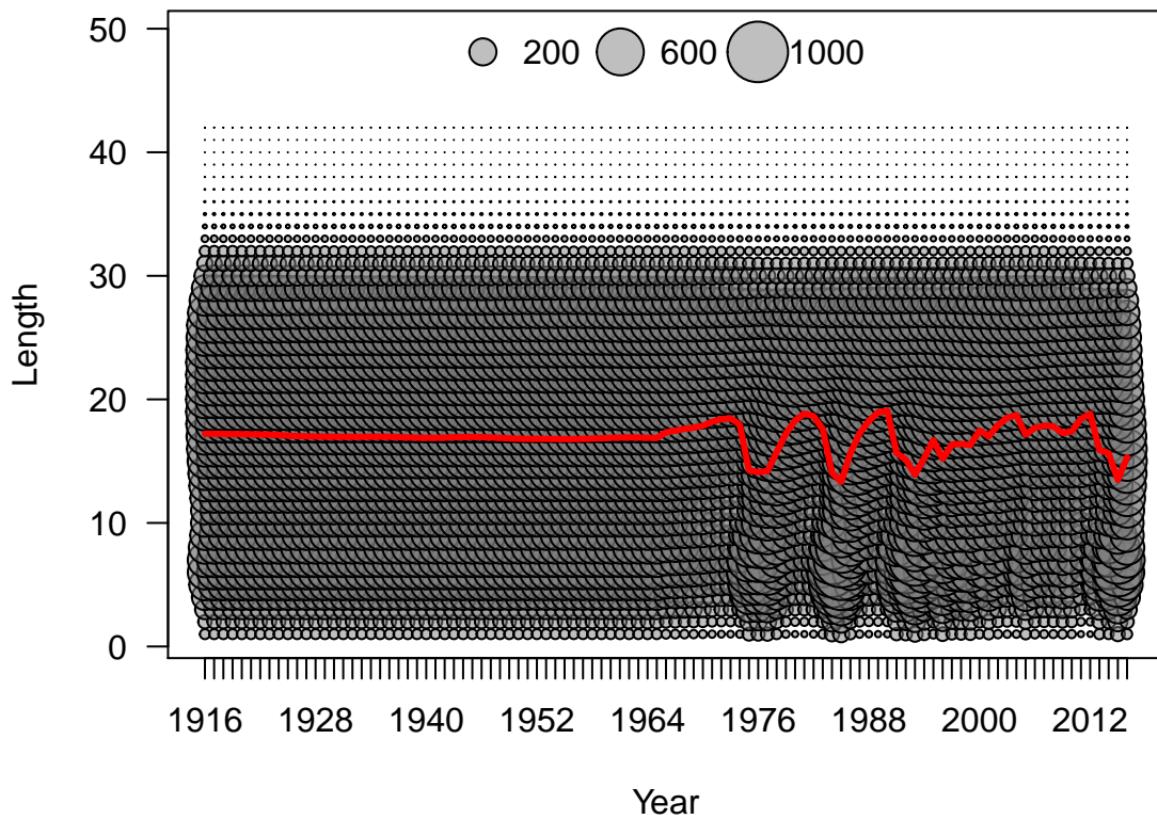
## Beginning of year mean length (cm) in the population



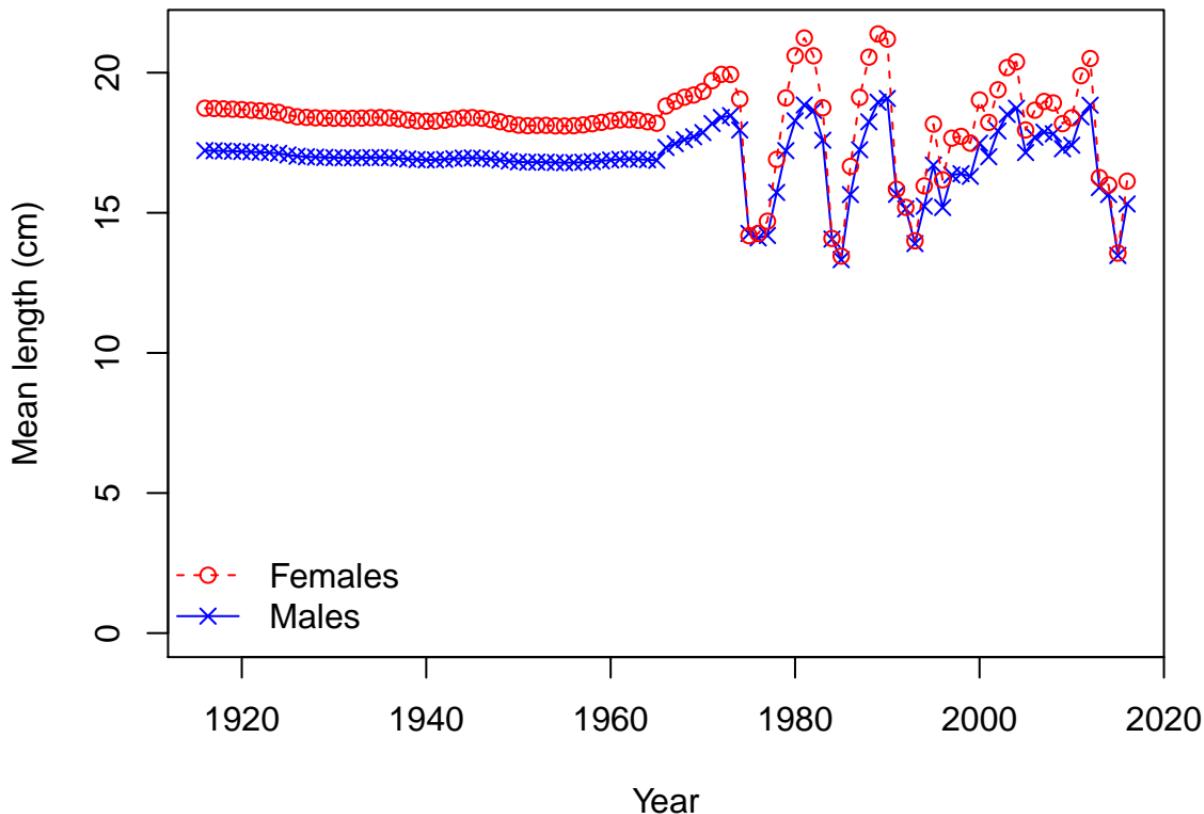
## Middle of year expected numbers at length of females in (max ~ 2.4 million)



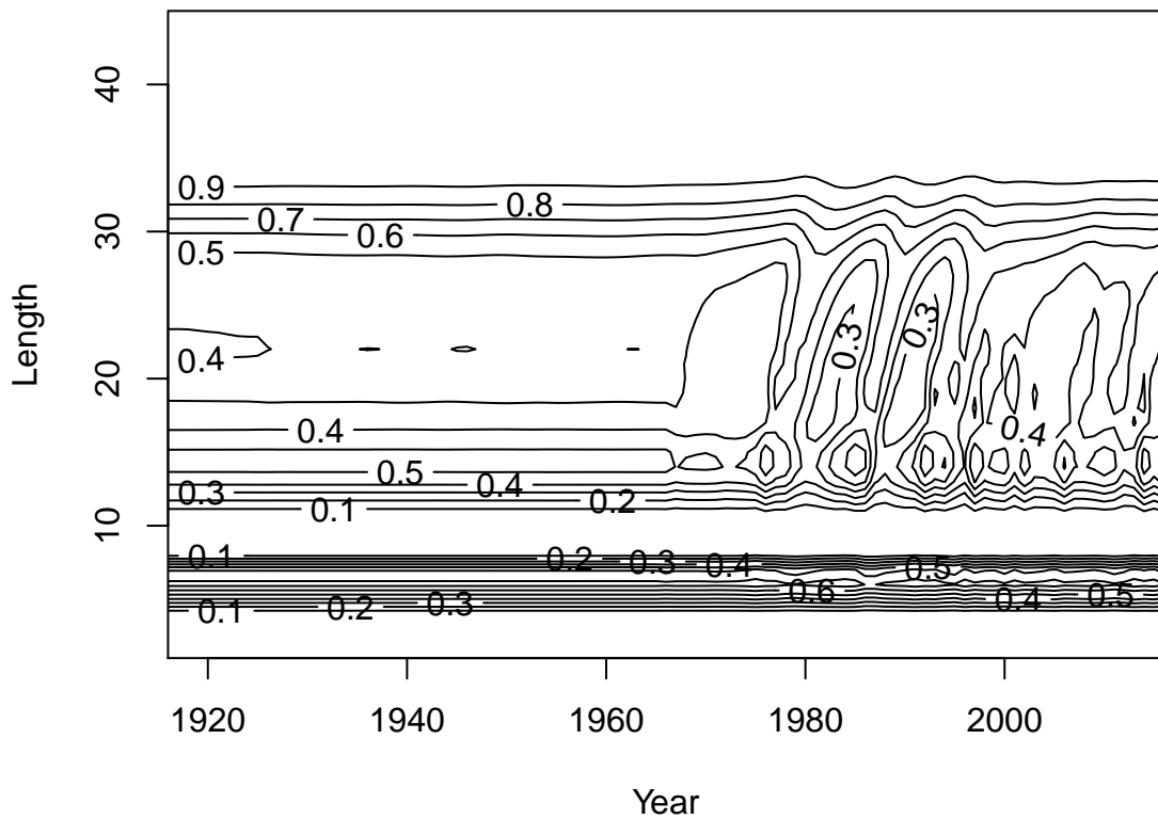
## Middle of year expected numbers at length of males in (max ~ 834.2 thousand)



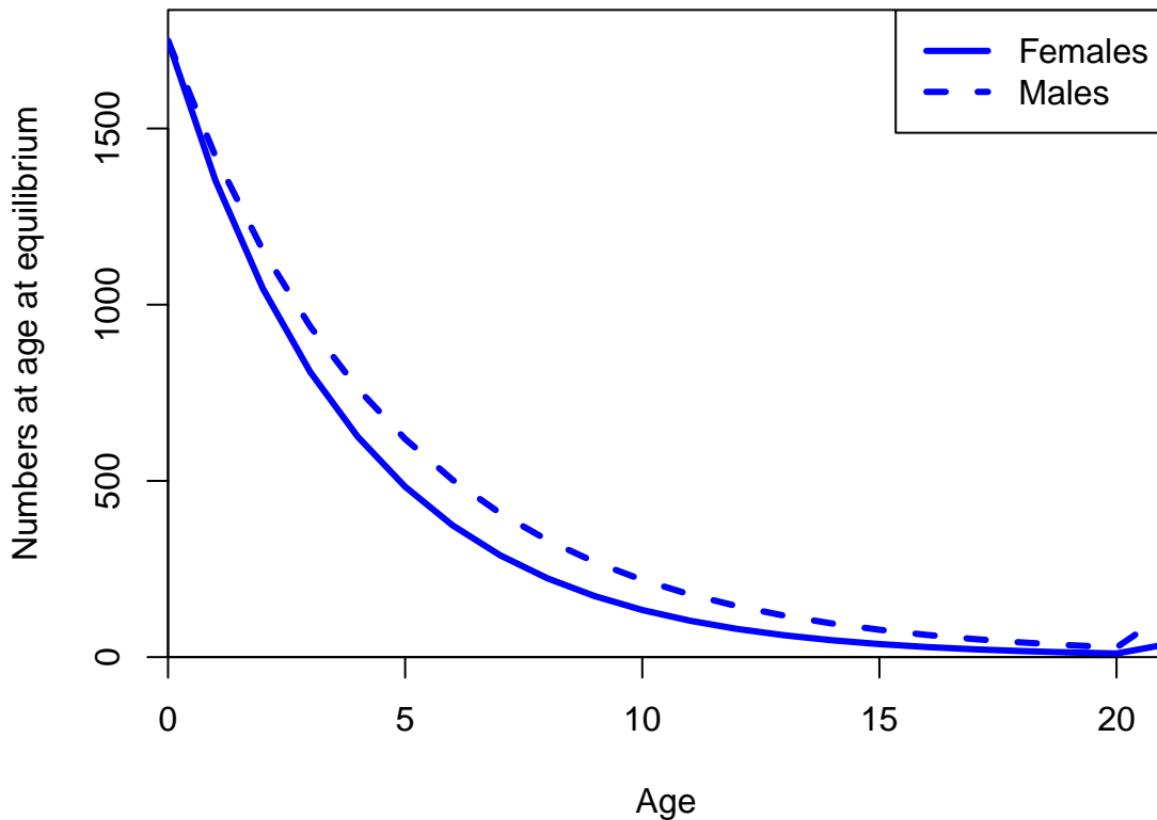
## Middle of year mean length (cm) in the population



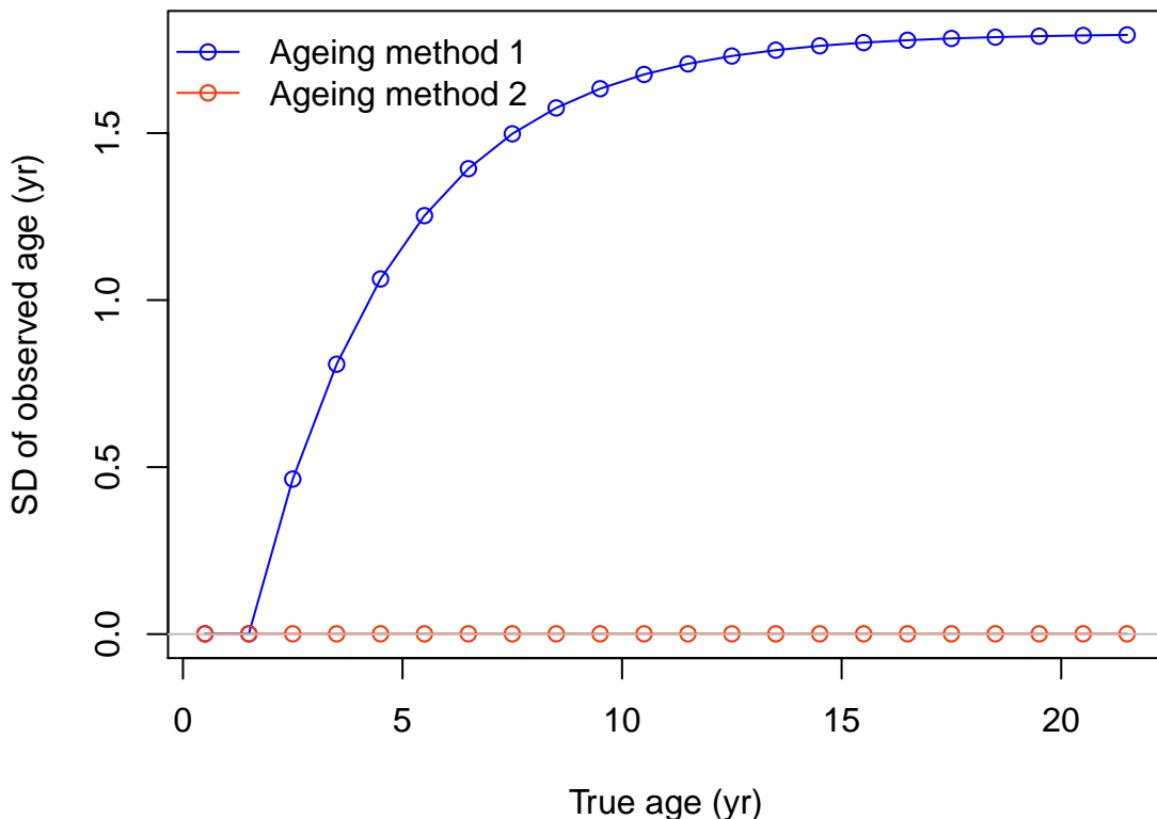
## Fraction female in numbers at length



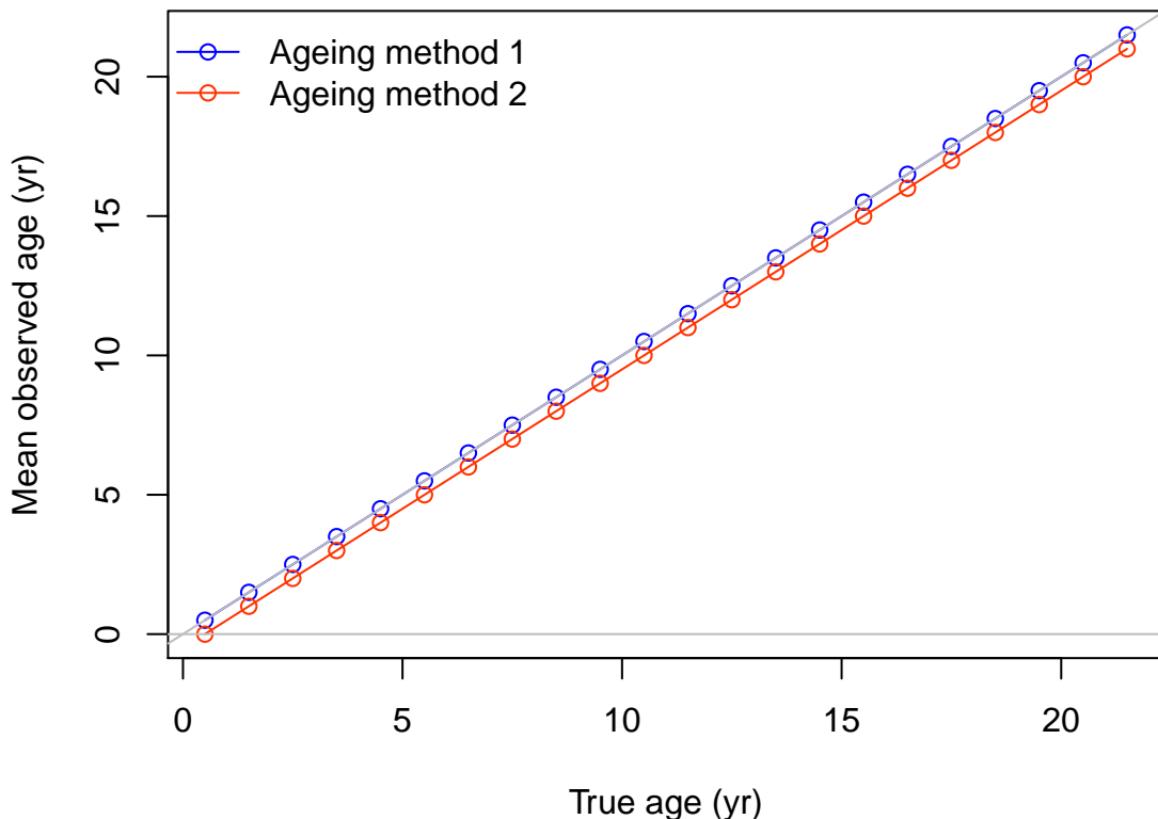
## Equilibrium age distribution



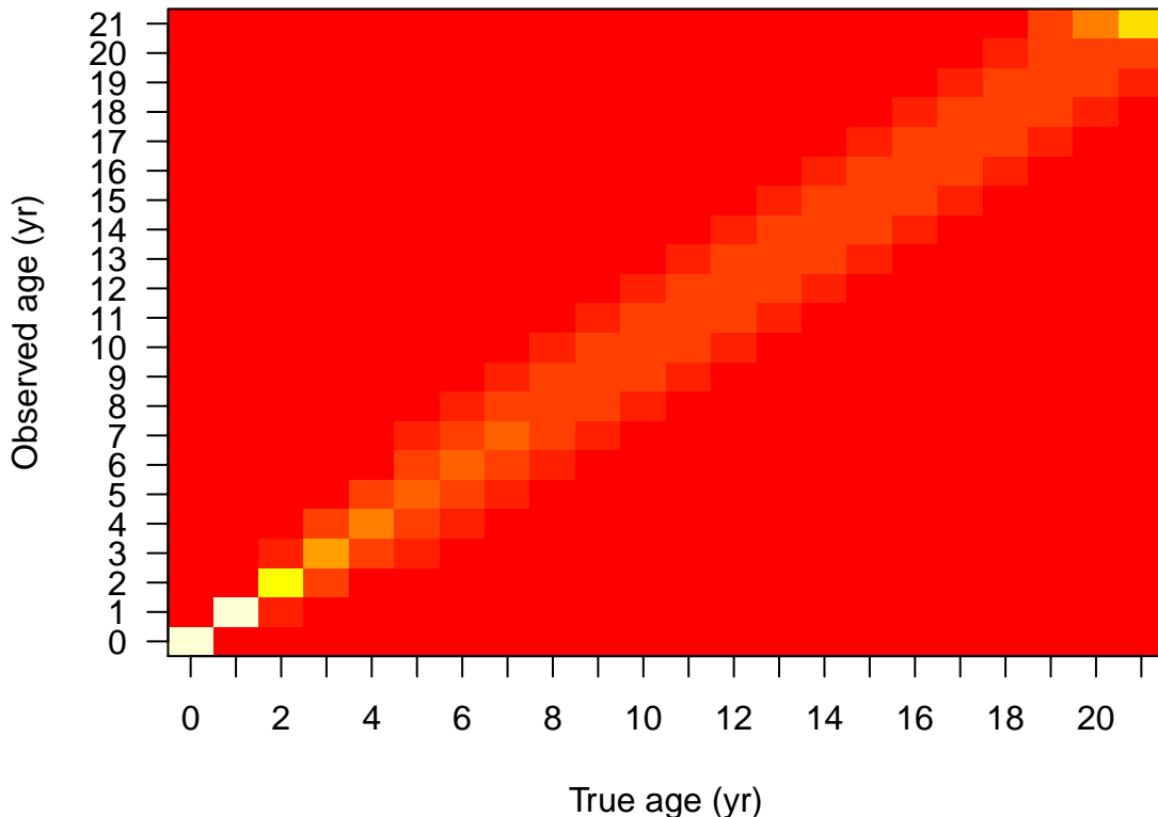
## Ageing imprecision



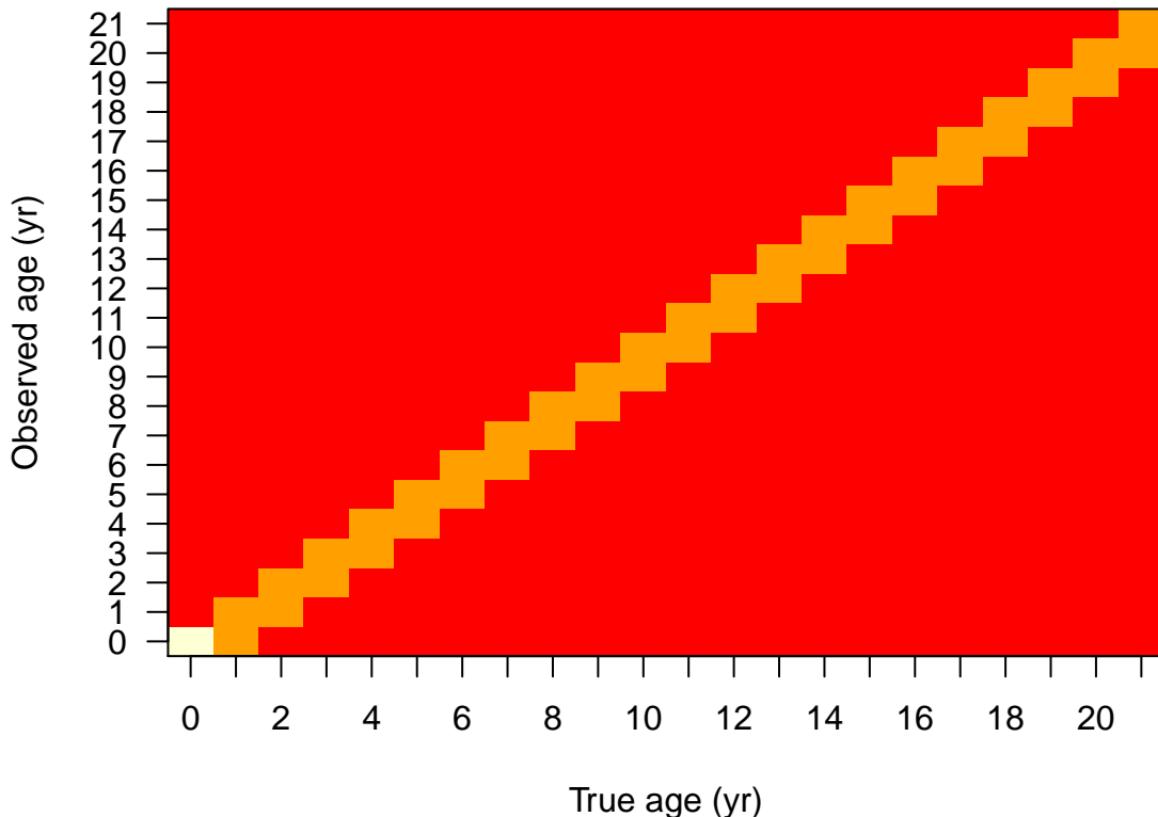
## Ageing imprecision



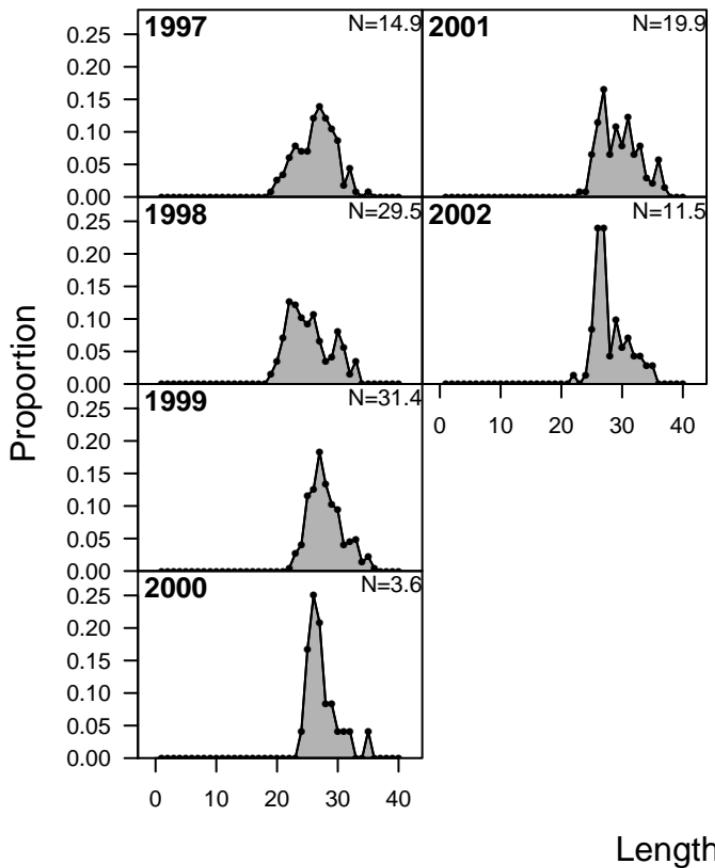
## Ageing imprecision: matrix for method 1



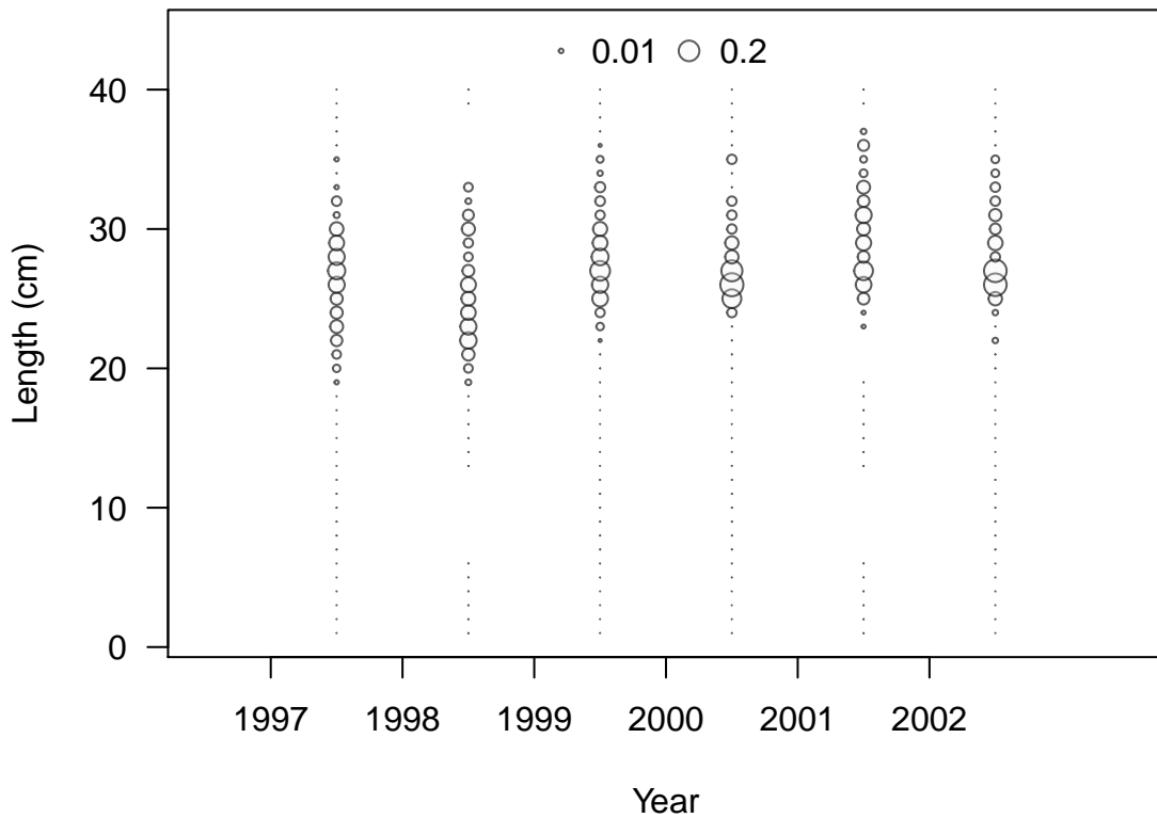
## Ageing imprecision: matrix for method 2



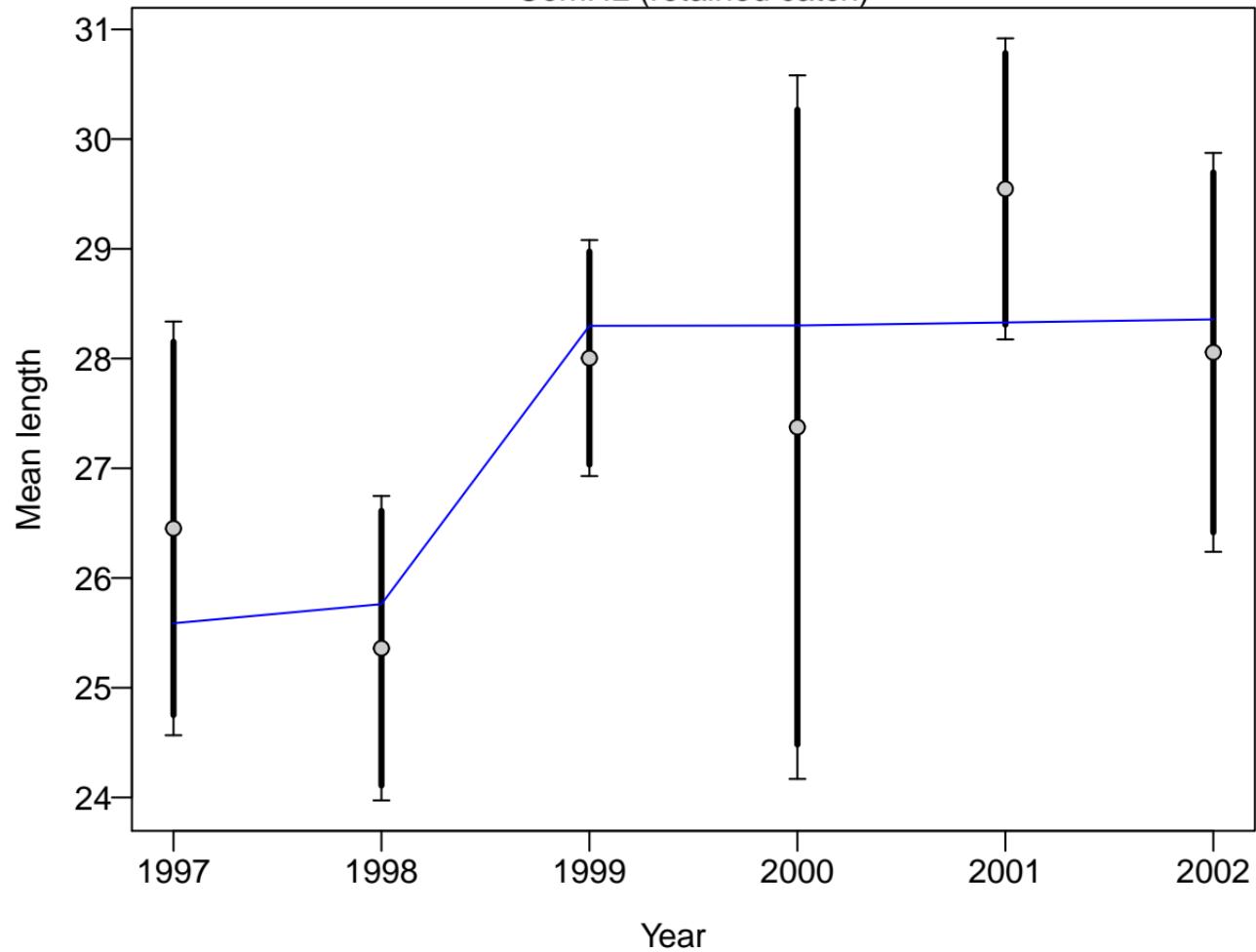
## Length comp data, retained, ComHL



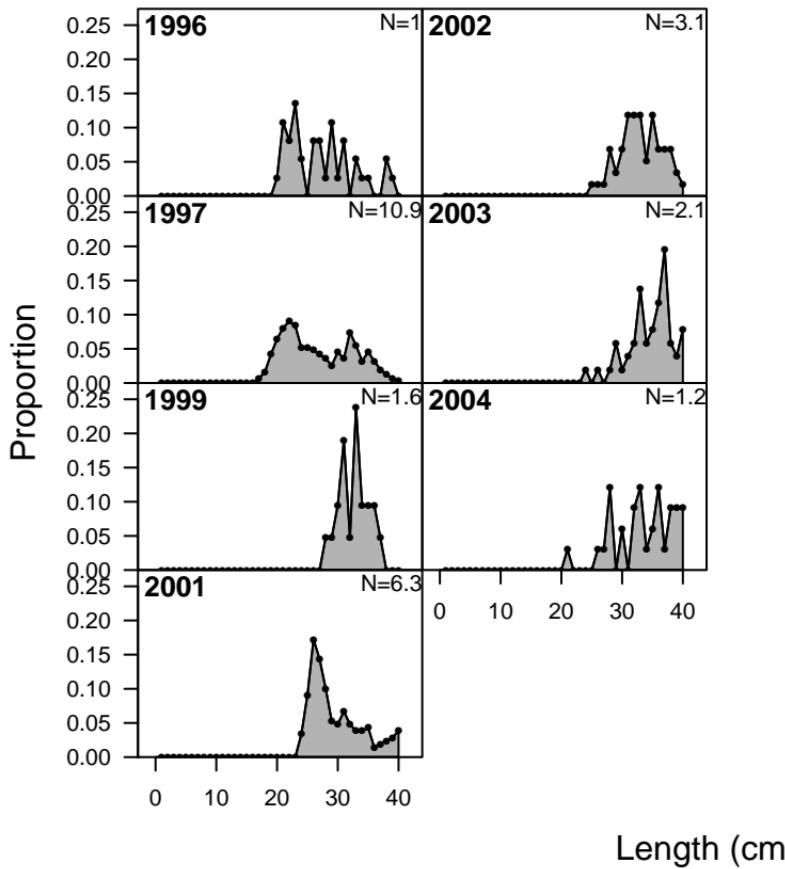
## Length comp data, retained, ComHL (max=0.25)



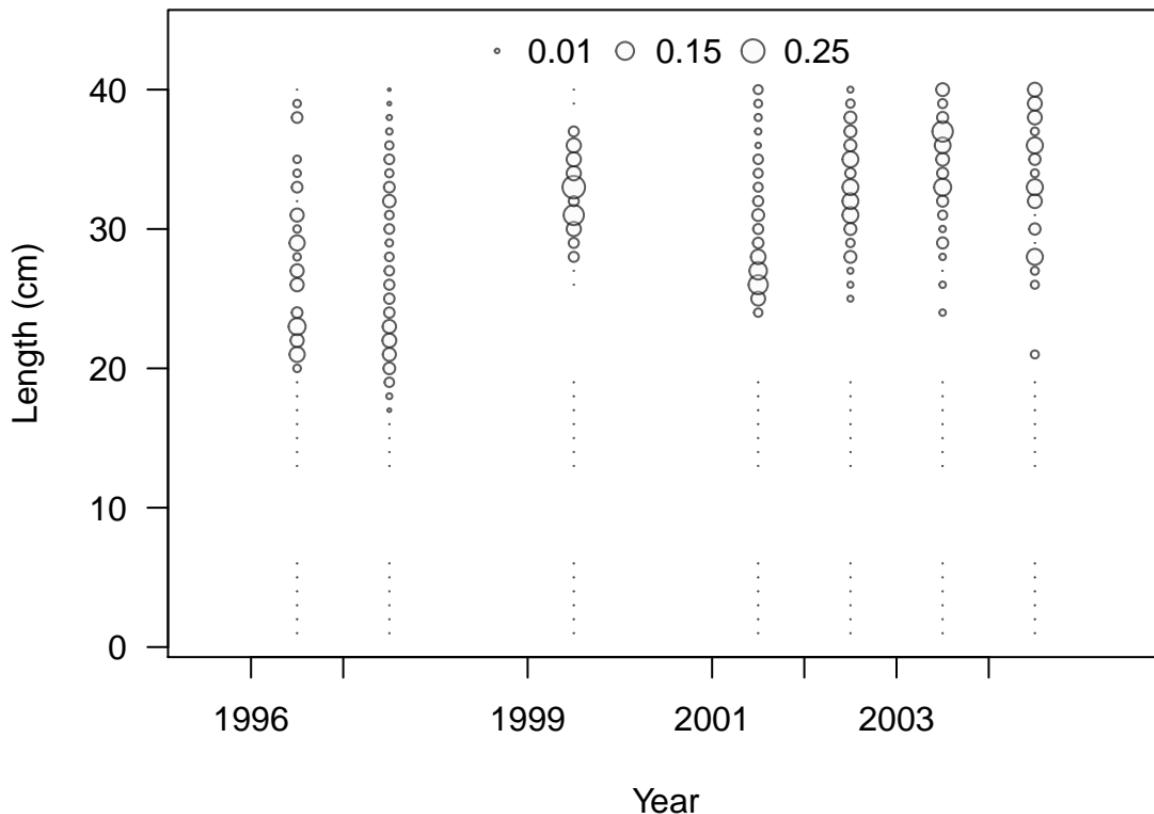
### ComHL (retained catch)



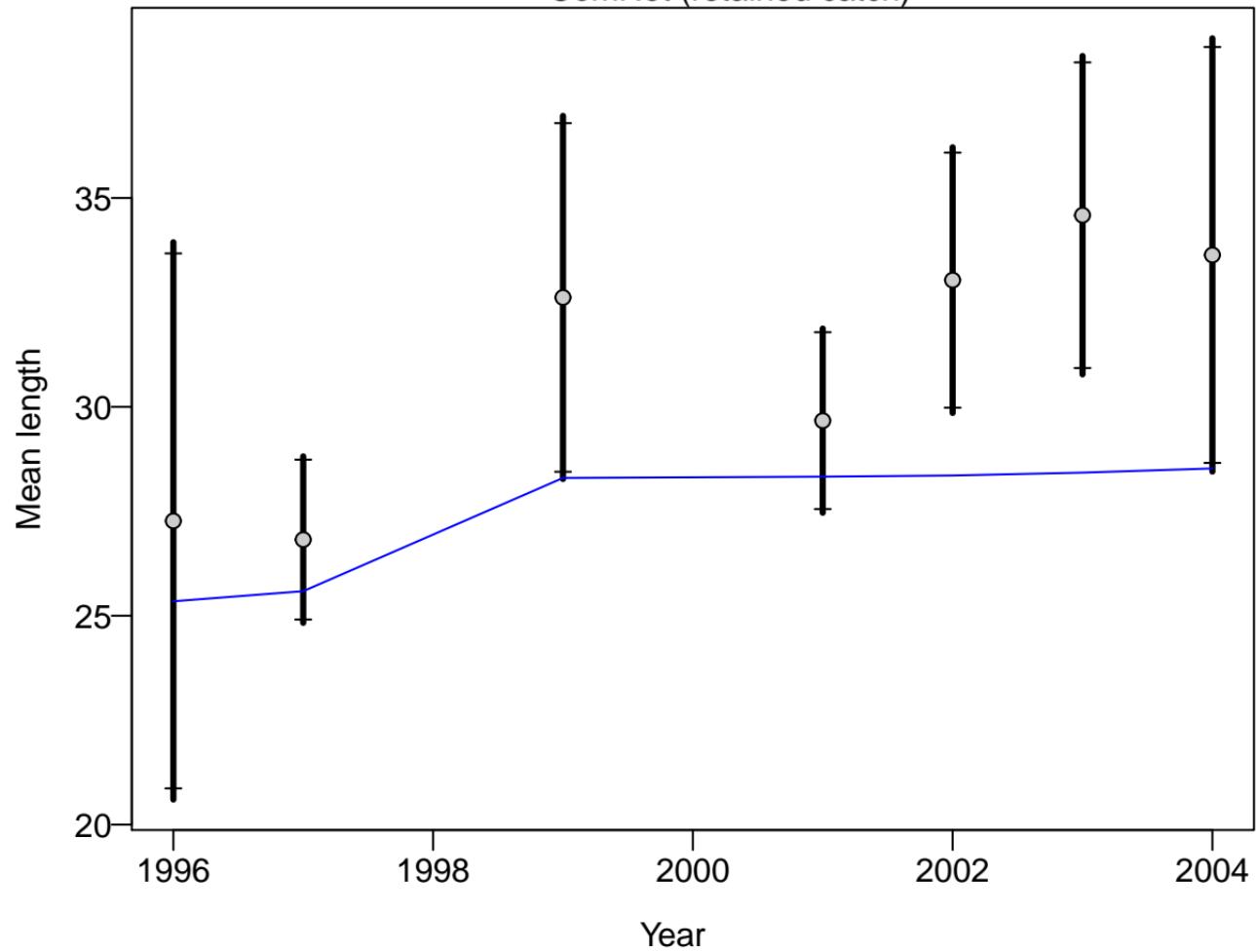
## Length comp data, retained, ComNet



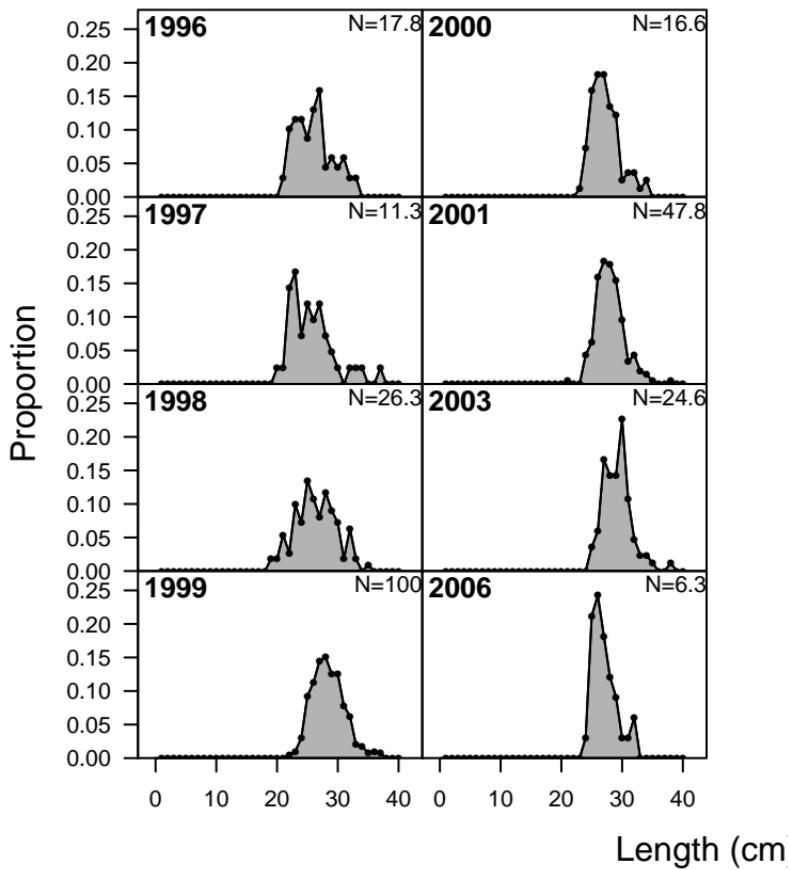
## Length comp data, retained, ComNet (max=0.24)



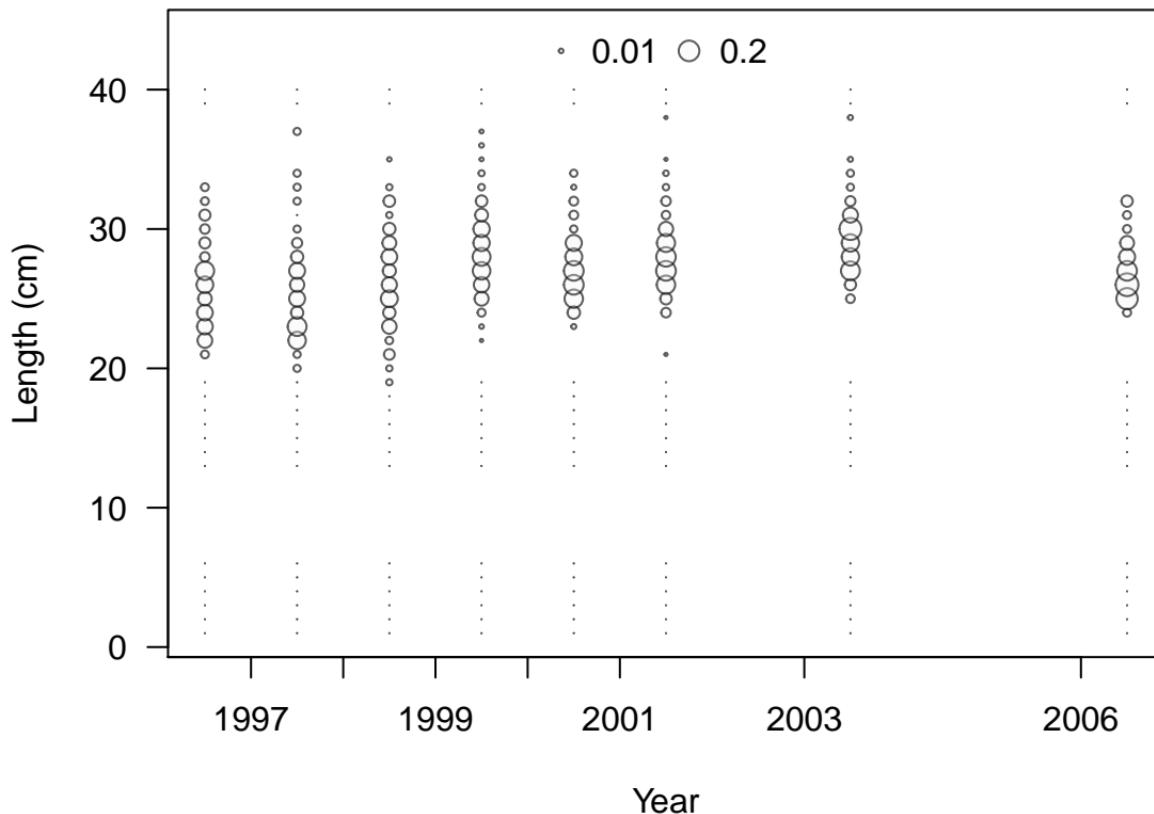
### ComNet (retained catch)



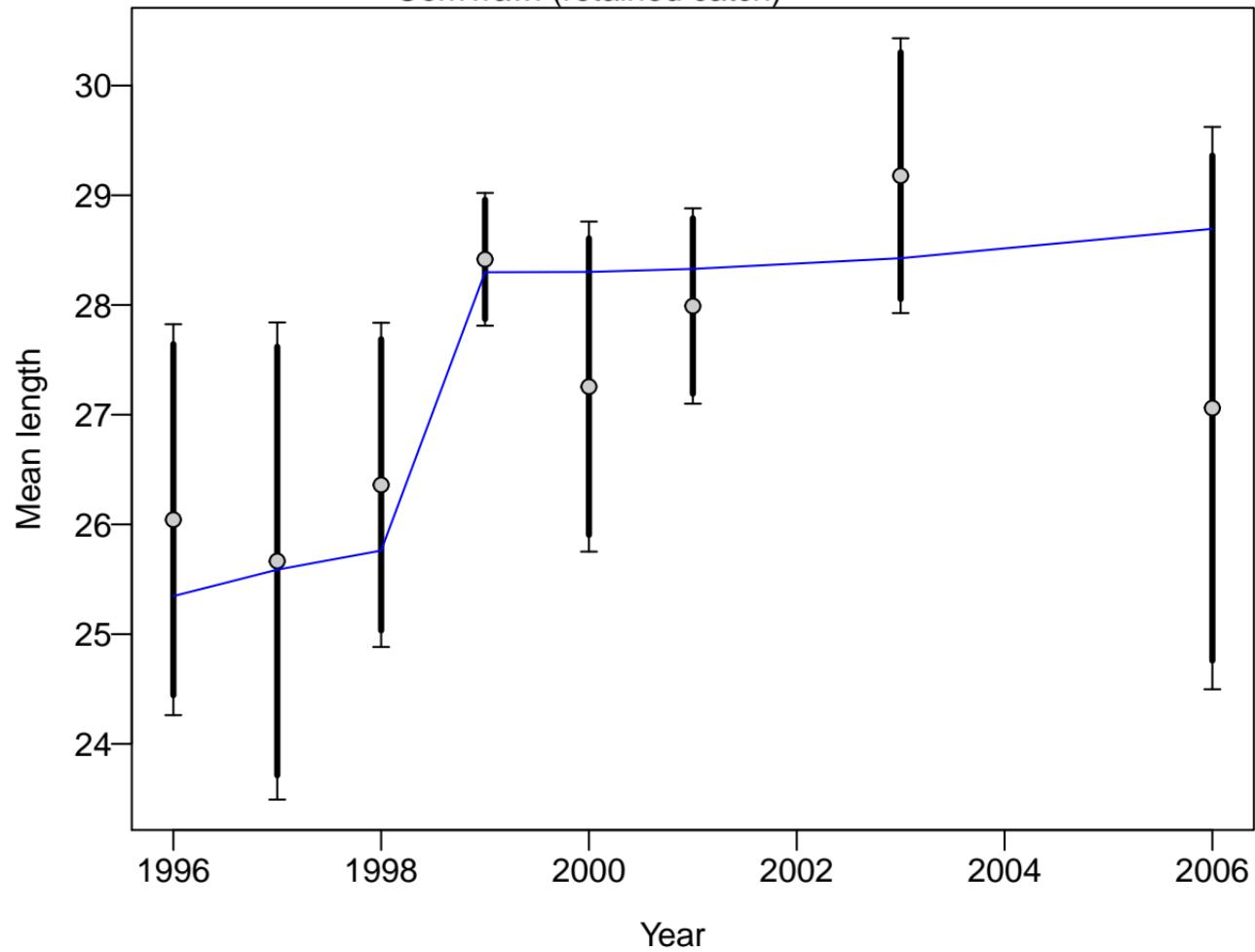
## Length comp data, retained, ComTrawl



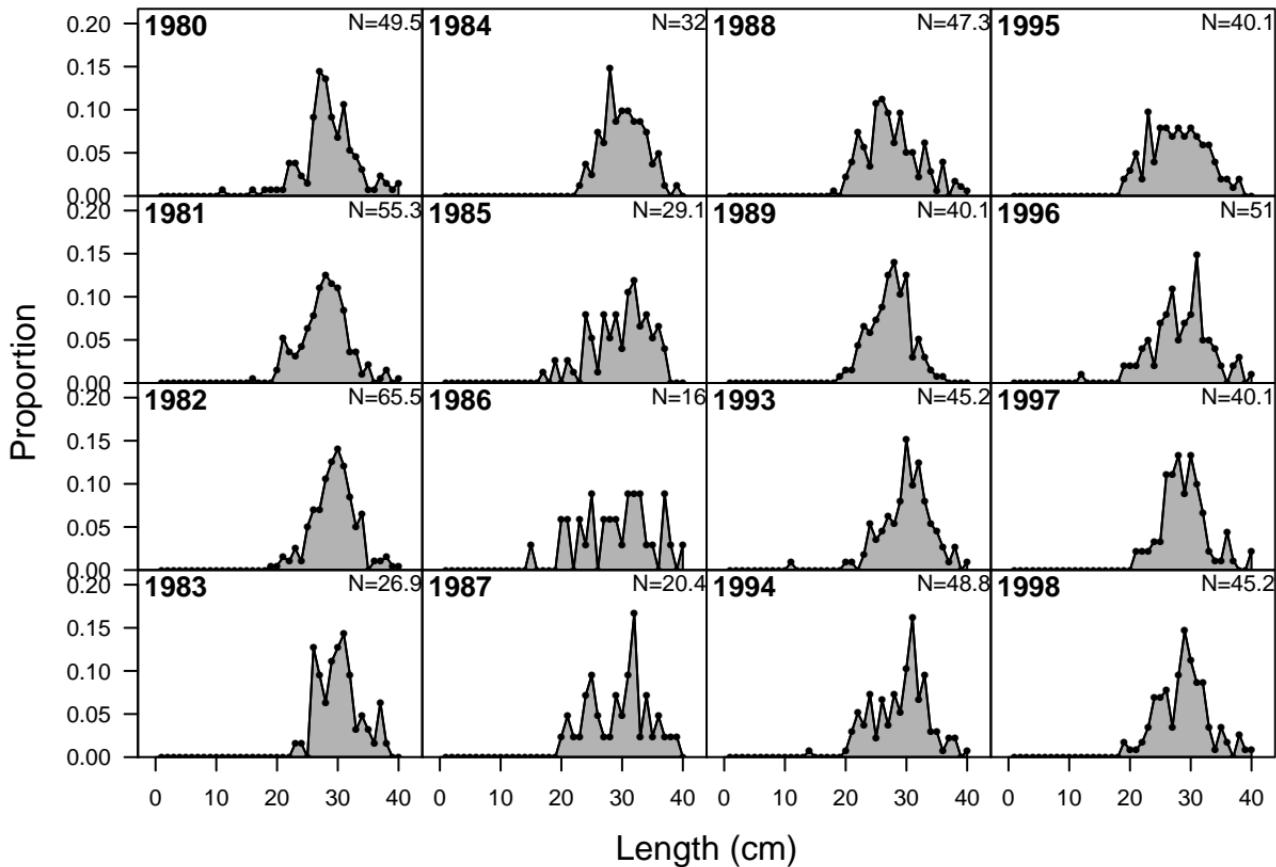
## Length comp data, retained, ComTrawl (max=0.24)



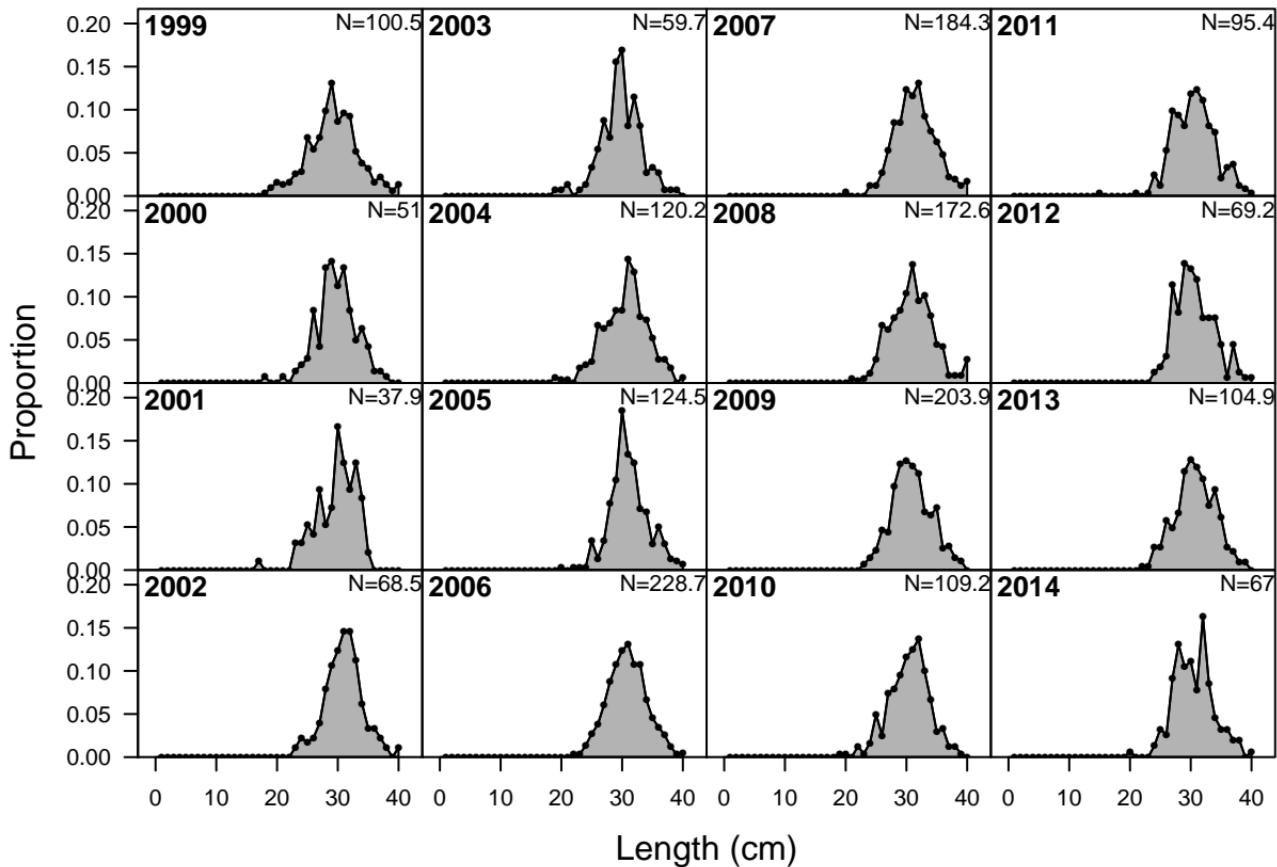
### ComTrawl (retained catch)



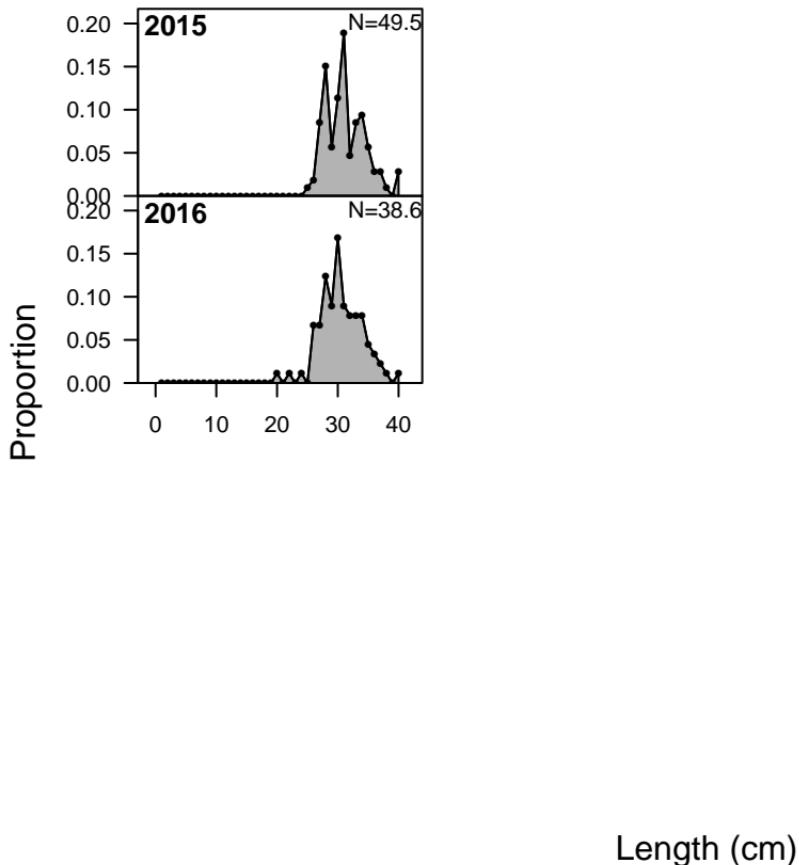
## Length comp data, retained, RecPR



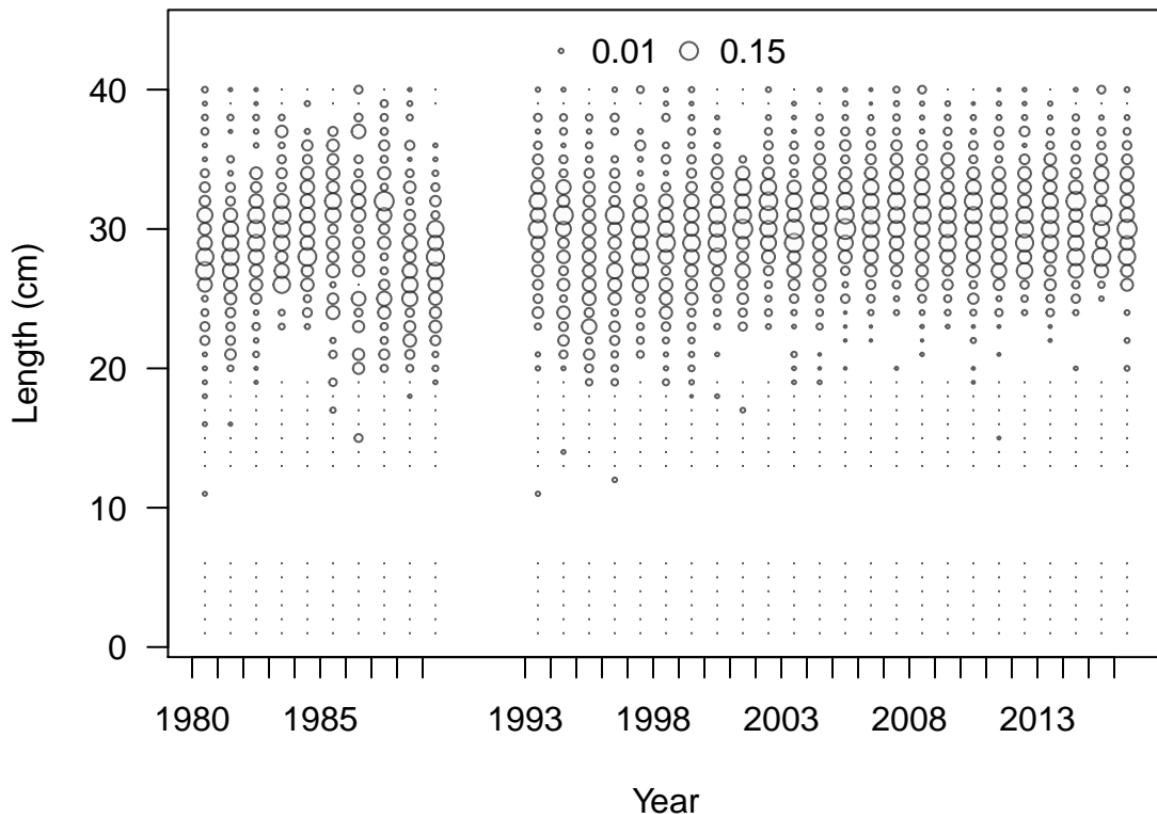
## Length comp data, retained, RecPR



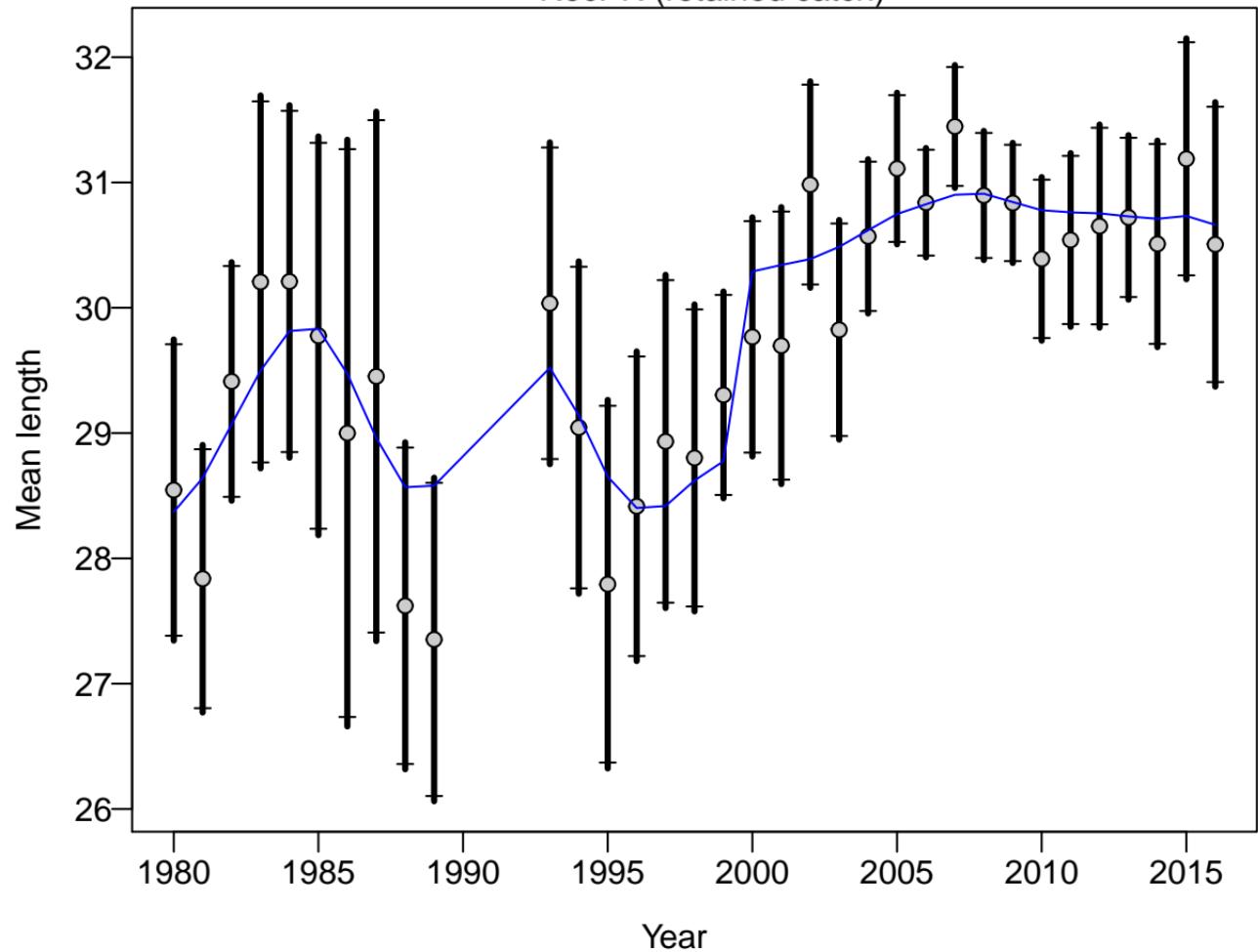
## Length comp data, retained, RecPR



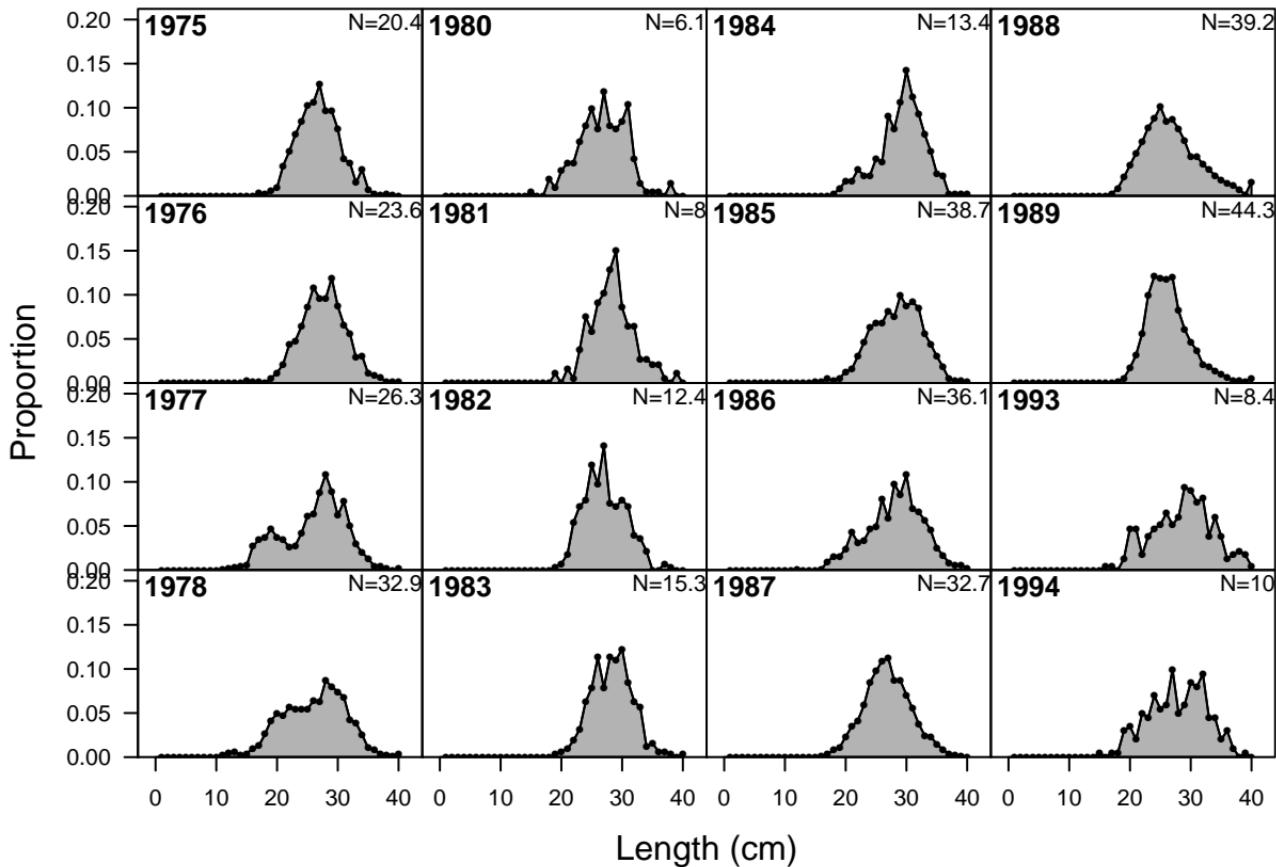
## Length comp data, retained, RecPR (max=0.19)



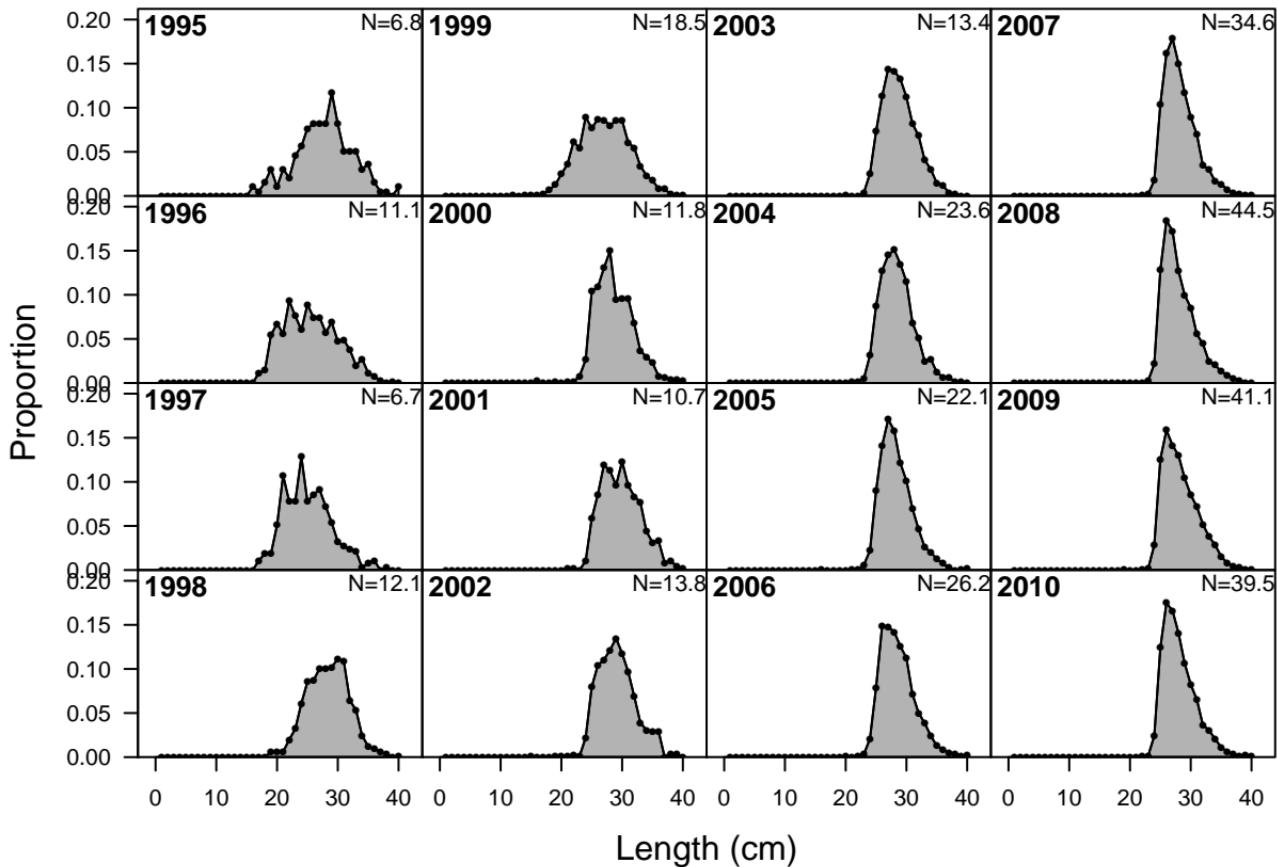
### RecPR (retained catch)



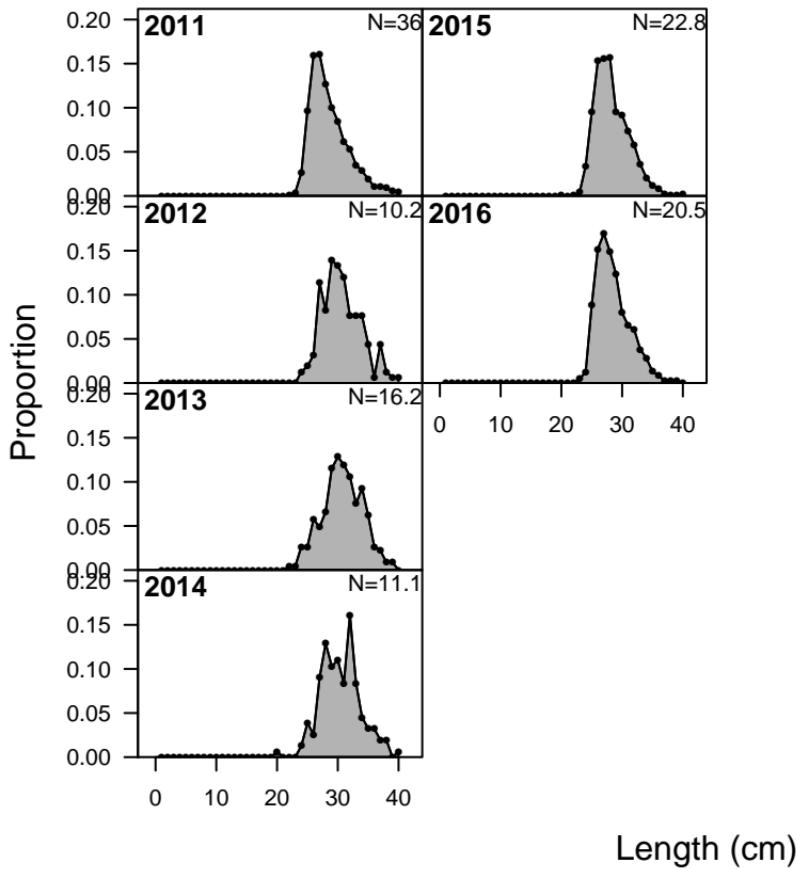
## Length comp data, retained, RecPC



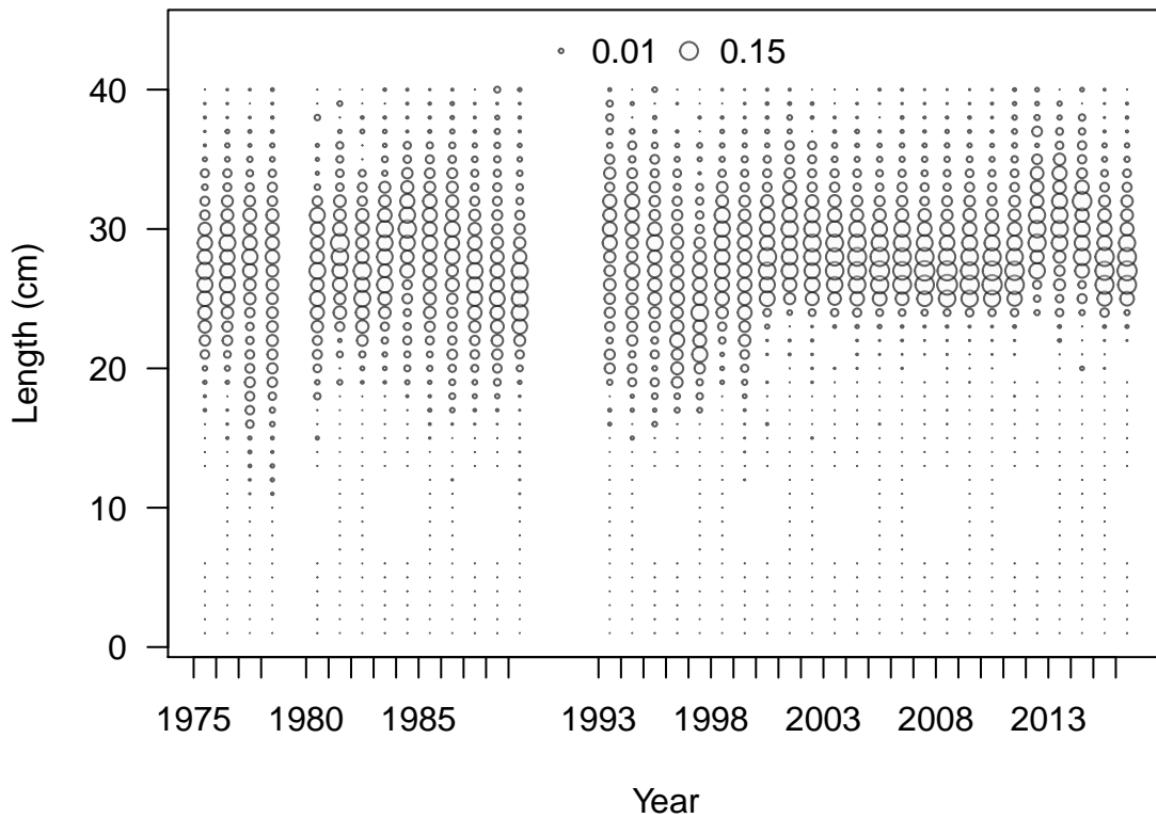
## Length comp data, retained, RecPC



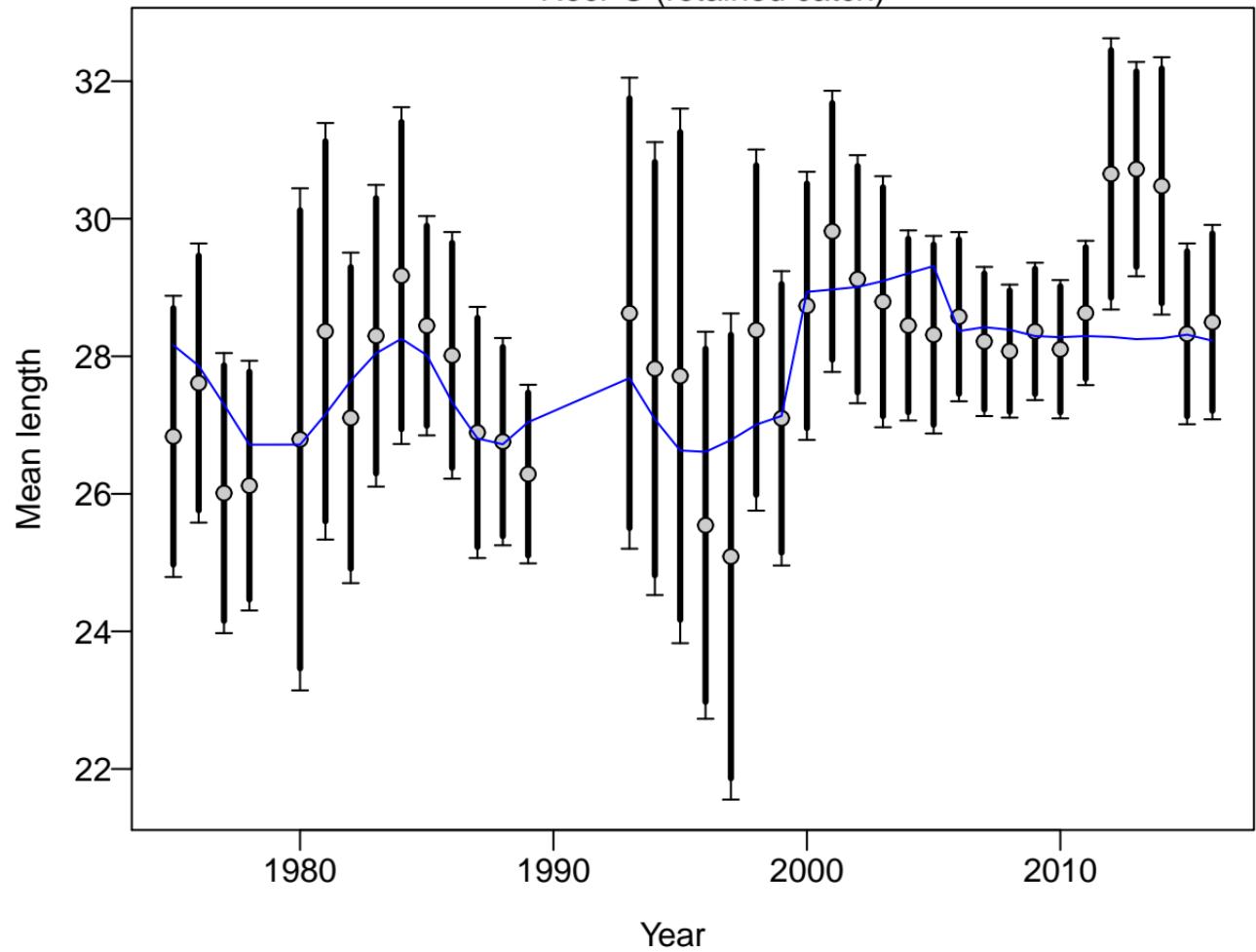
## Length comp data, retained, RecPC



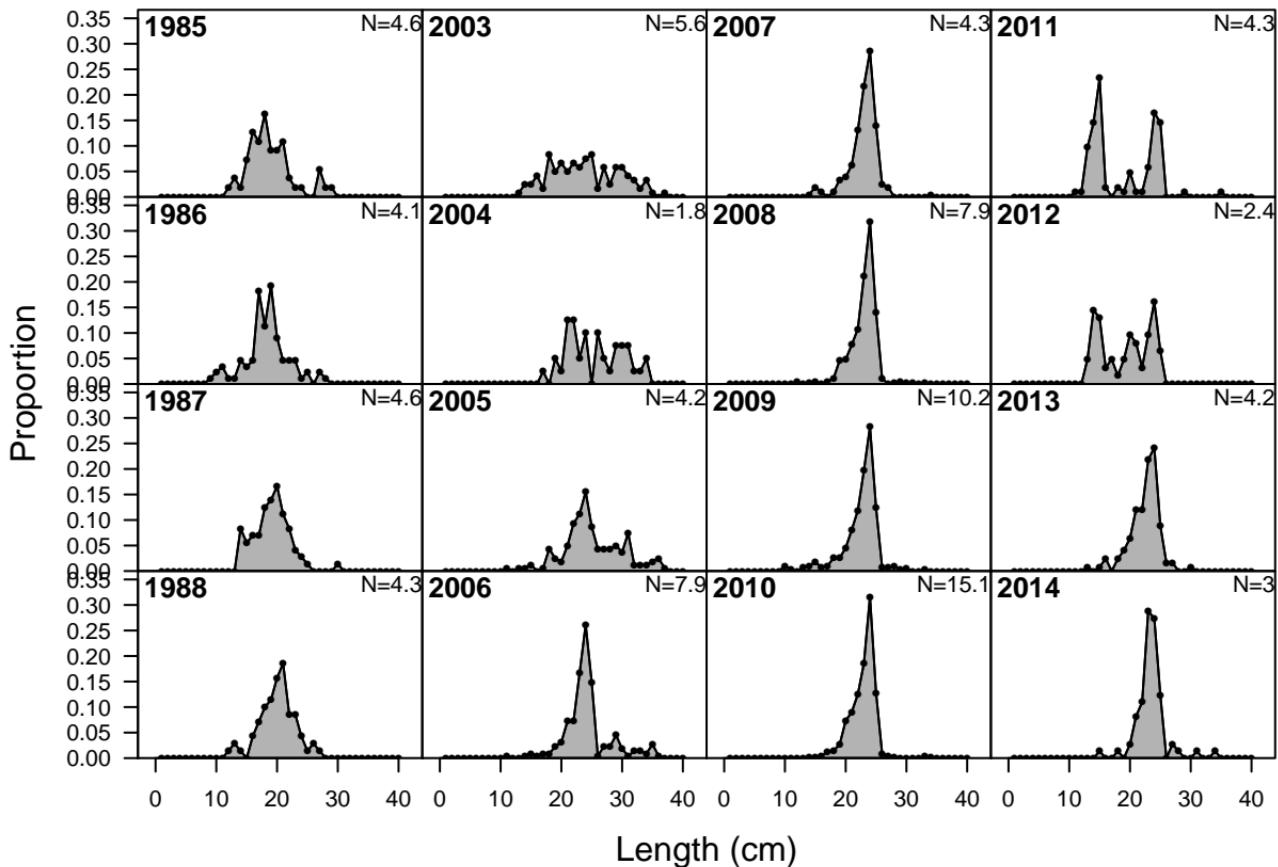
### Length comp data, retained, RecPC (max=0.18)



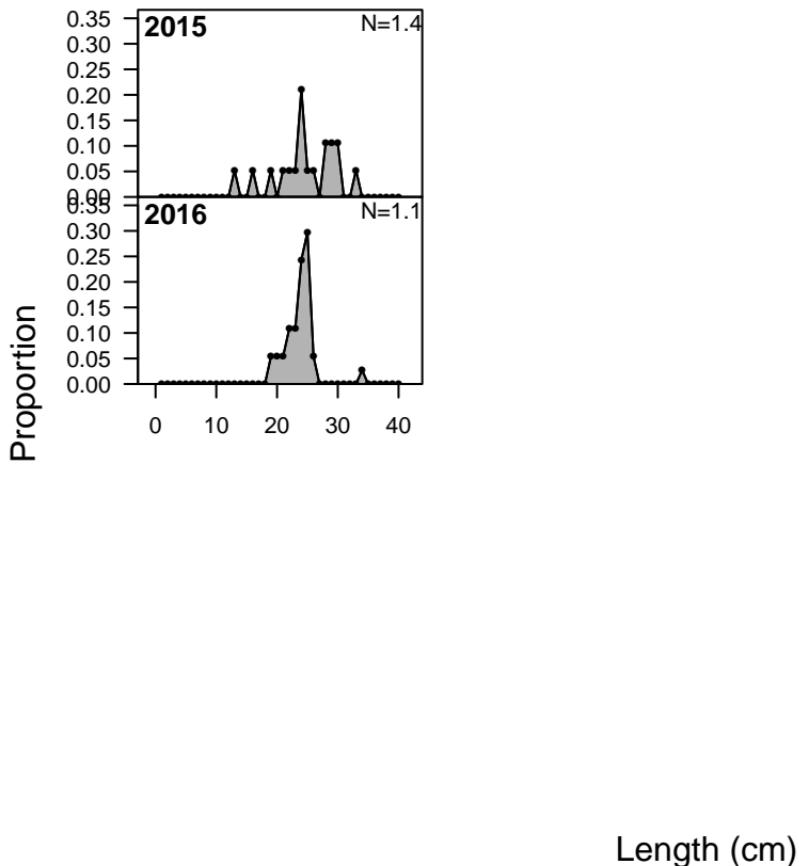
### RecPC (retained catch)



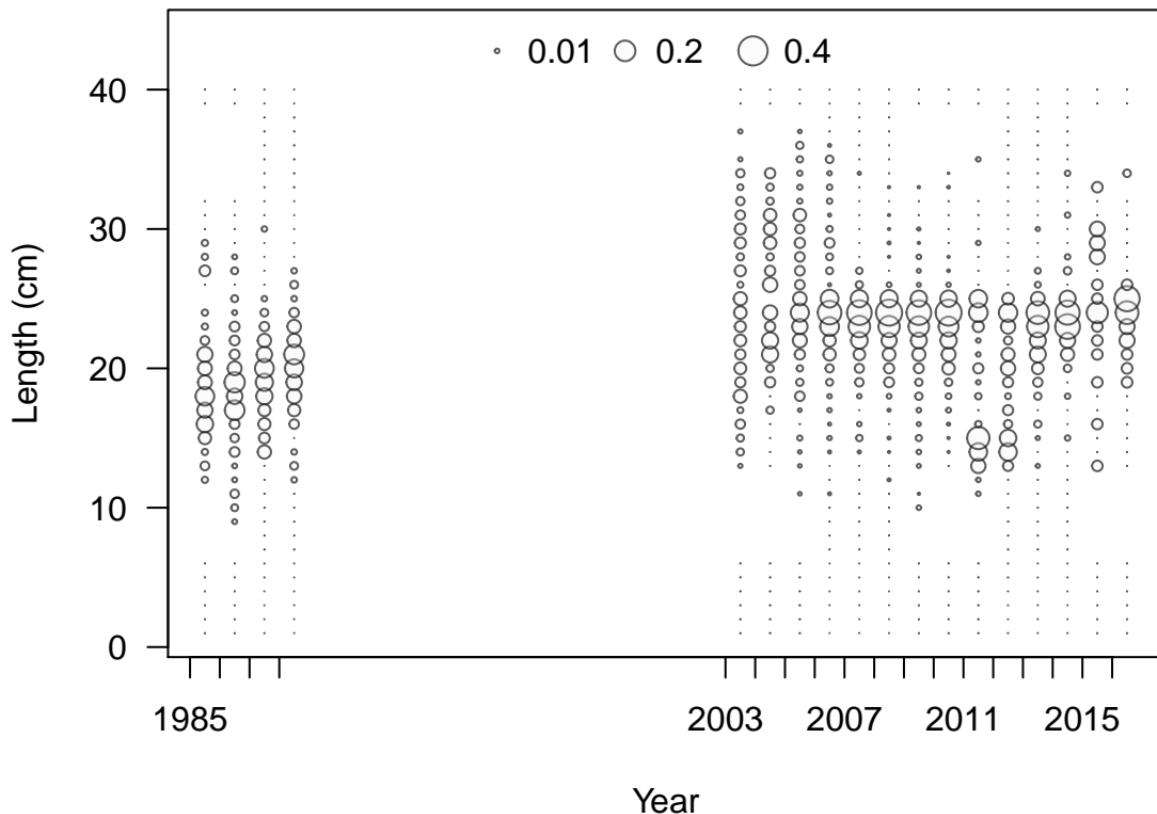
## Length comp data, retained, RecDD



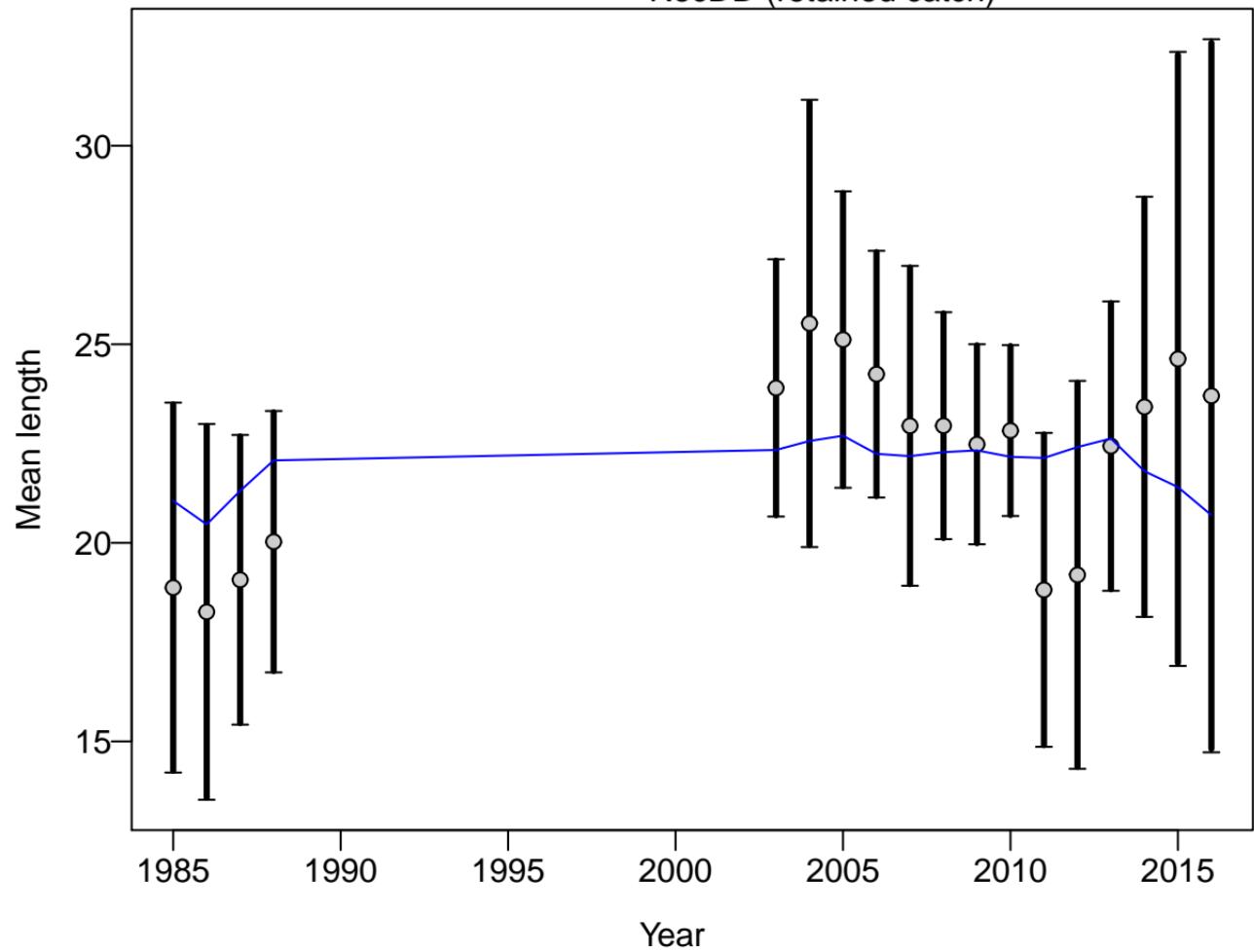
## Length comp data, retained, RecDD



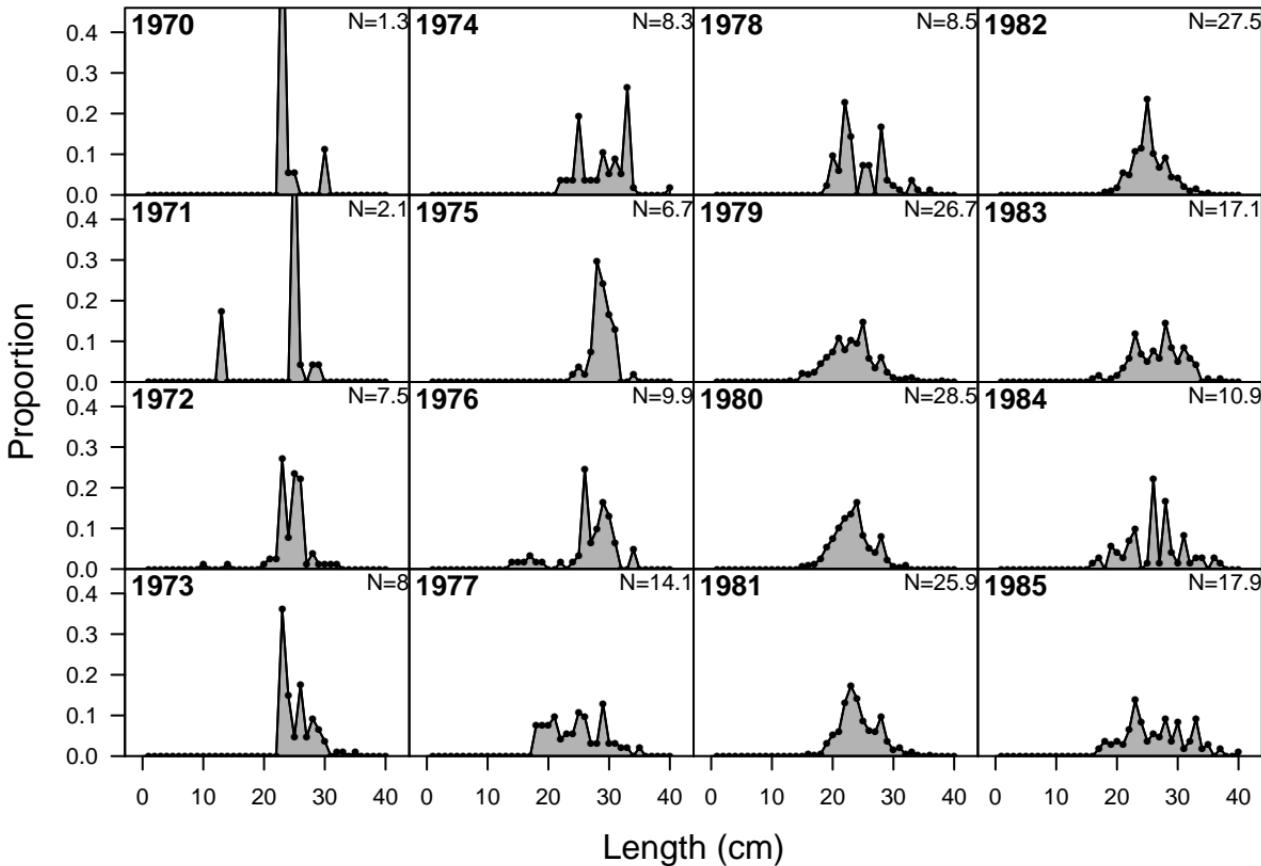
## Length comp data, retained, RecDD (max=0.32)



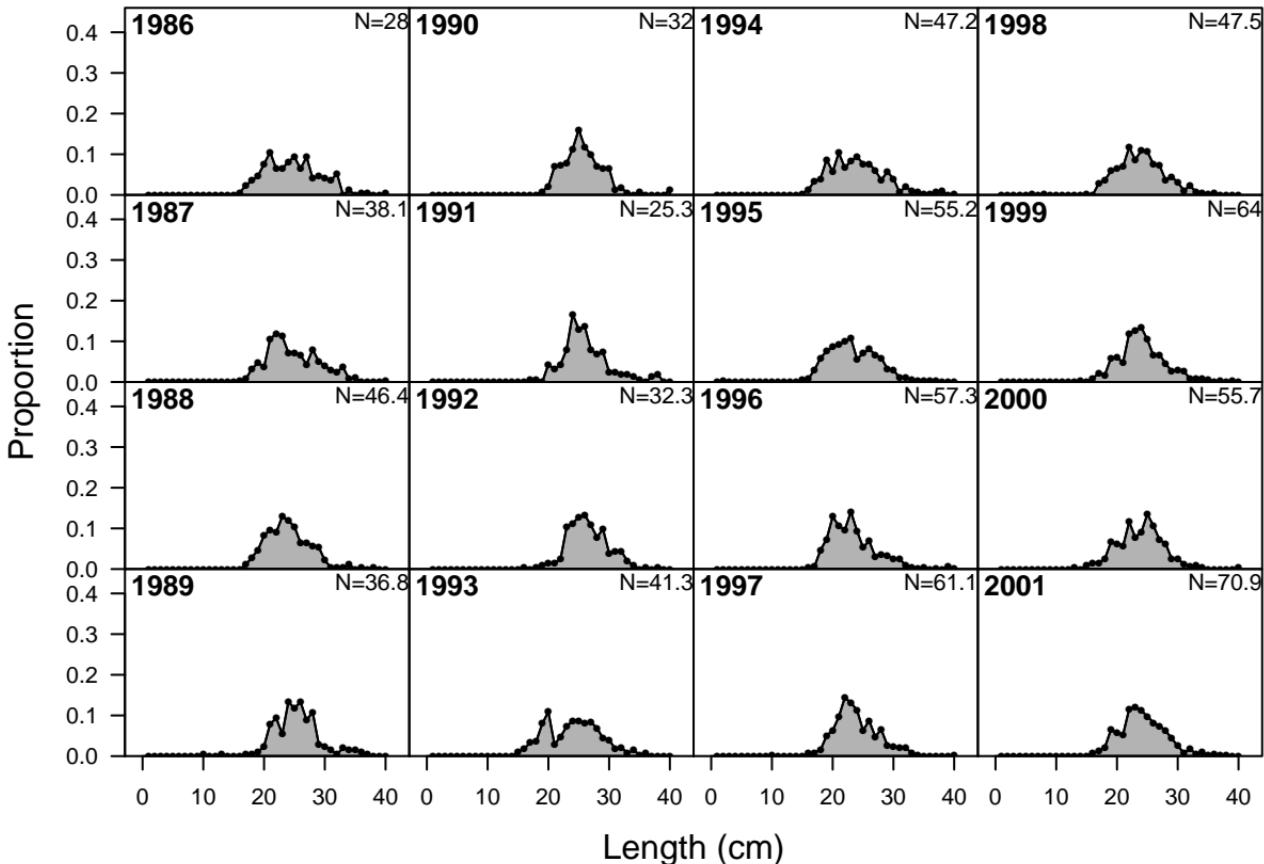
### RecDD (retained catch)



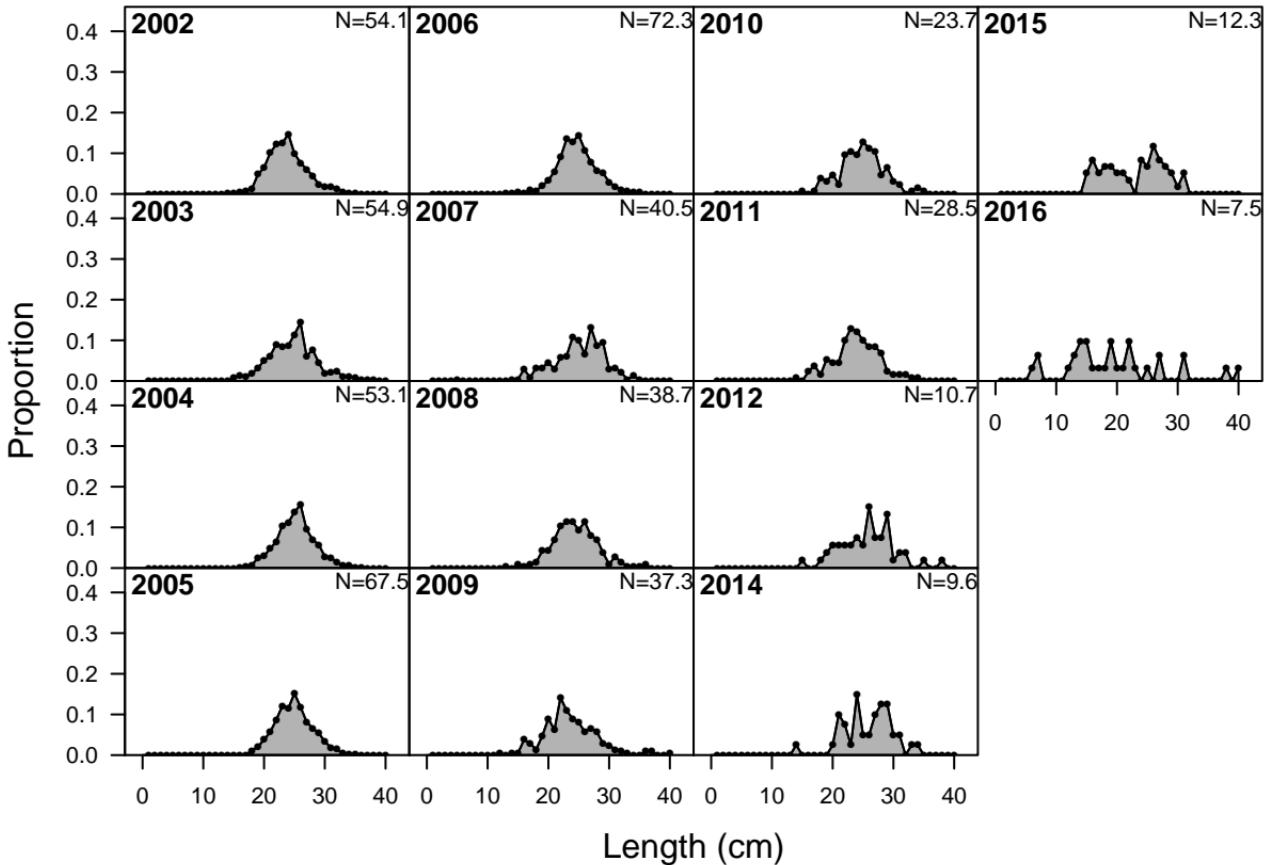
## Length comp data, retained, Sanitation



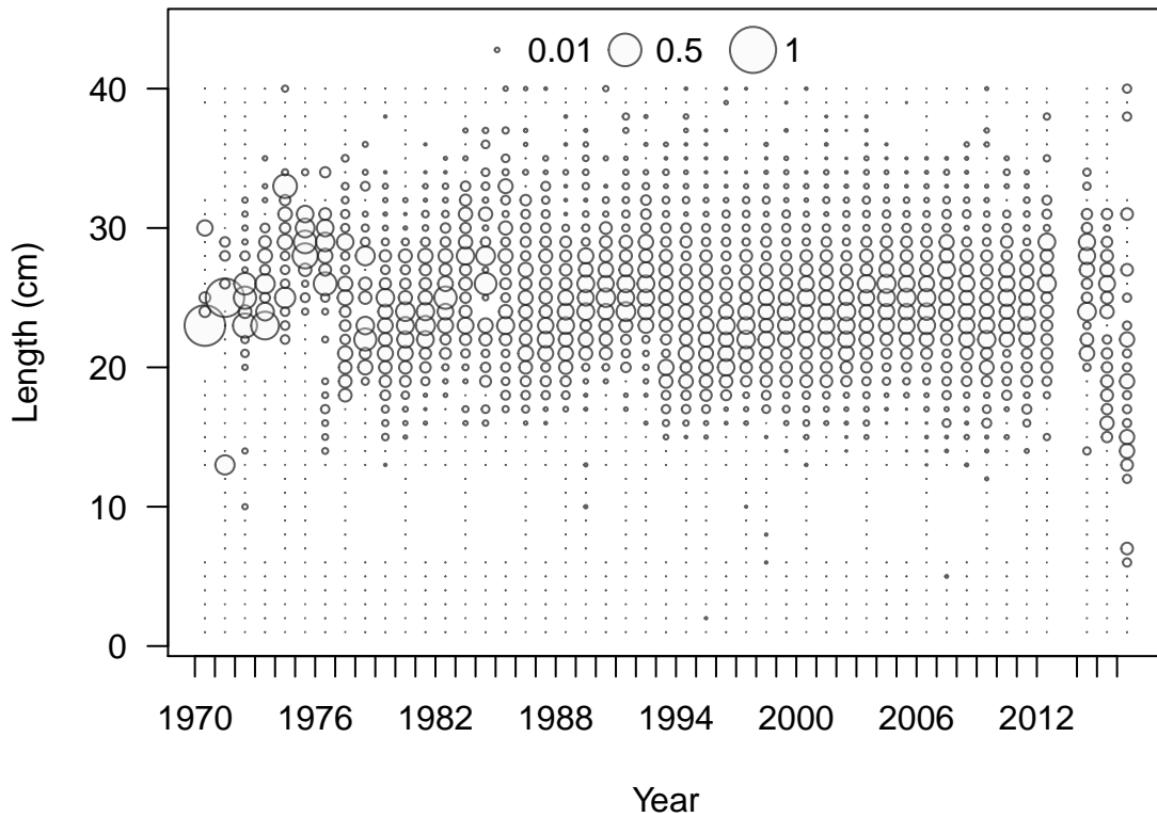
## Length comp data, retained, Sanitation



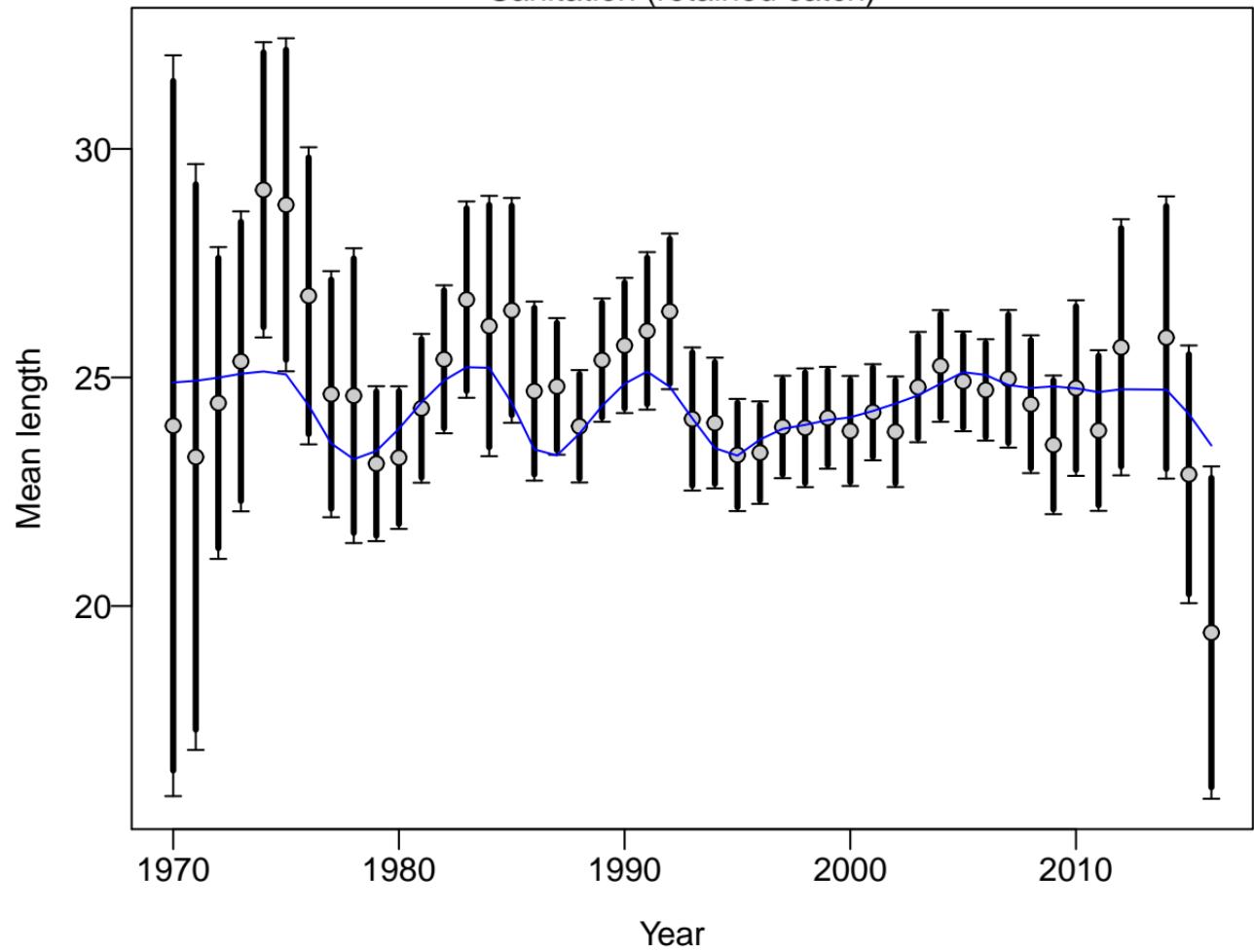
## Length comp data, retained, Sanitation



## Length comp data, retained, Sanitation (max=0.78)

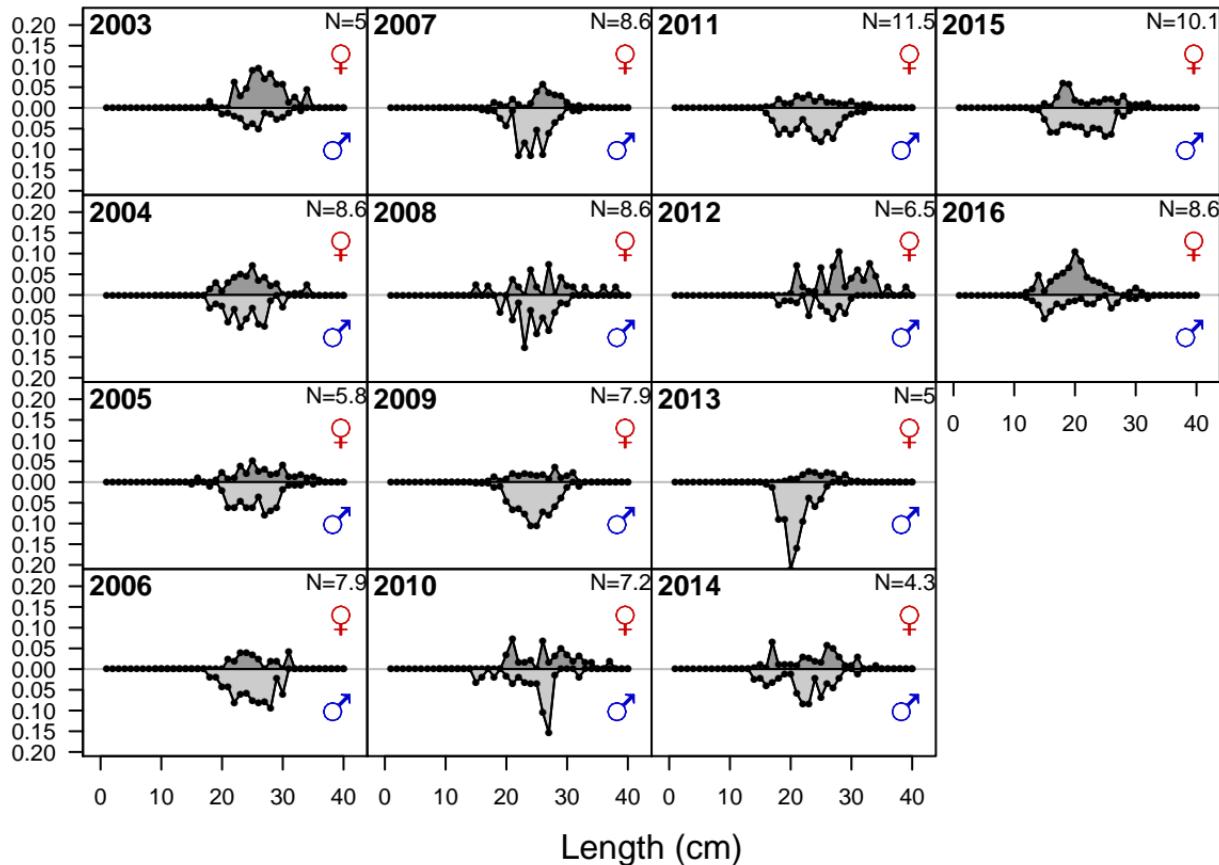


### Sanitation (retained catch)

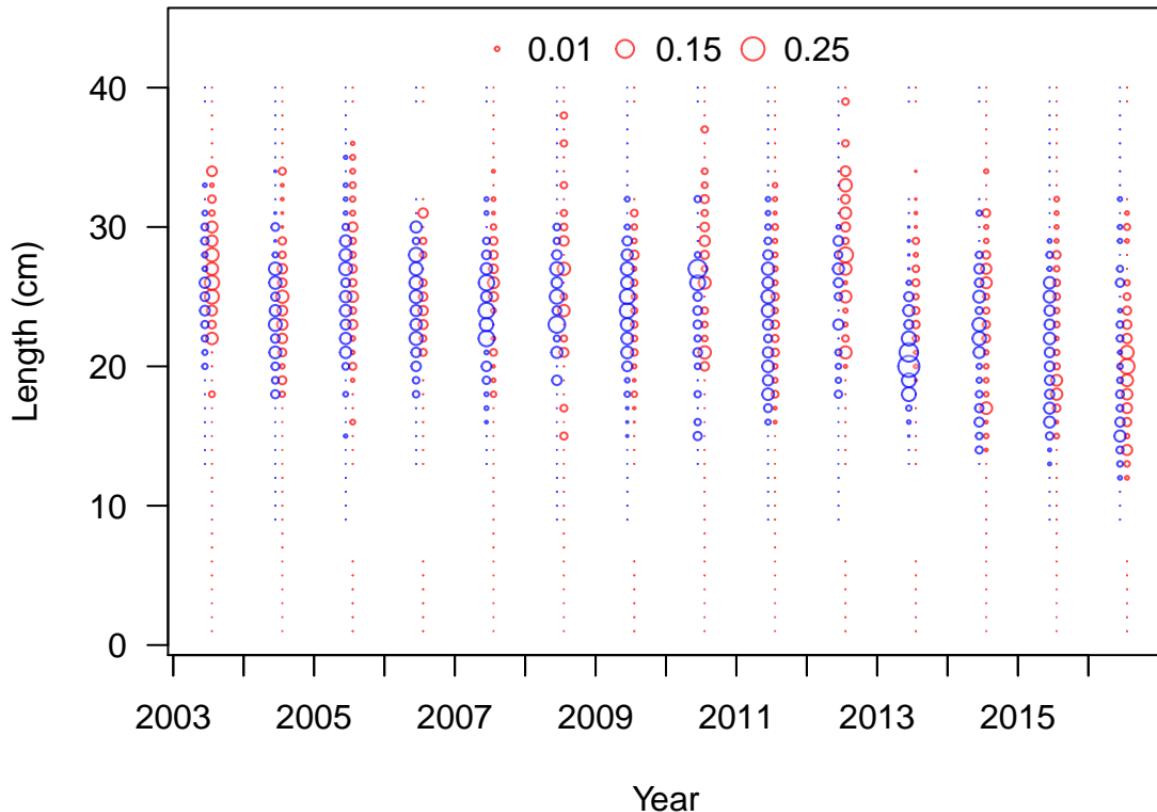


## Length comp data, whole catch, NWFSC Trawl

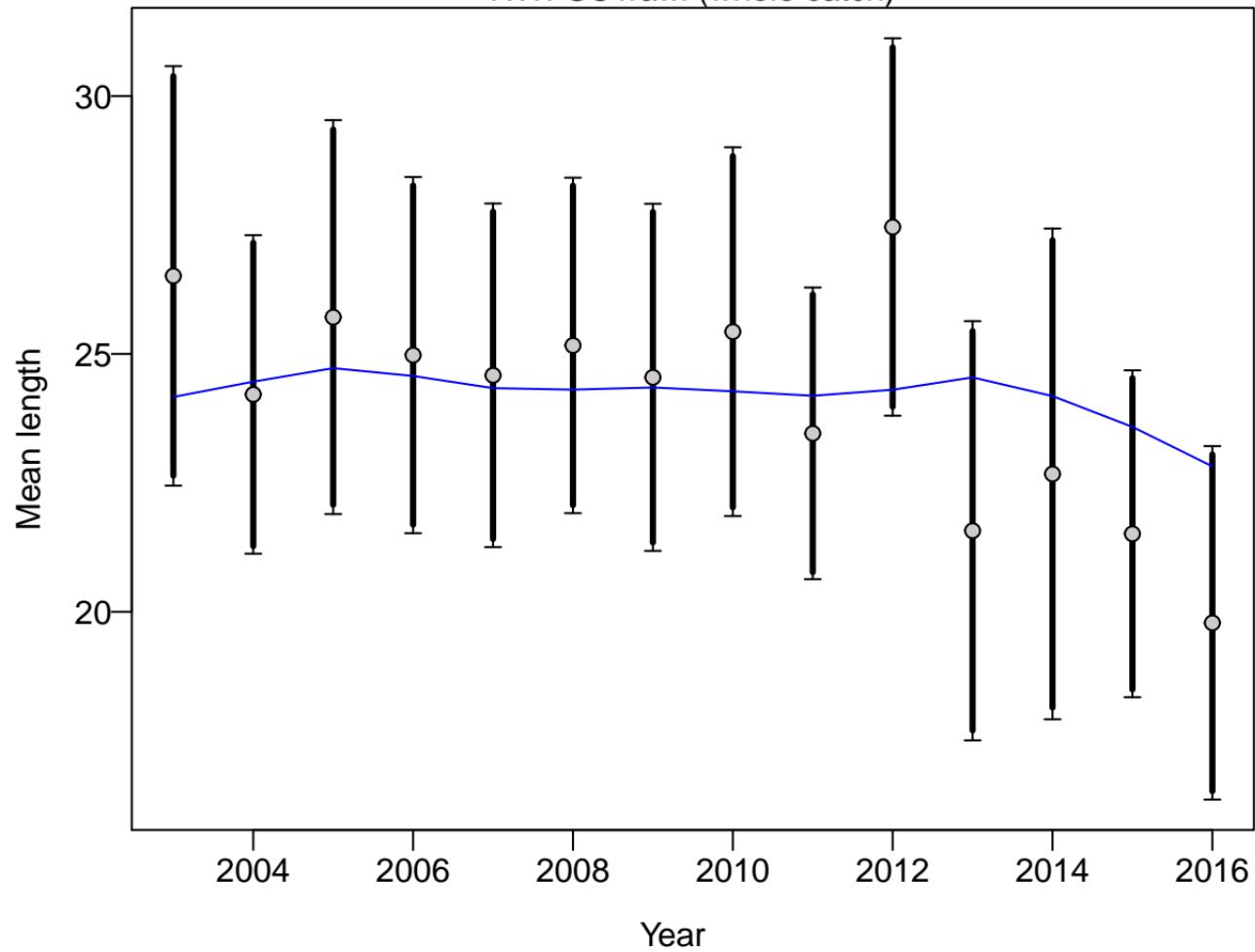
Proportion



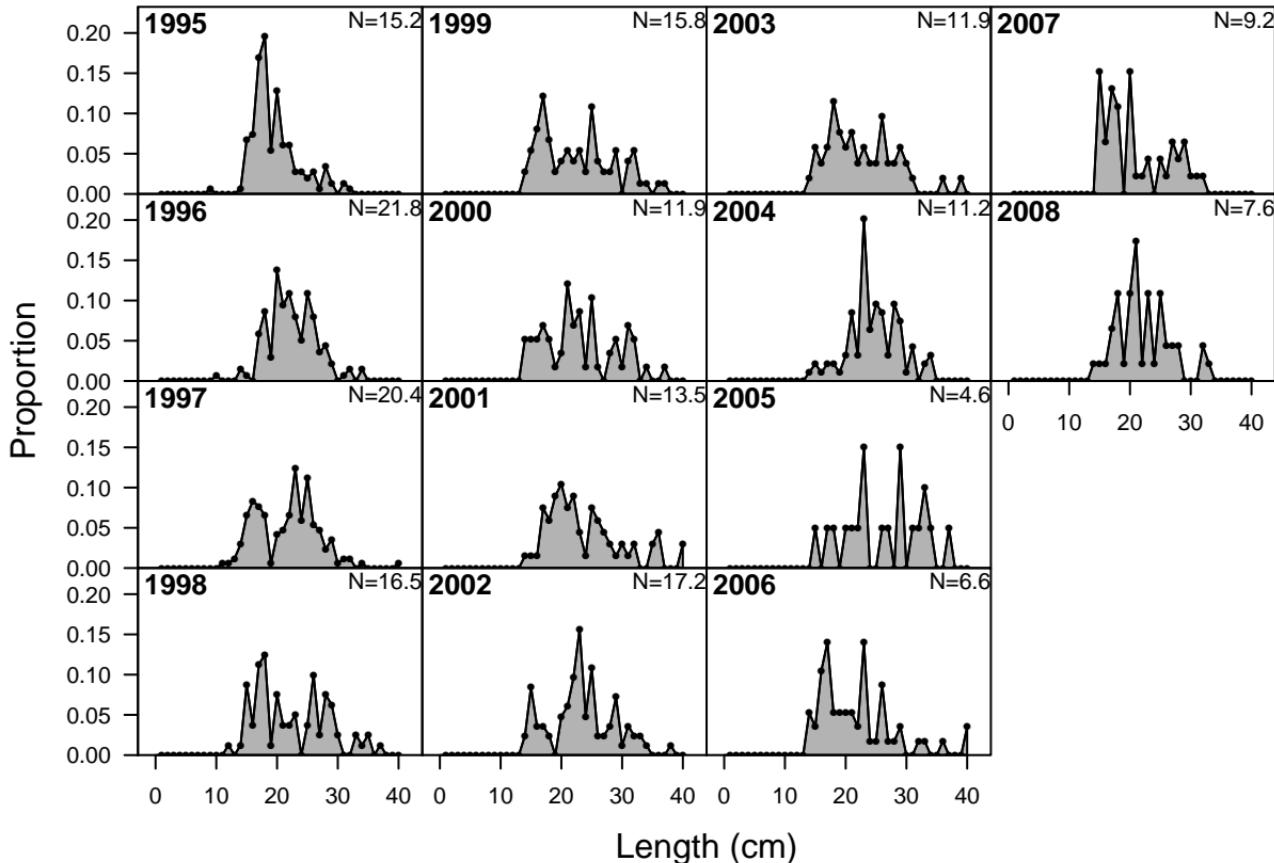
## Length comp data, whole catch, NWFSC Trawl (max=0.21)



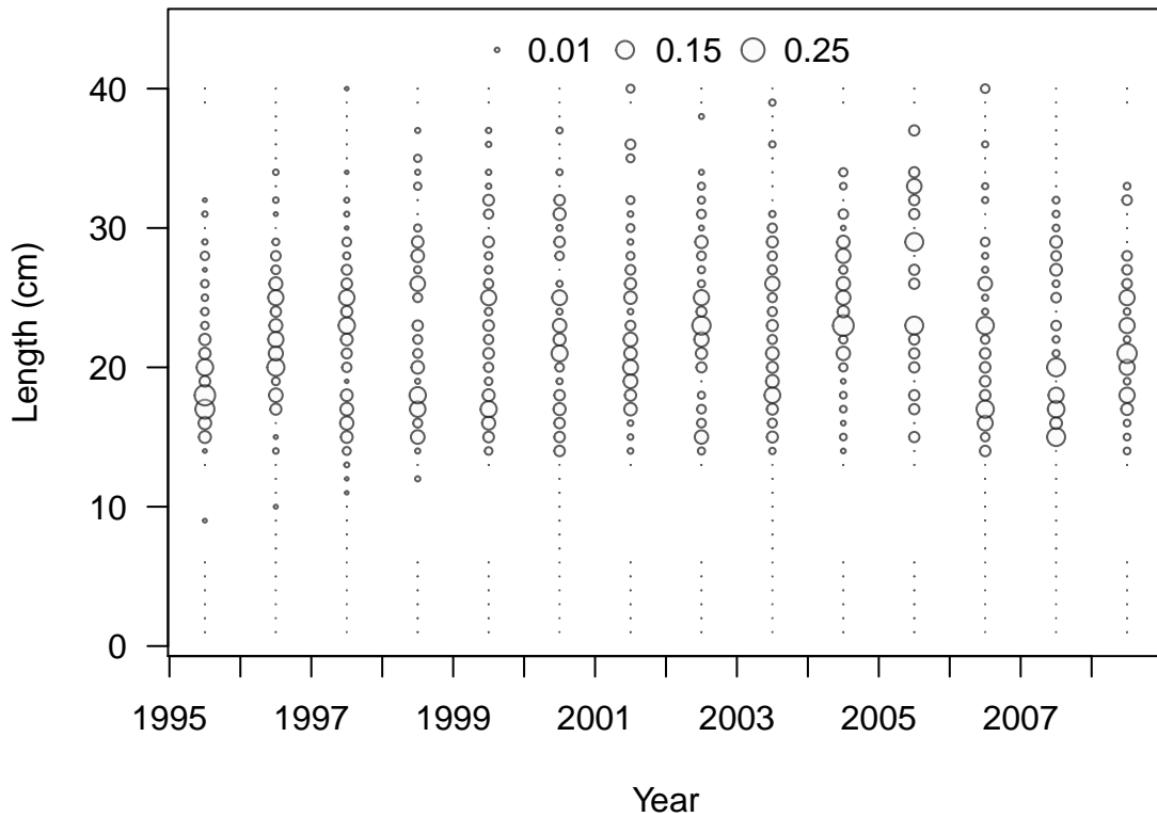
### NWFSCTrawl (whole catch)



## Length comp data, retained, GillnetSurvey

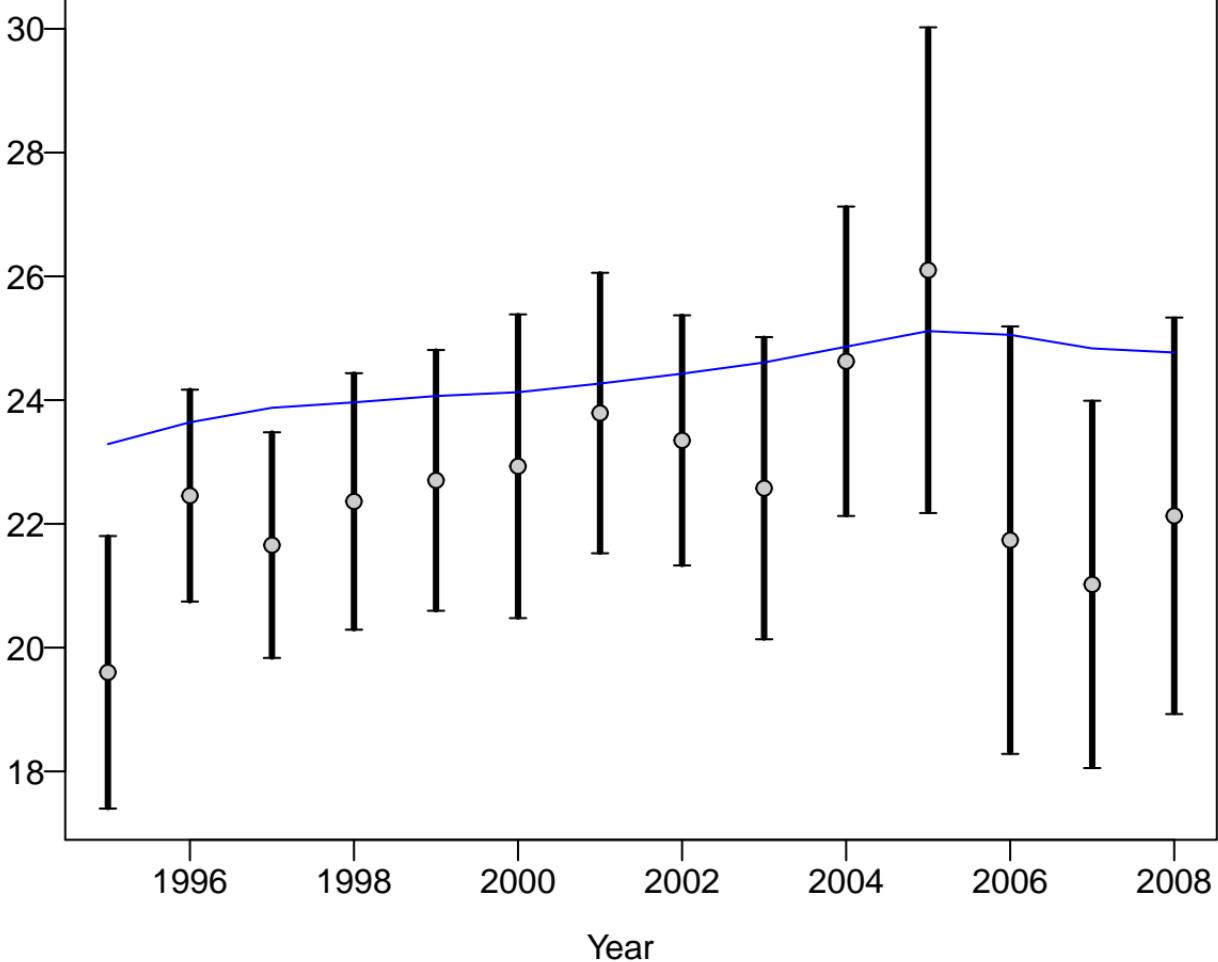


## Length comp data, retained, GillnetSurvey (max=0.2)

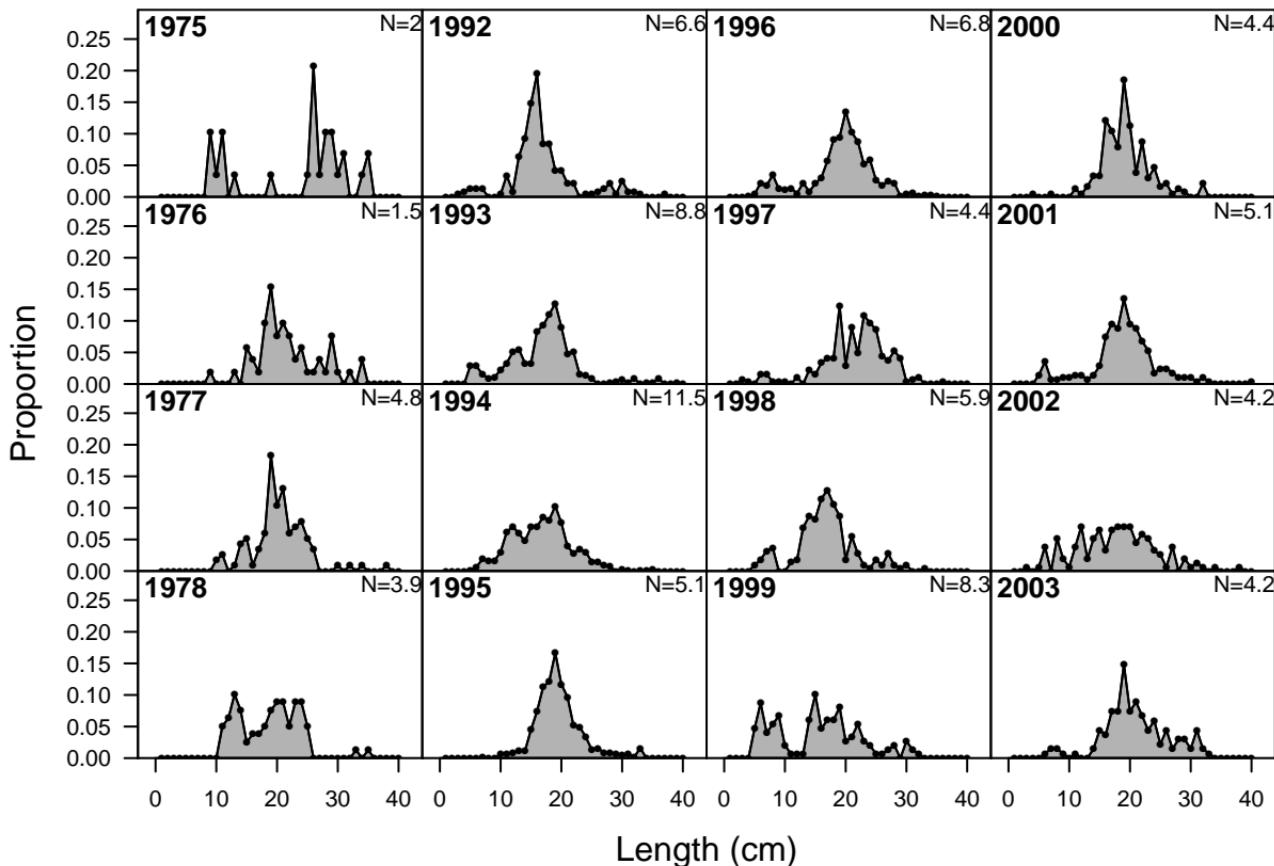


### GillnetSurvey (retained catch)

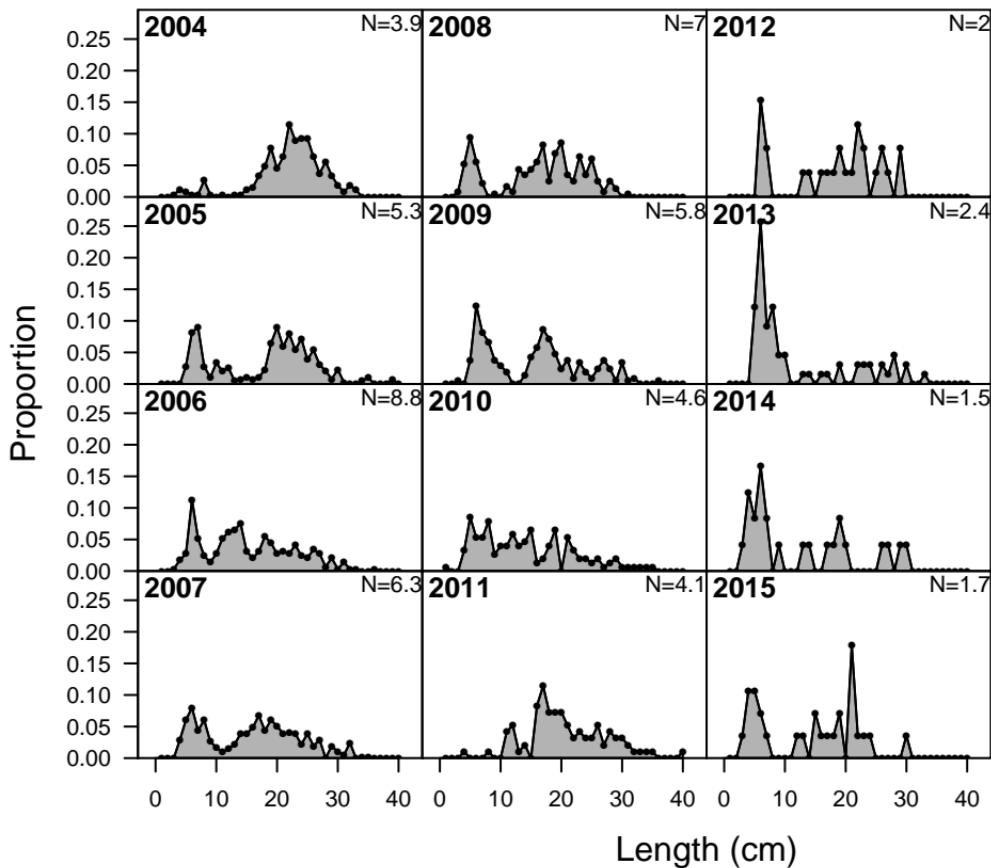
Mean length



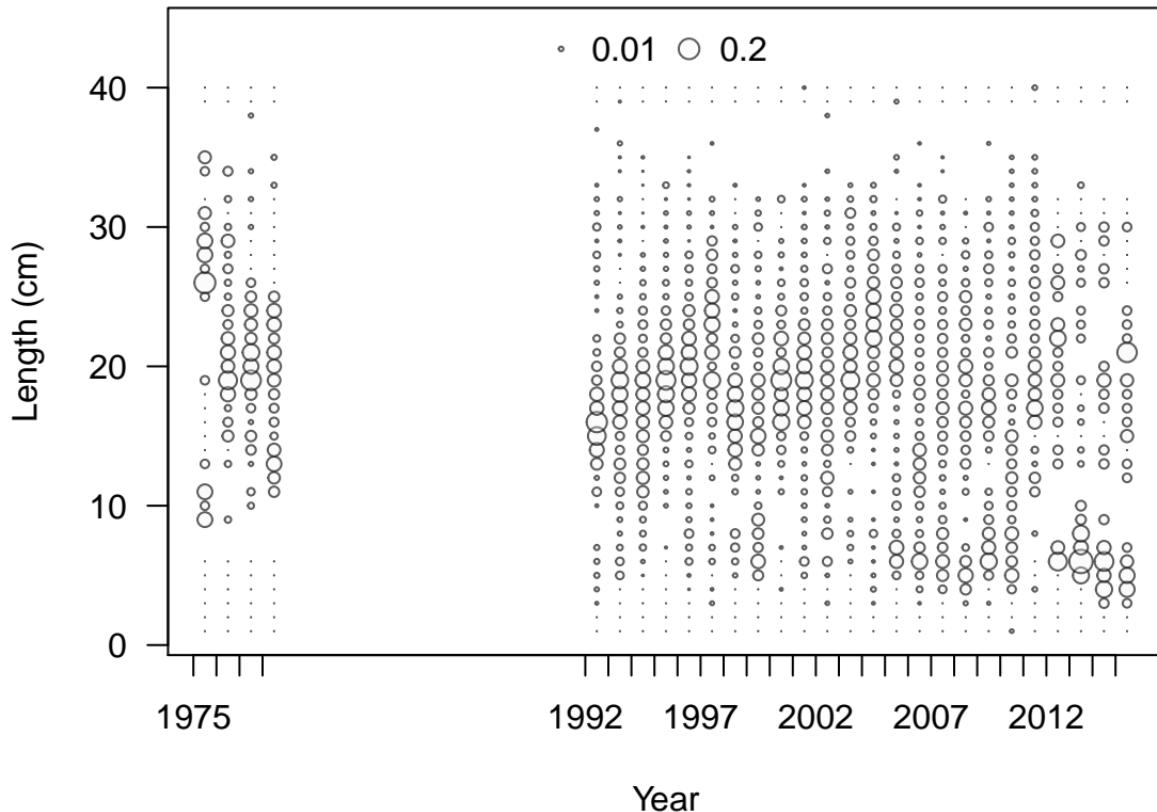
## Length comp data, retained, Impingement



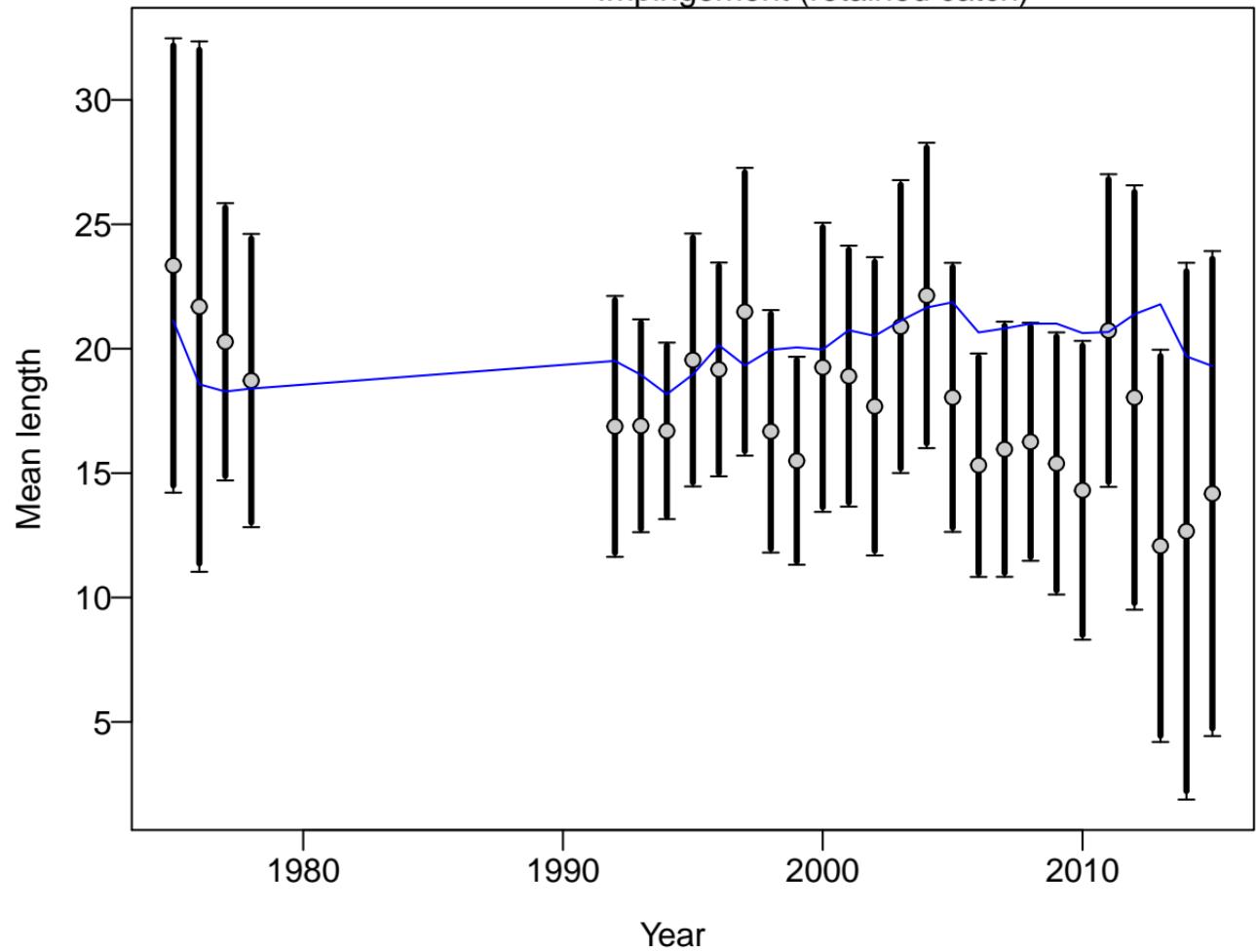
## Length comp data, retained, Impingement



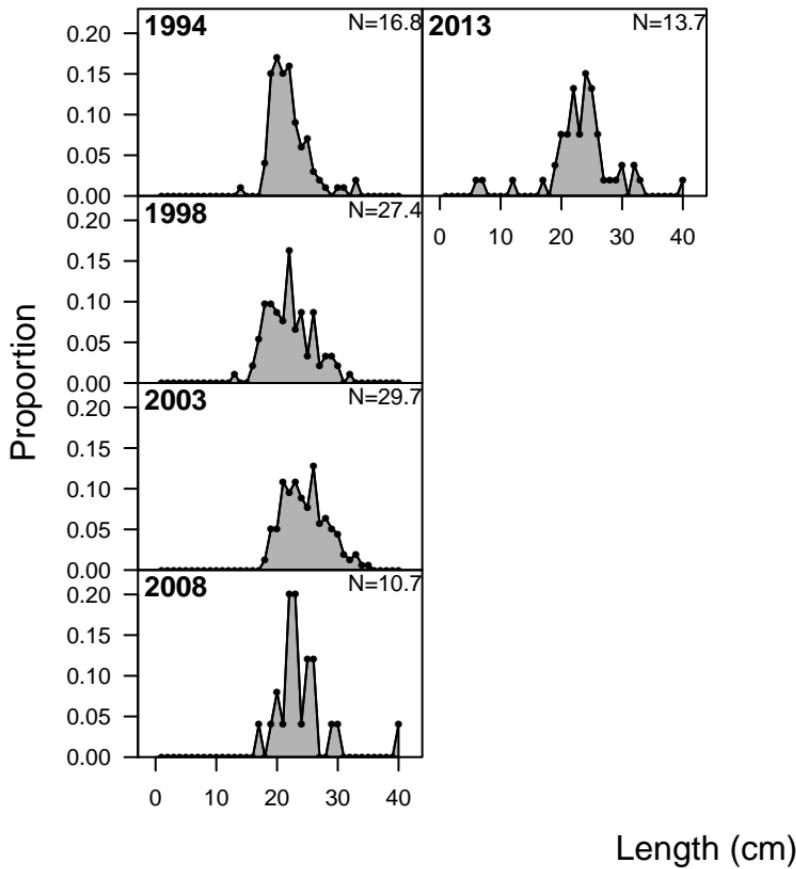
## Length comp data, retained, Impingement (max=0.26)



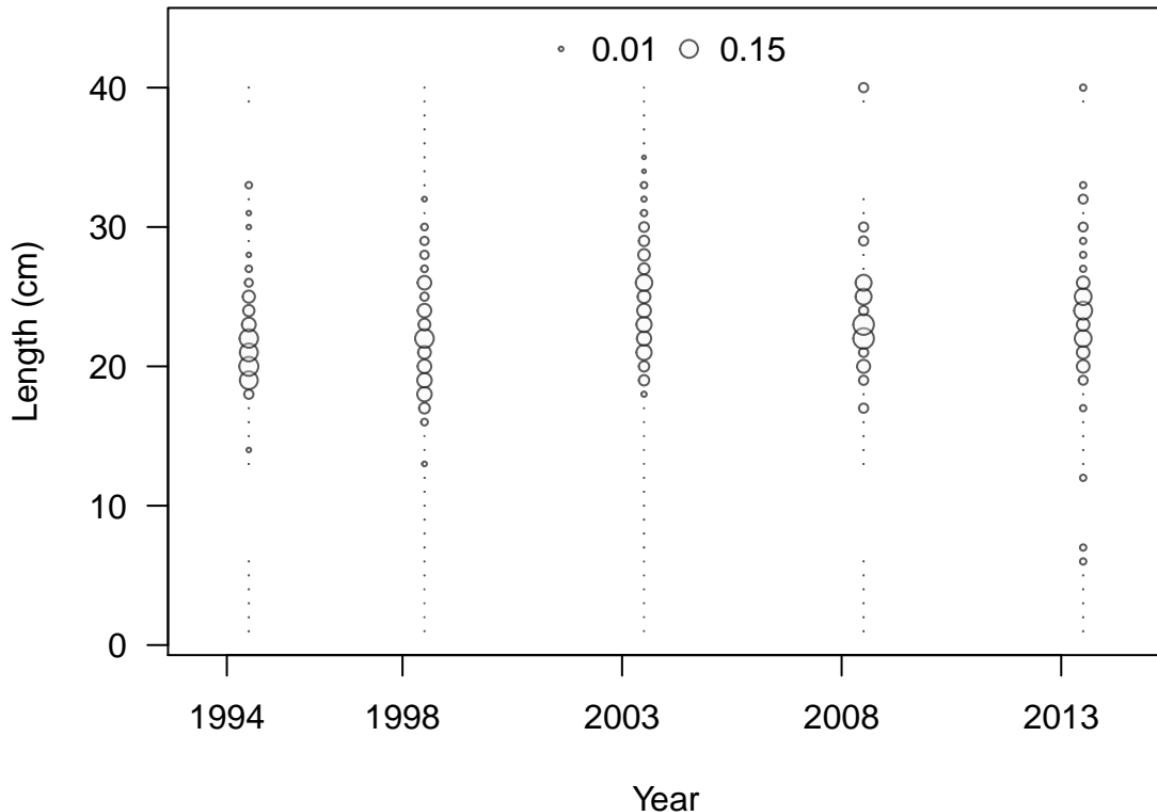
### Impingement (retained catch)



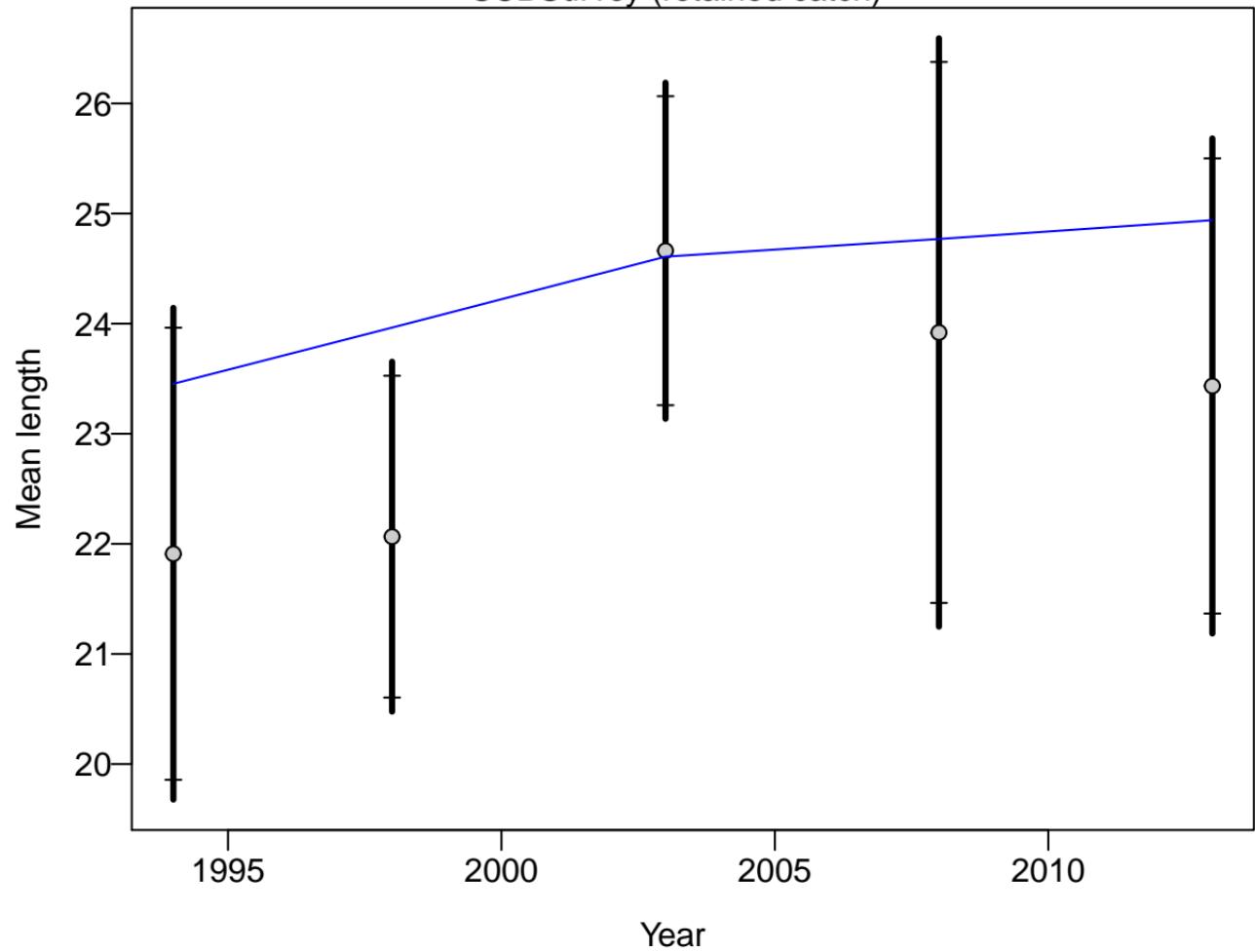
## Length comp data, retained, SCBSurvey



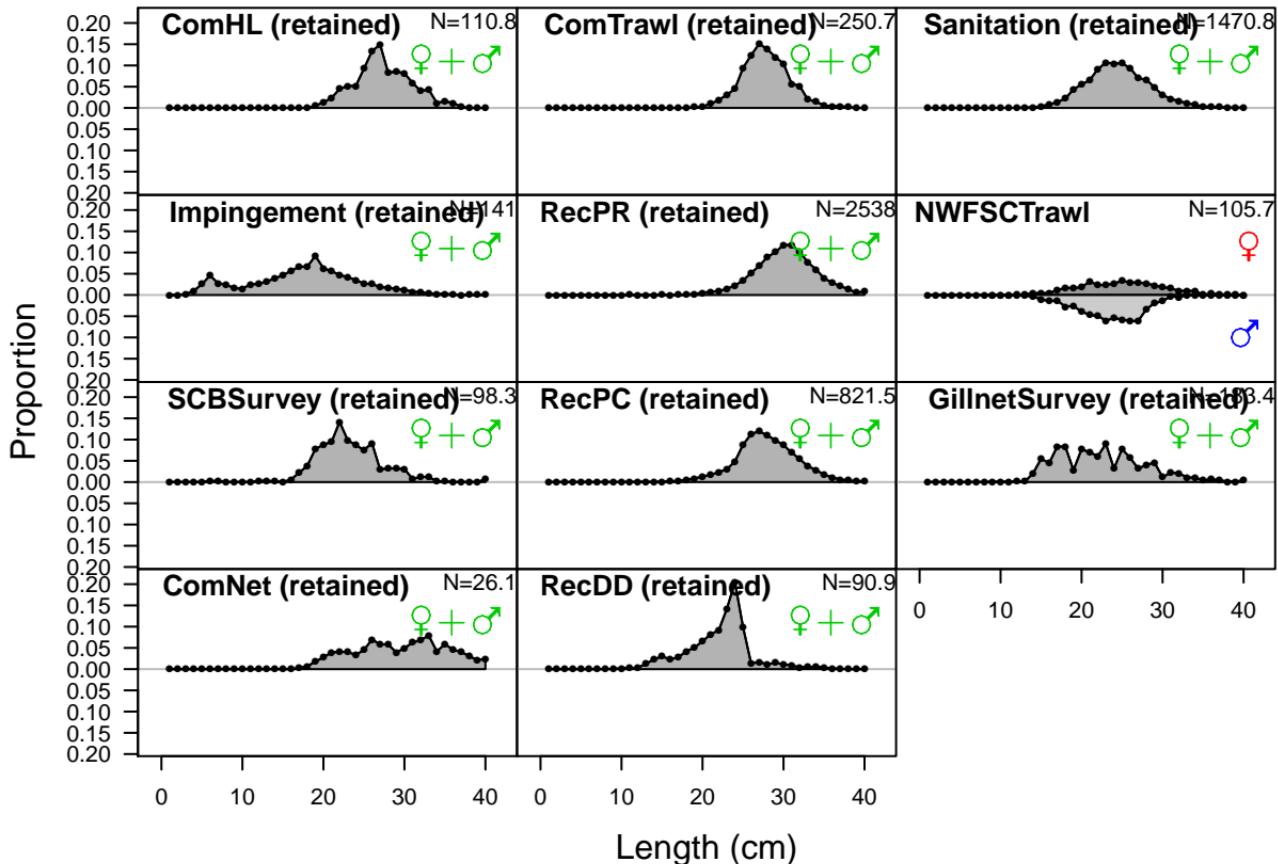
## Length comp data, retained, SCBSurvey (max=0.2)



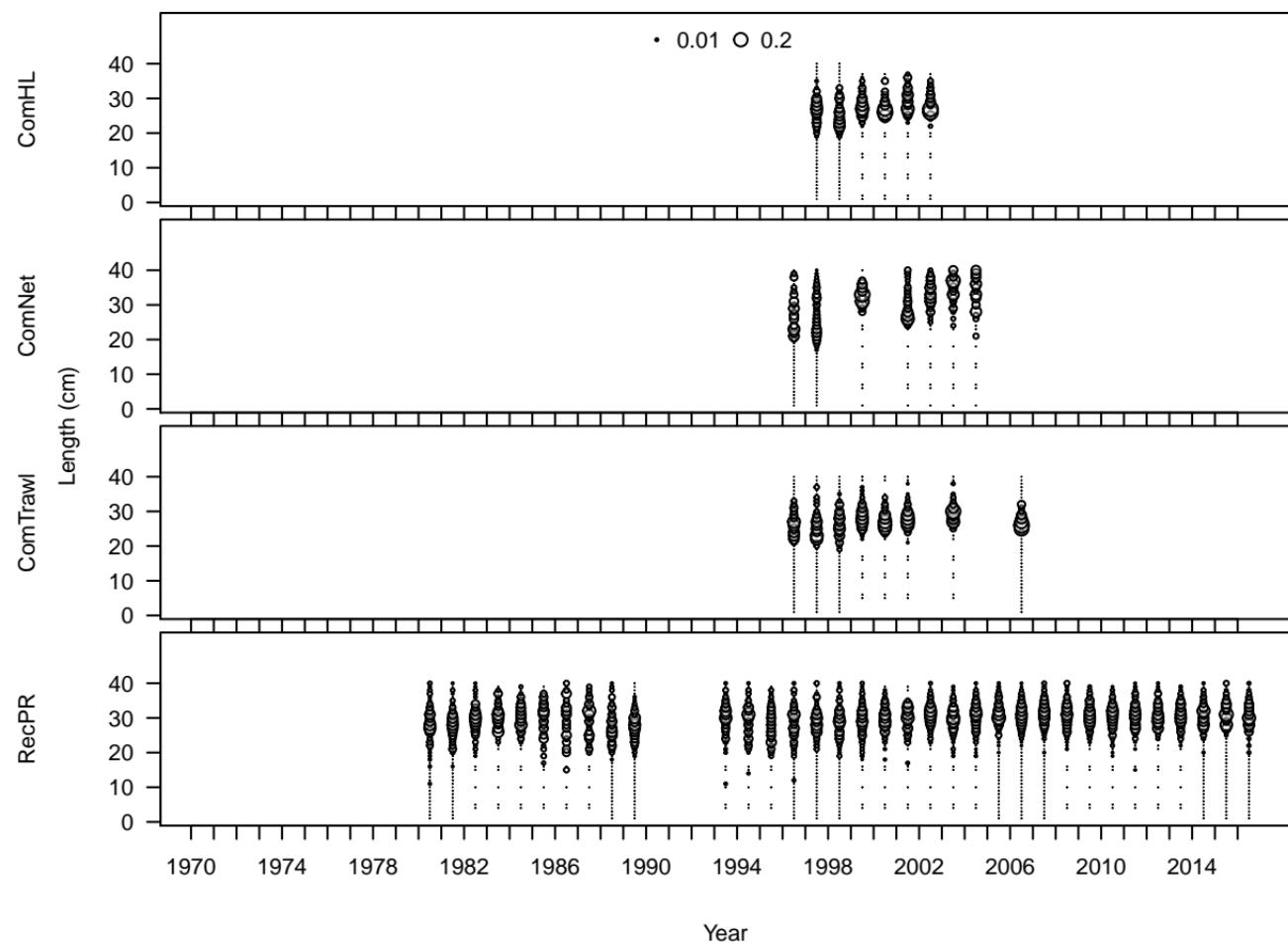
### SCBSurvey (retained catch)



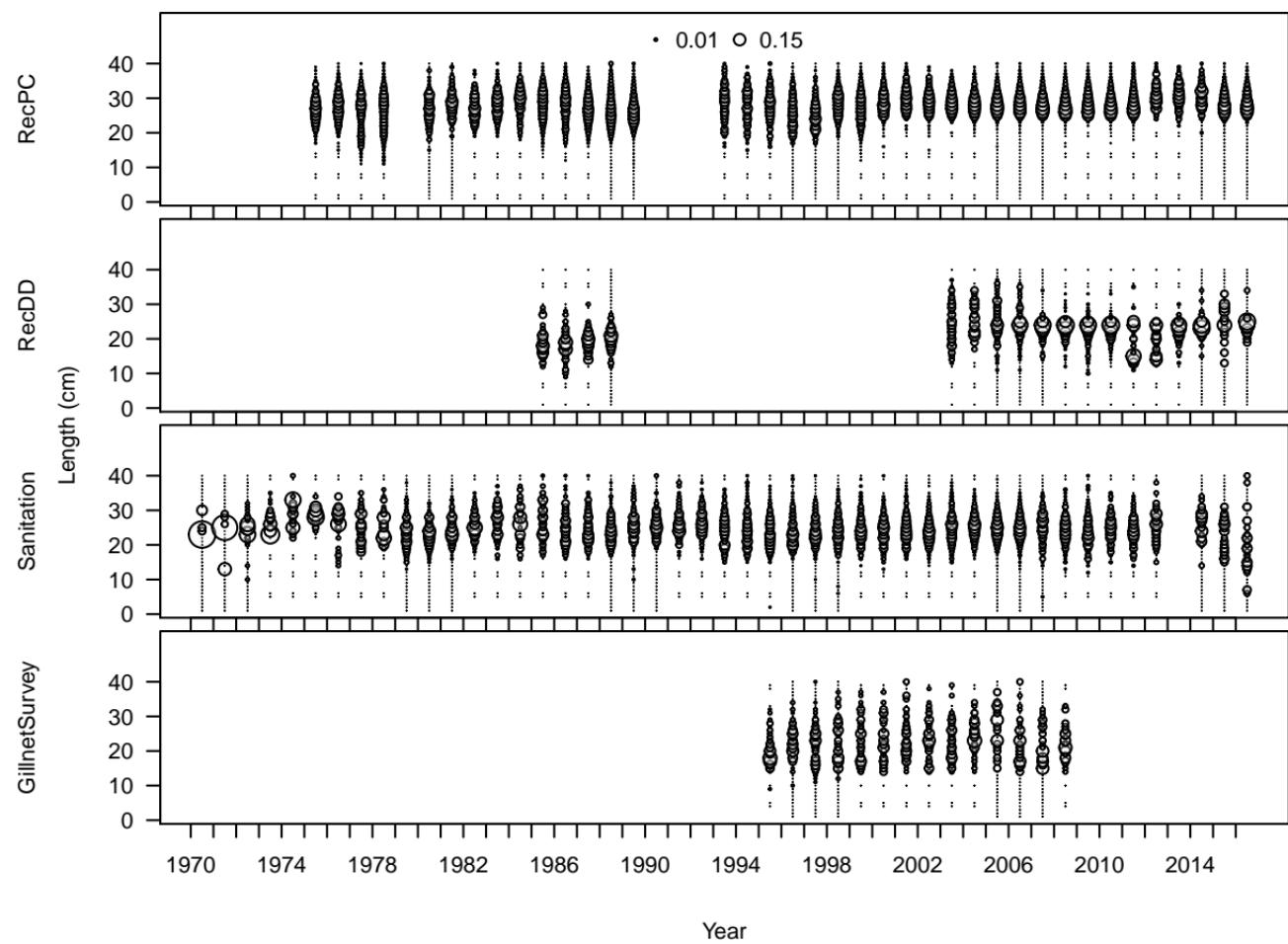
## Length comp data, aggregated across time by fleet



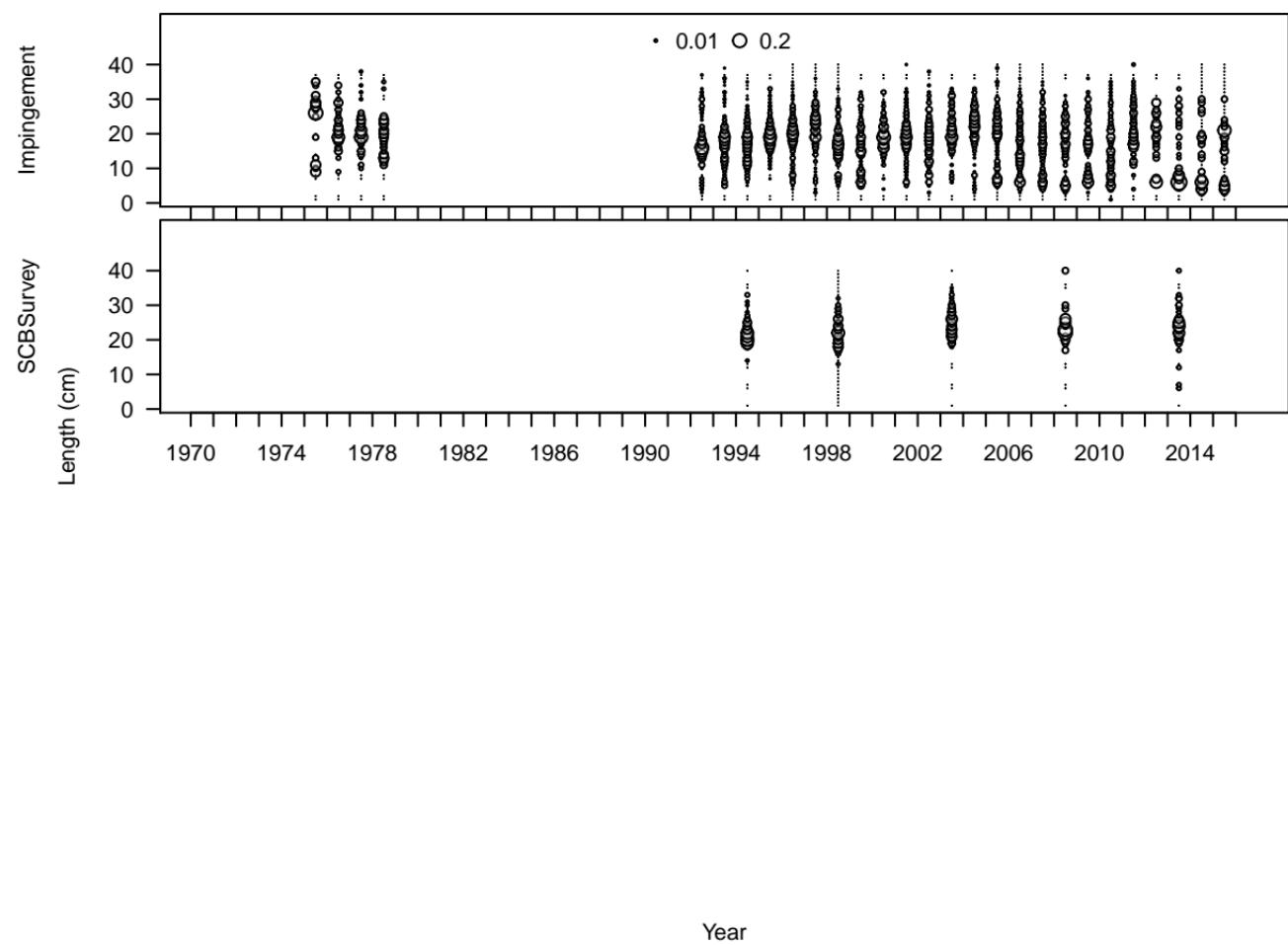
## Length comp data, sexes combined, retained, comparing across fleets



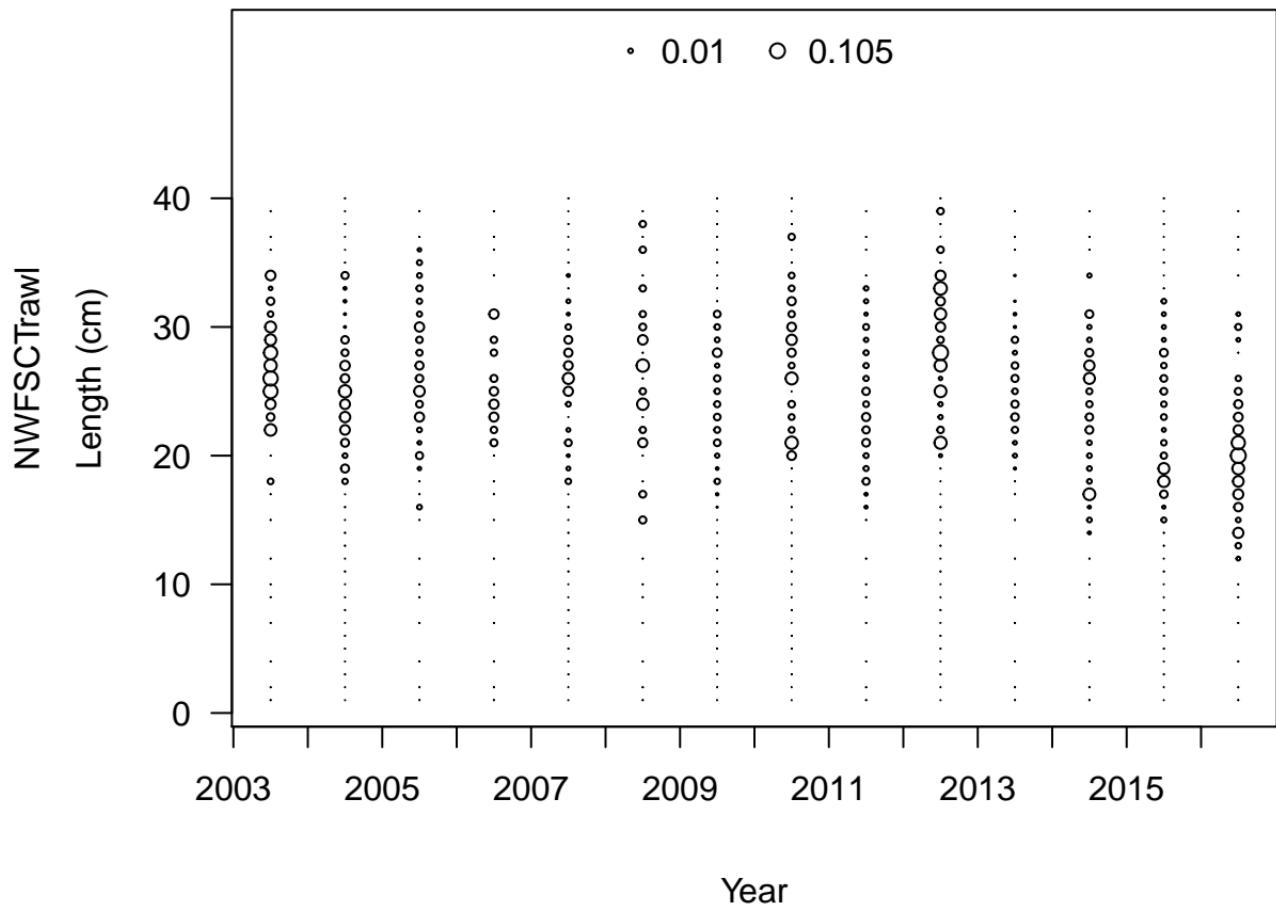
# Length comp data, sexes combined, retained, comparing across fleets



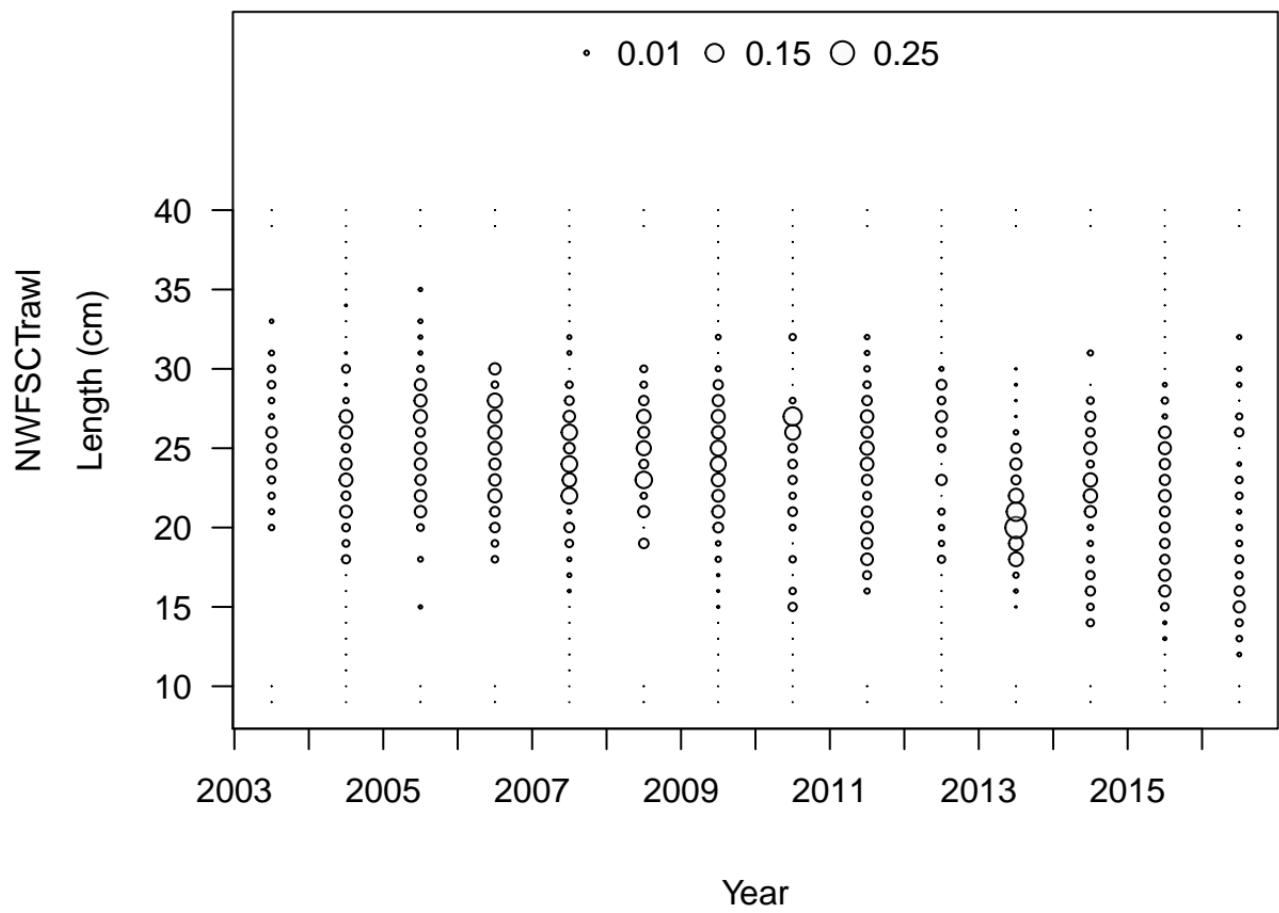
## Length comp data, sexes combined, retained, comparing across fleets



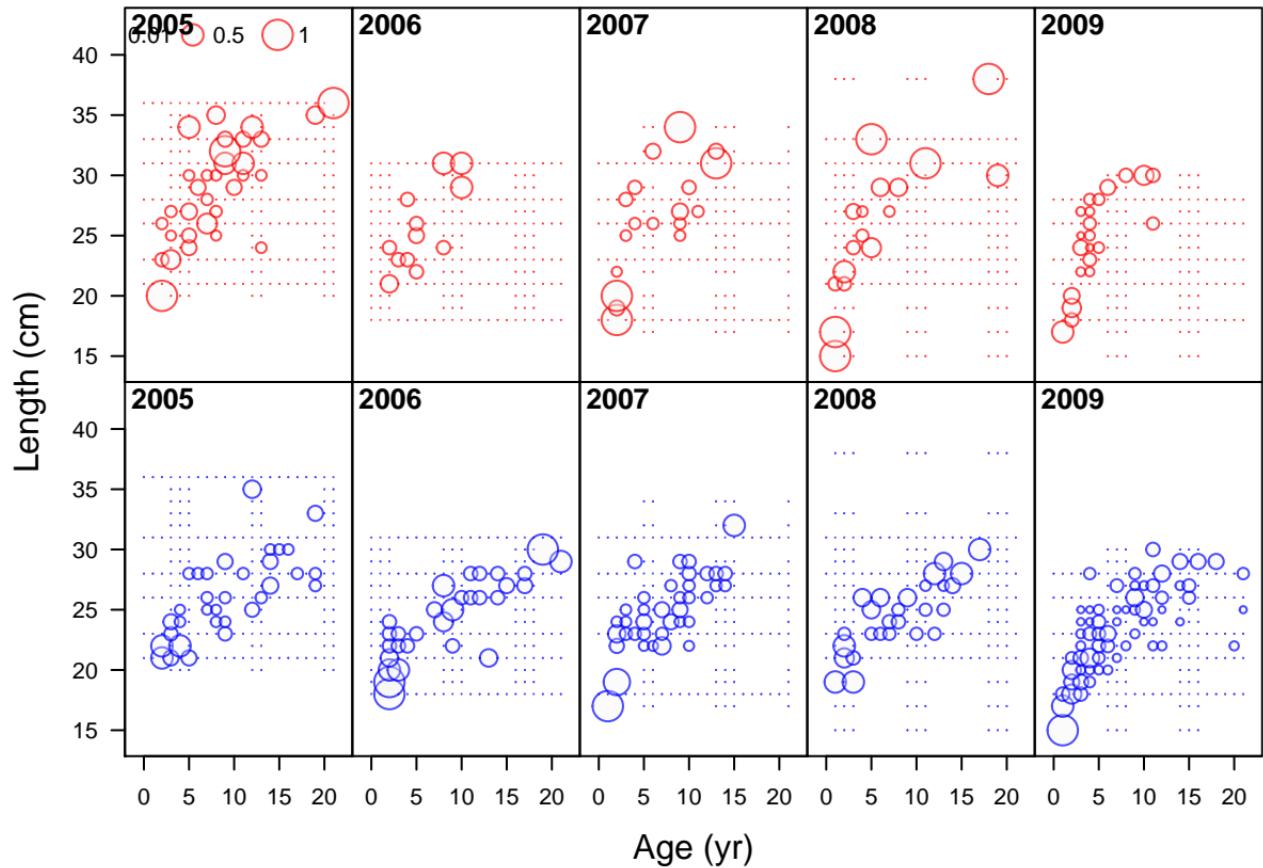
# Length comp data, female, whole catch, comparing across fleet



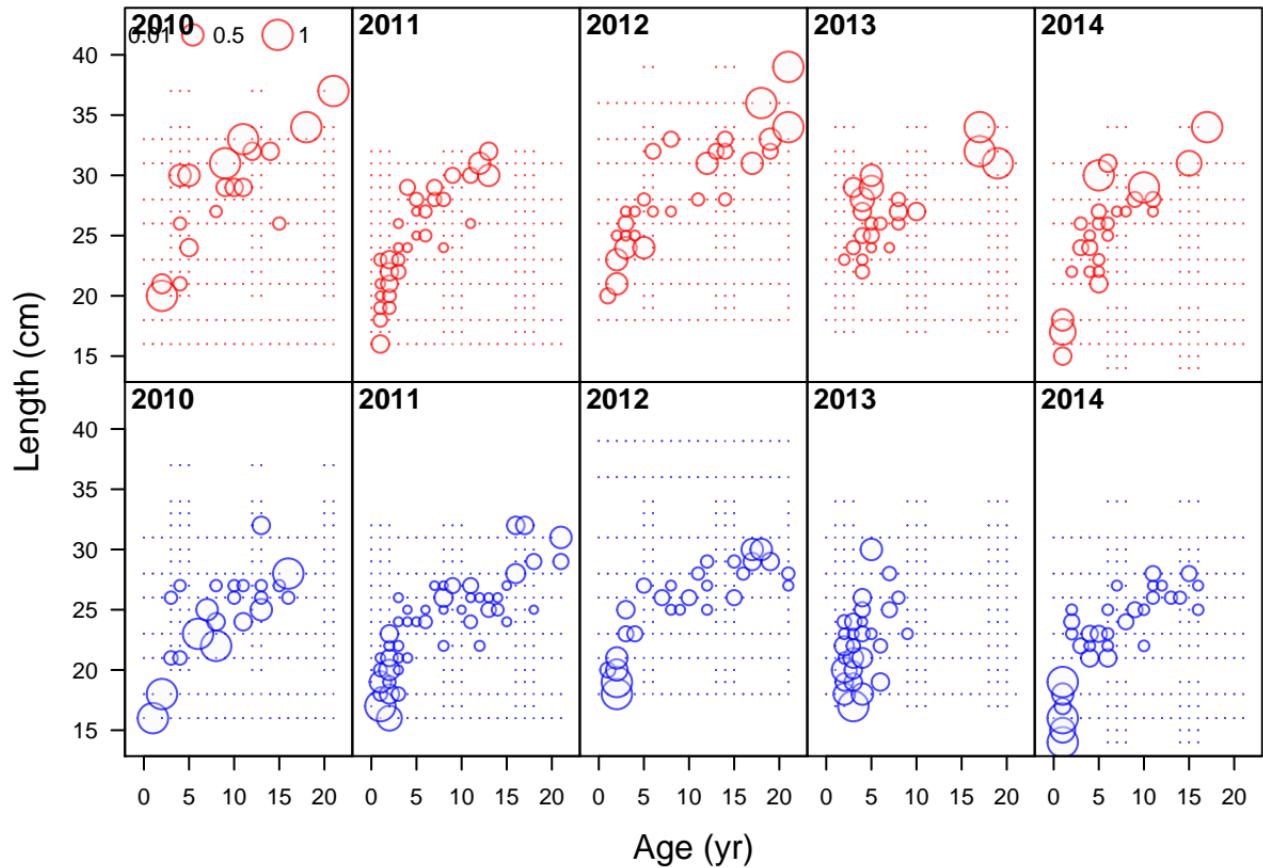
## Length comp data, male, whole catch, comparing across fleet



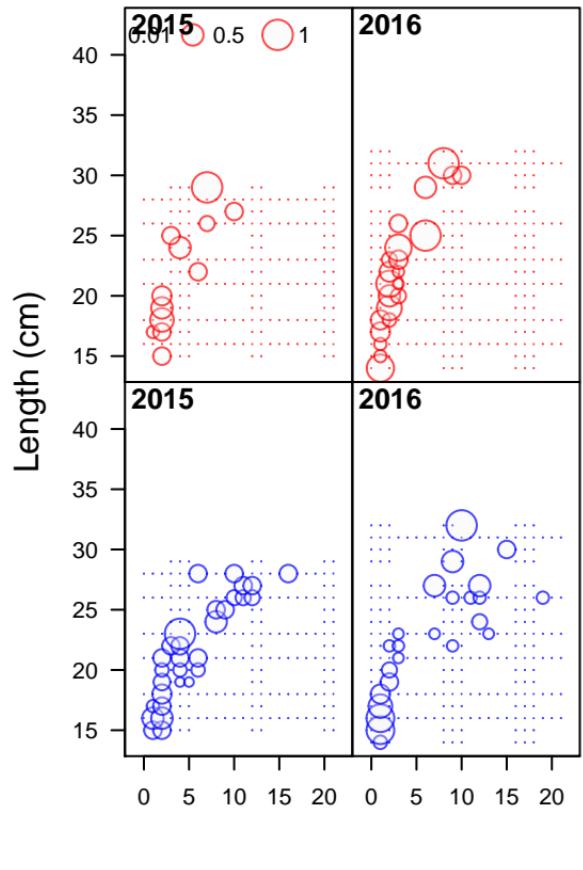
## Conditional age-at-length data, whole catch, NWFSC Trawl (max=1)



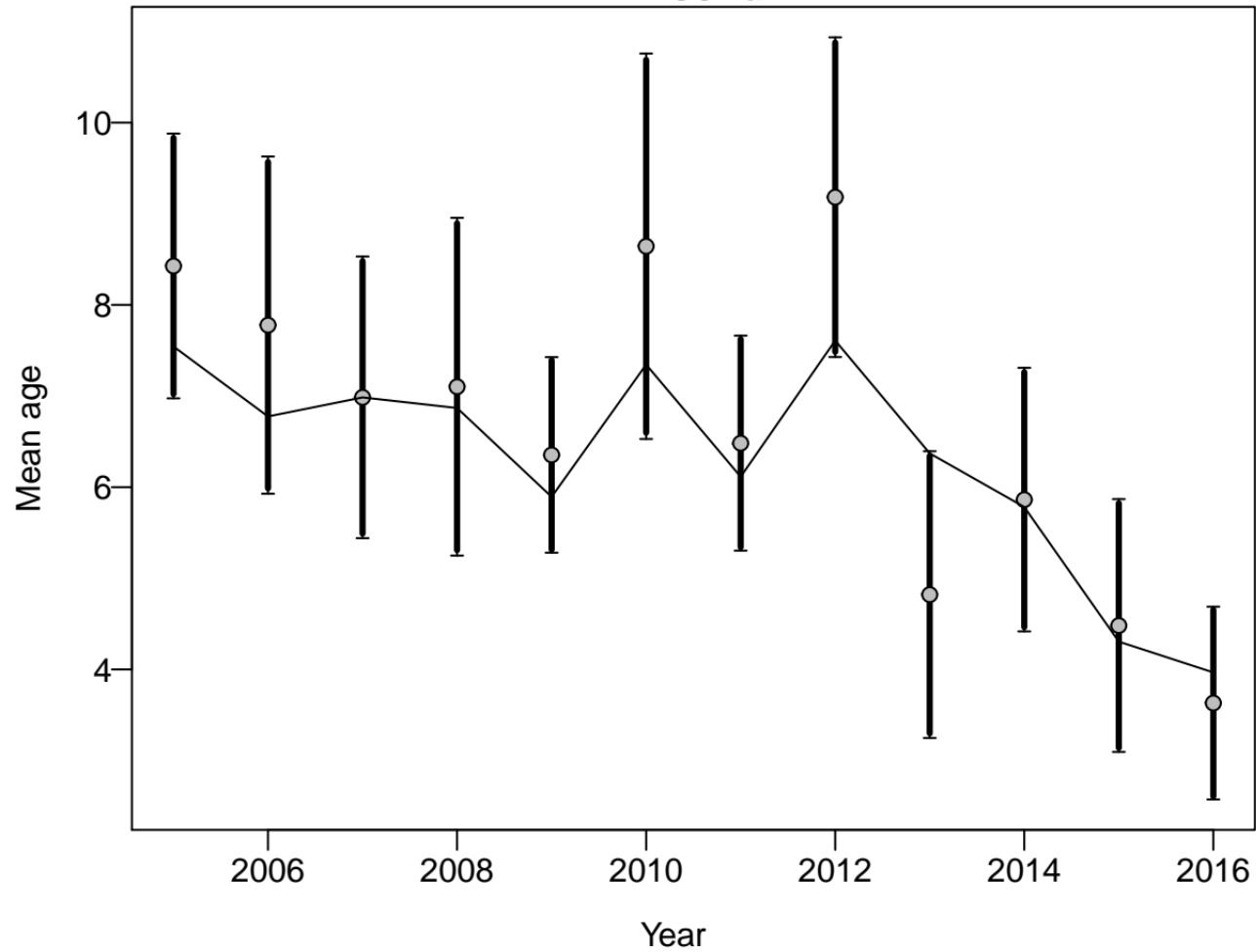
## Conditional age-at-length data, whole catch, NWFSC Trawl (max=1)



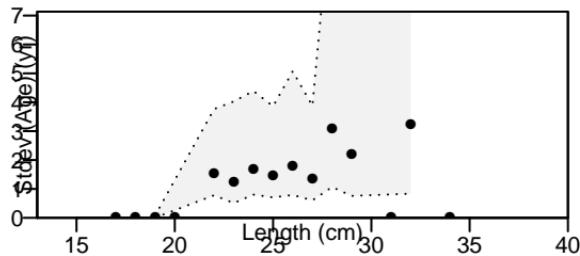
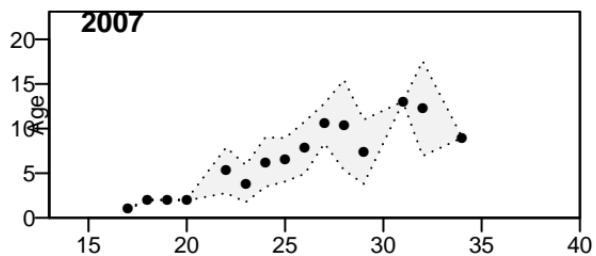
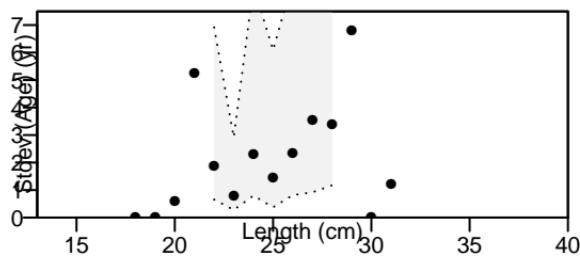
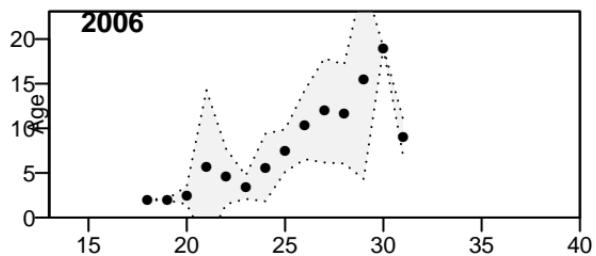
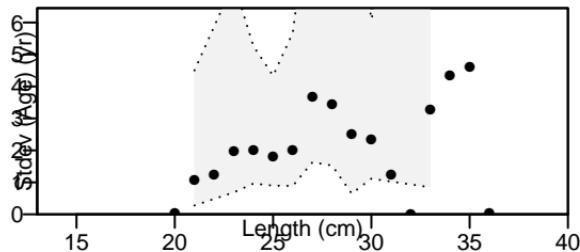
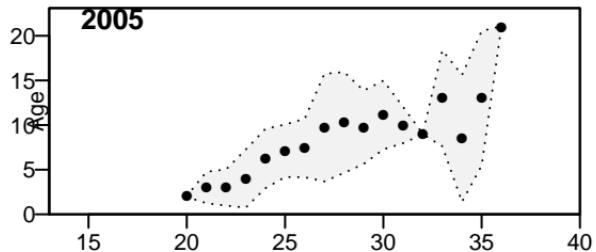
## Conditional age-at-length data, whole catch, NWFSC Trawl (max=1)



### NWFSC Trawl

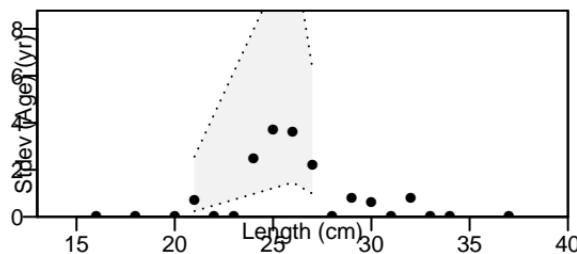
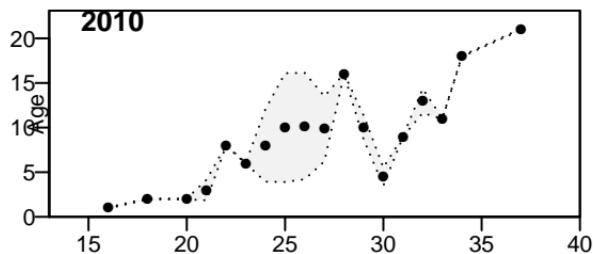
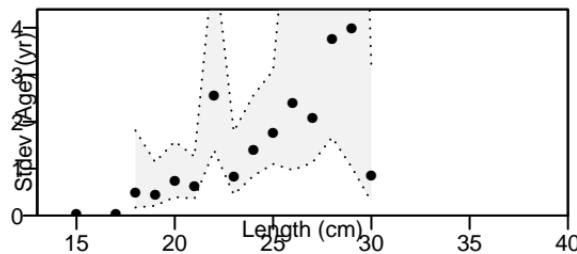
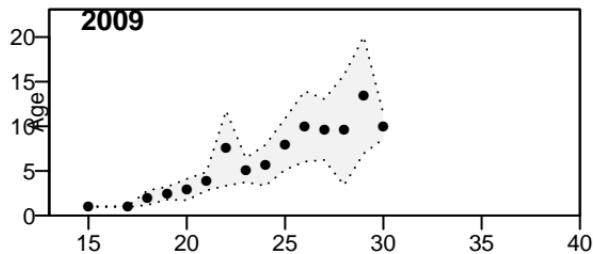
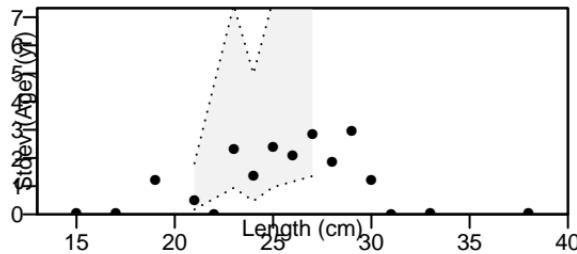
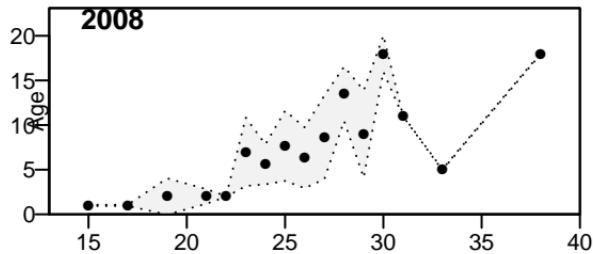


### Conditional AAL plot, whole catch, NWFSC Trawl



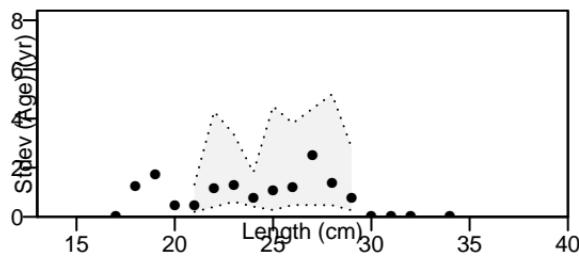
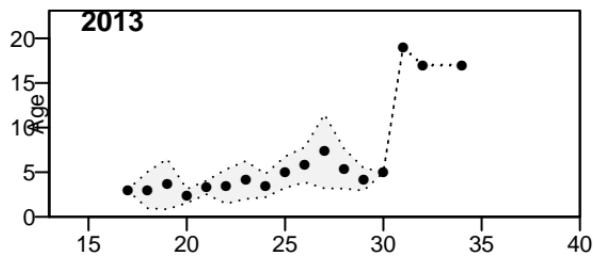
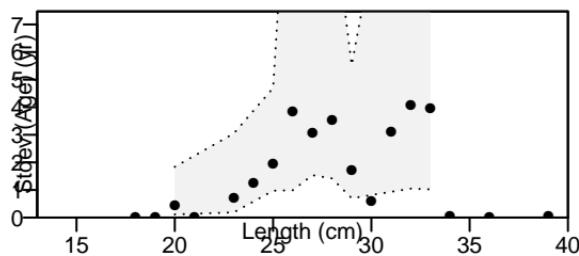
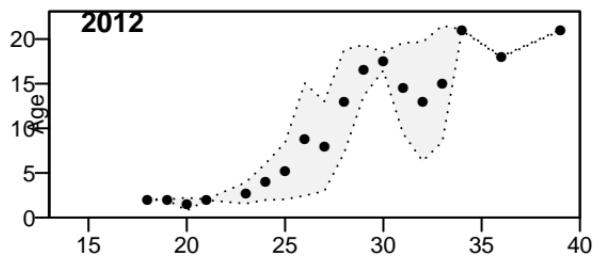
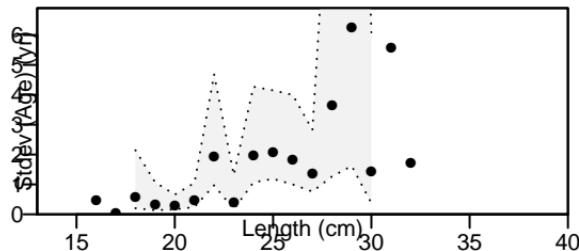
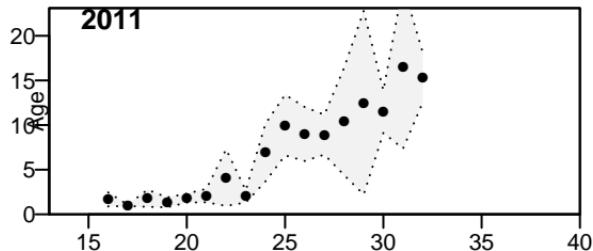
Length (cm)

### Conditional AAL plot, whole catch, NWFSC Trawl



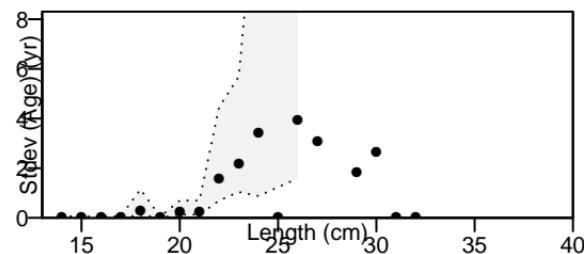
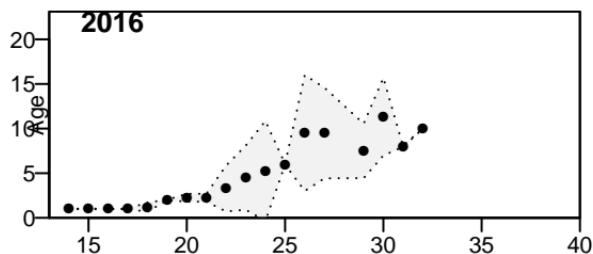
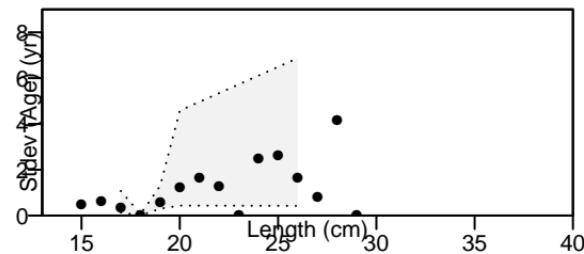
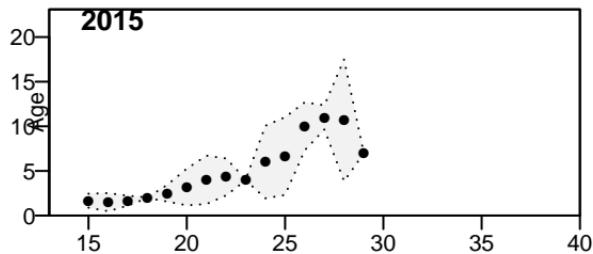
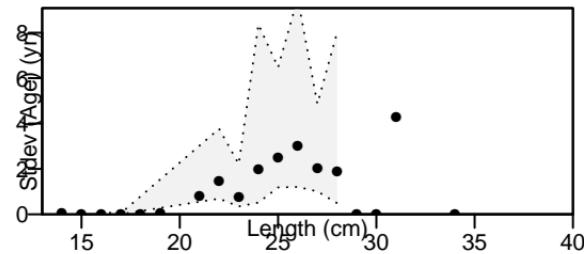
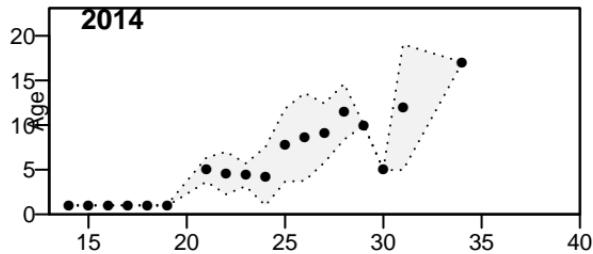
Length (cm)

### Conditional AAL plot, whole catch, NWFSC Trawl



Length (cm)

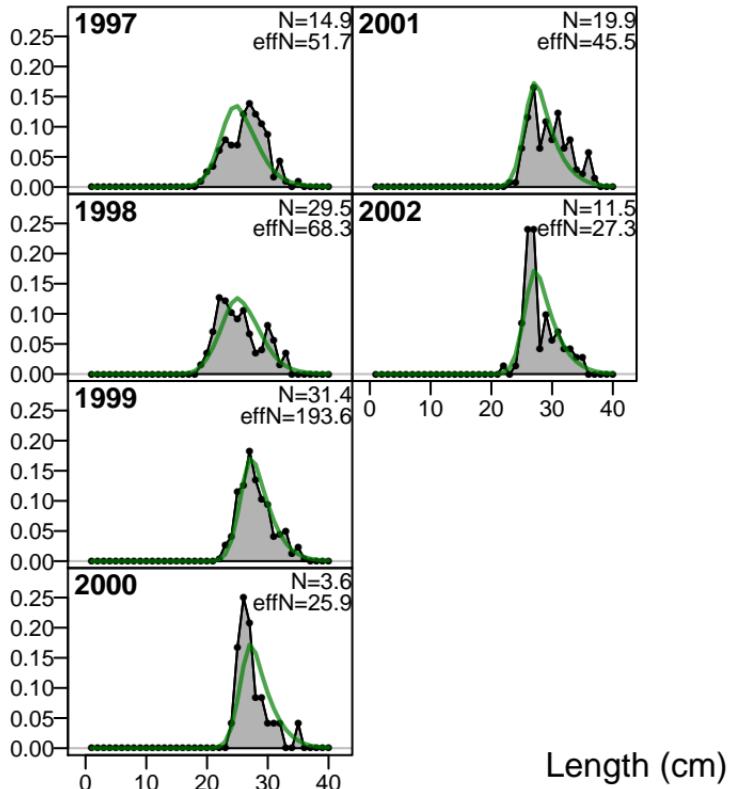
## Conditional AAL plot, whole catch, NWFSC Trawl



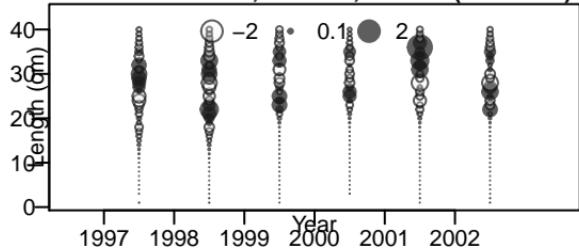
Length (cm)

## Length comps, retained, ComHL

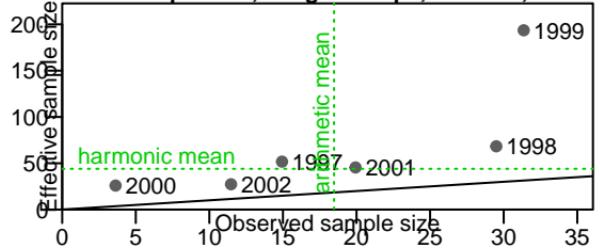
Proportion



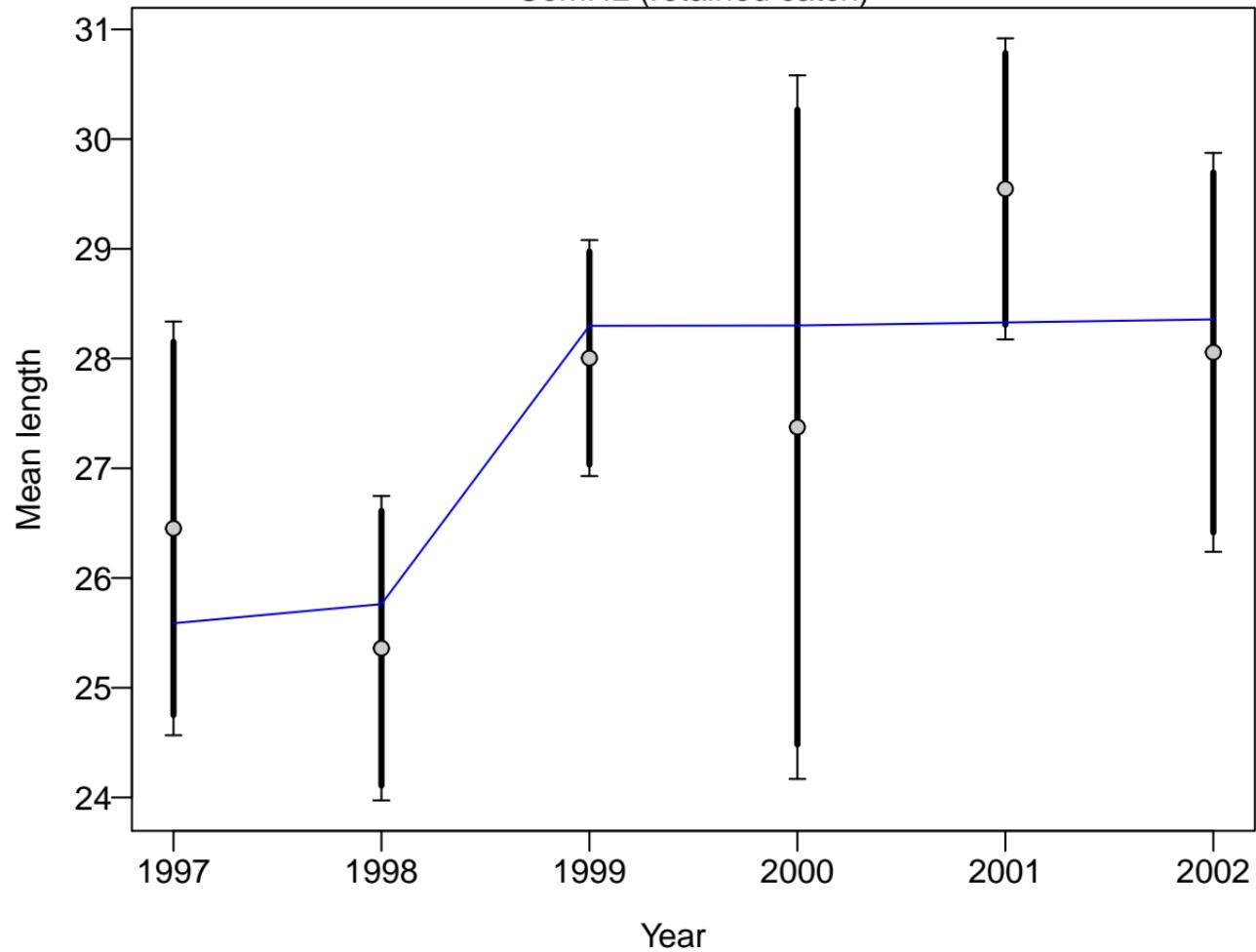
### Pearson residuals, retained, ComHL (max=2.48)



### N-EffN comparison, Length comps, retained, ComHL

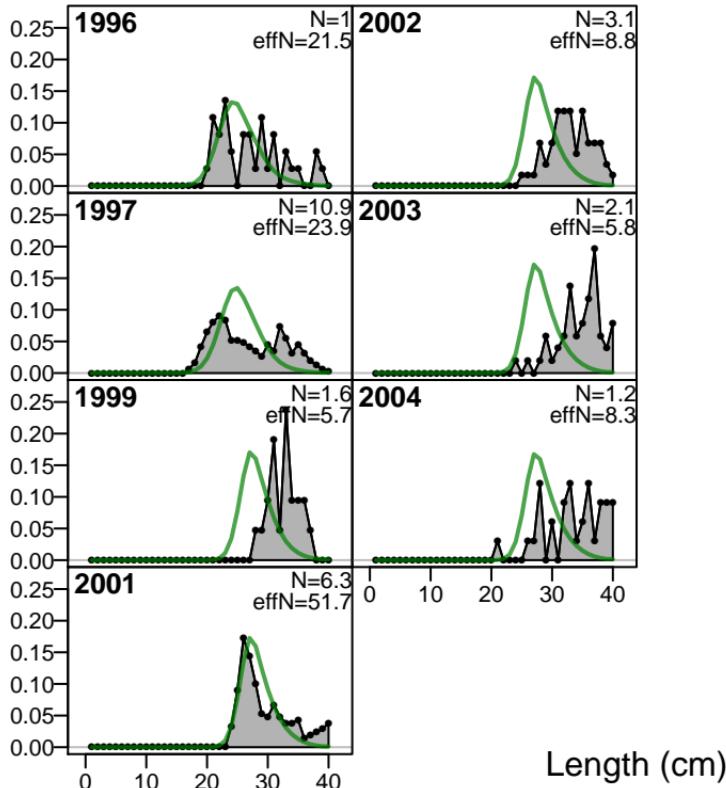


### ComHL (retained catch)

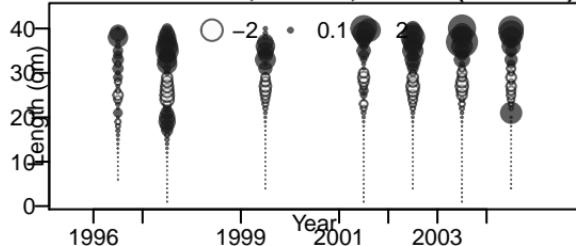


## Length comps, retained, ComNet

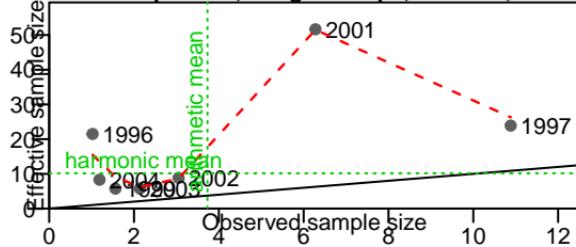
Proportion



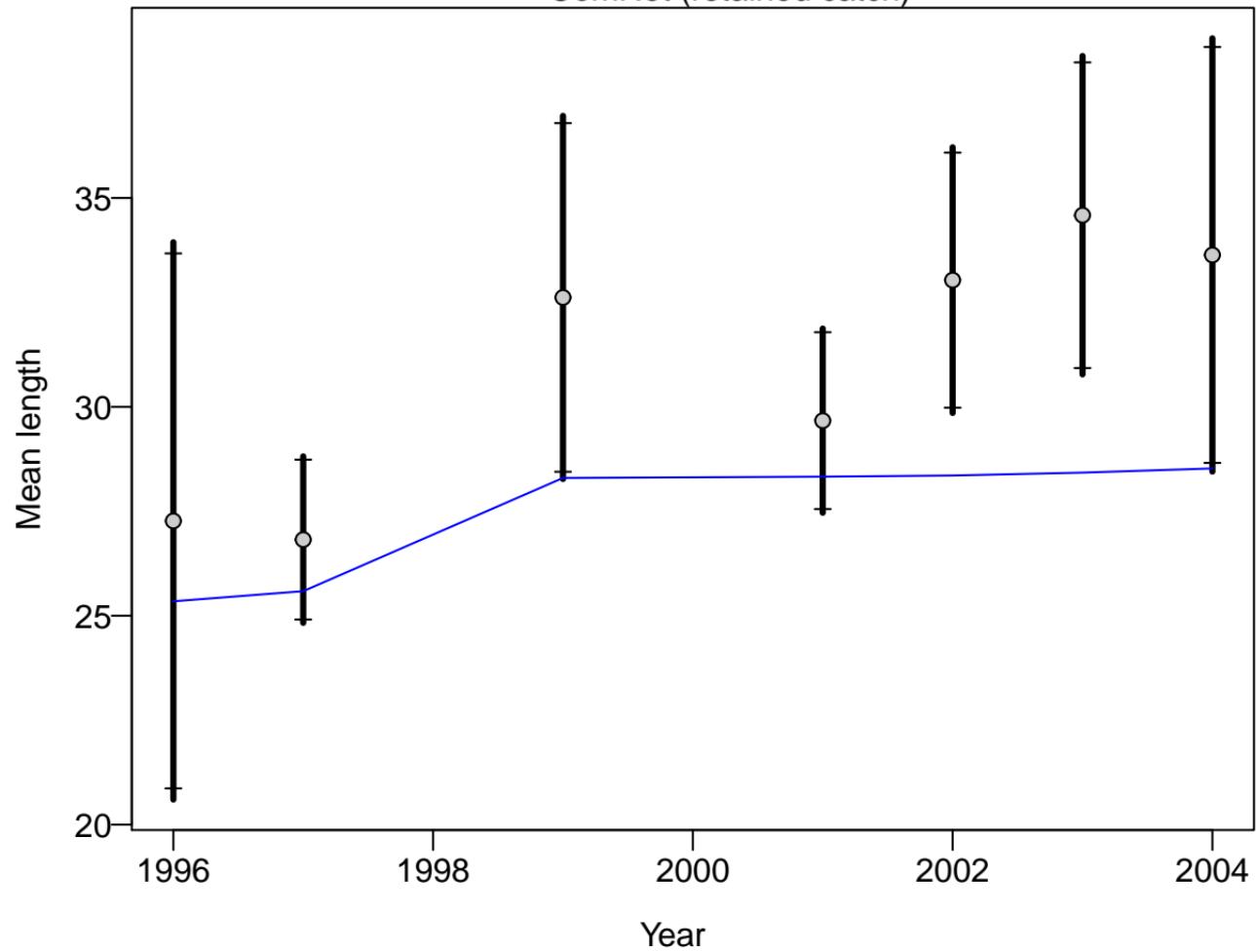
Pearson residuals, retained, ComNet (max=3.88)



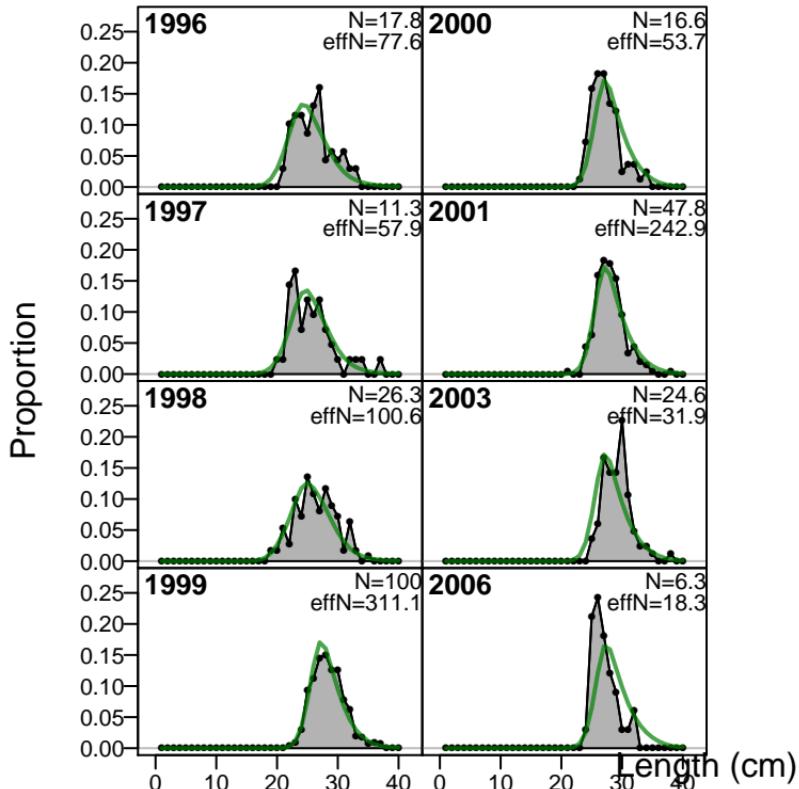
N-EffN comparison, Length comps, retained, ComNet

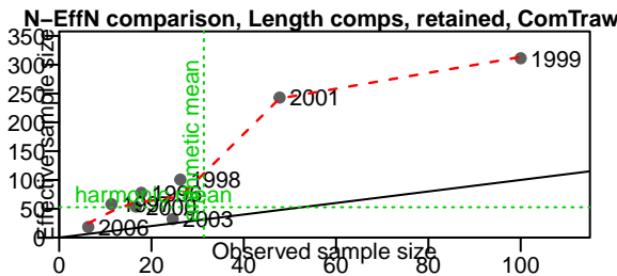
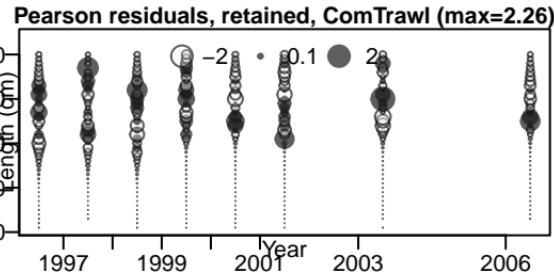


### ComNet (retained catch)

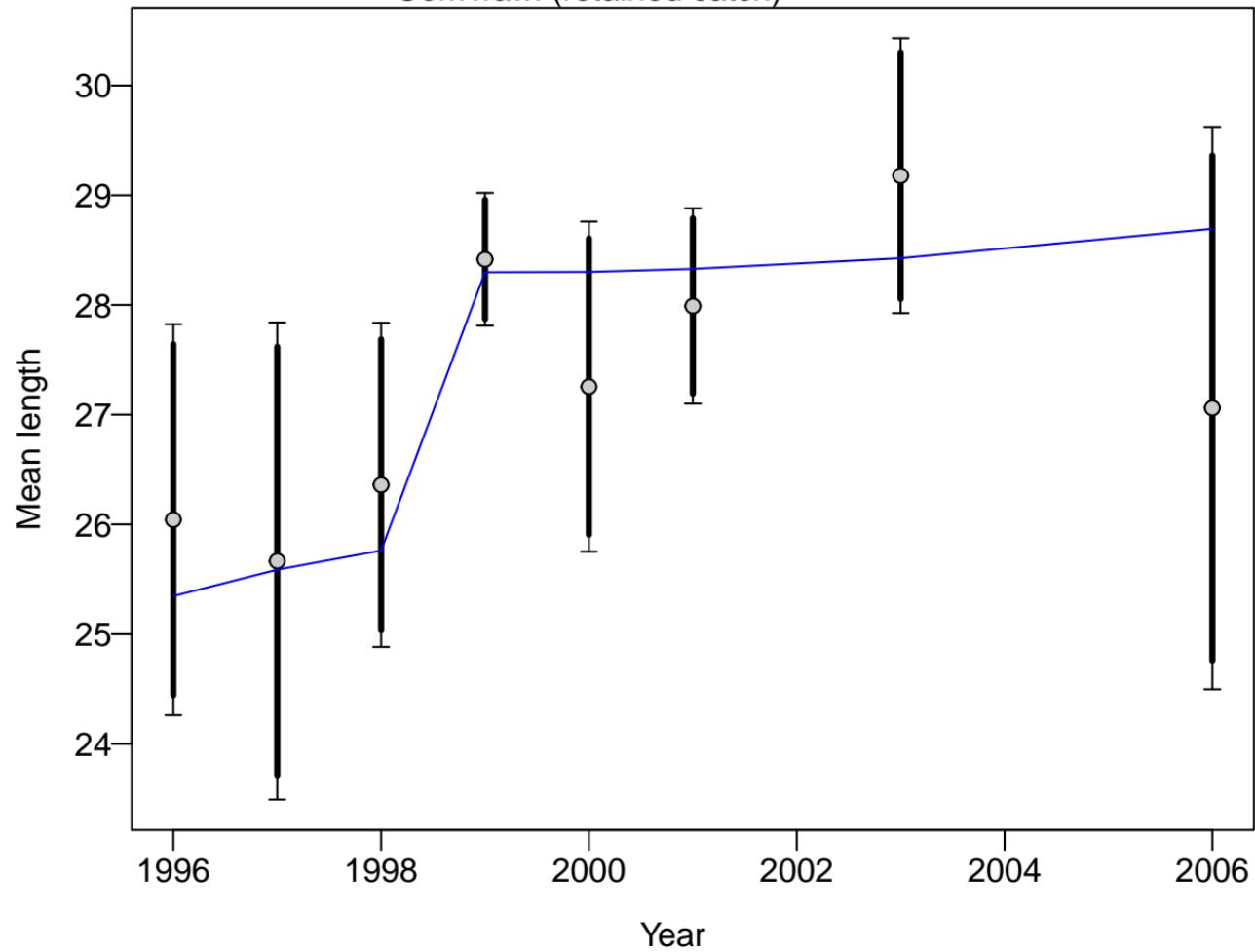


## Length comps, retained, ComTrawl



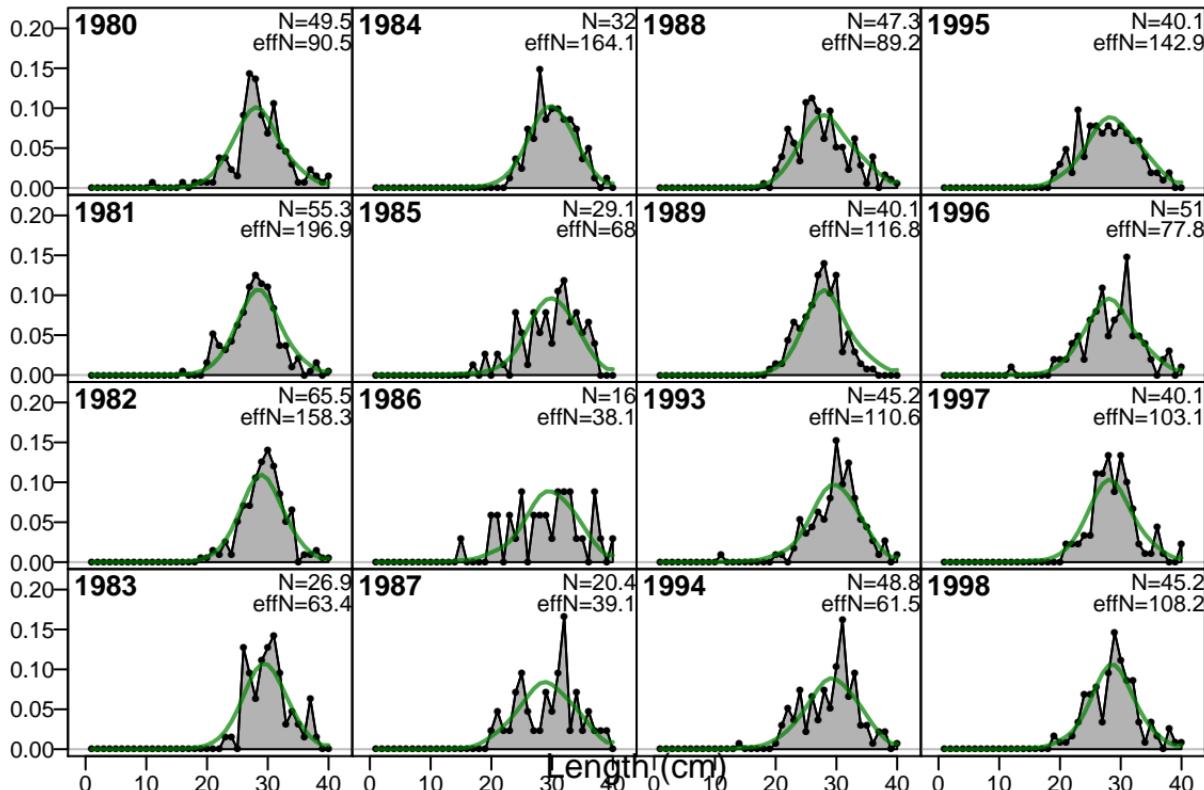


### ComTrawl (retained catch)



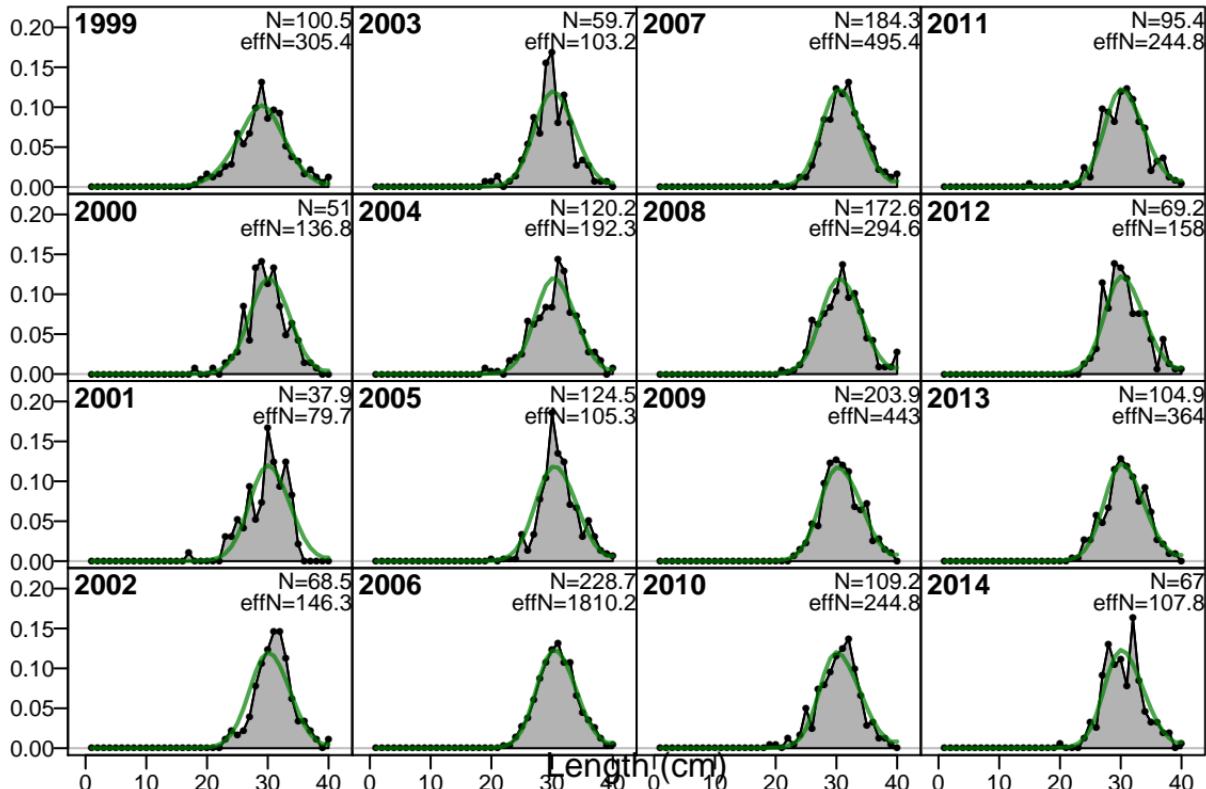
## Length comps, retained, RecPR

Proportion

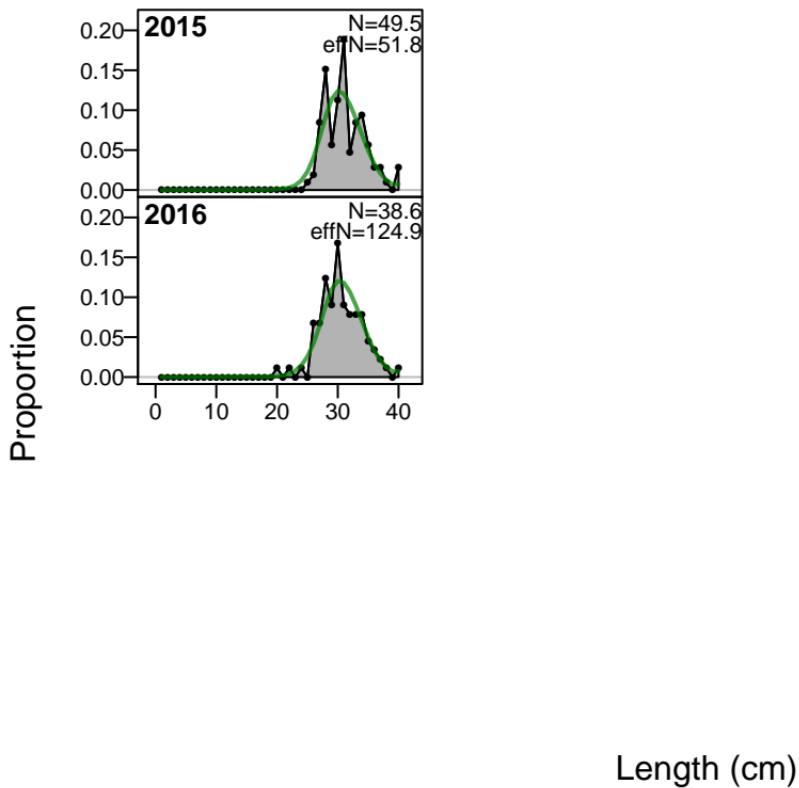


## Length comps, retained, RecPR

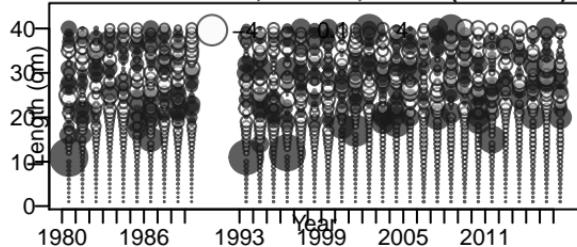
Proportion



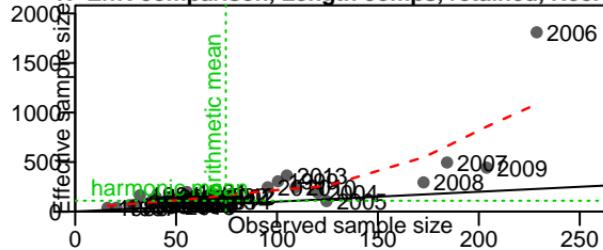
## Length comps, retained, RecPR



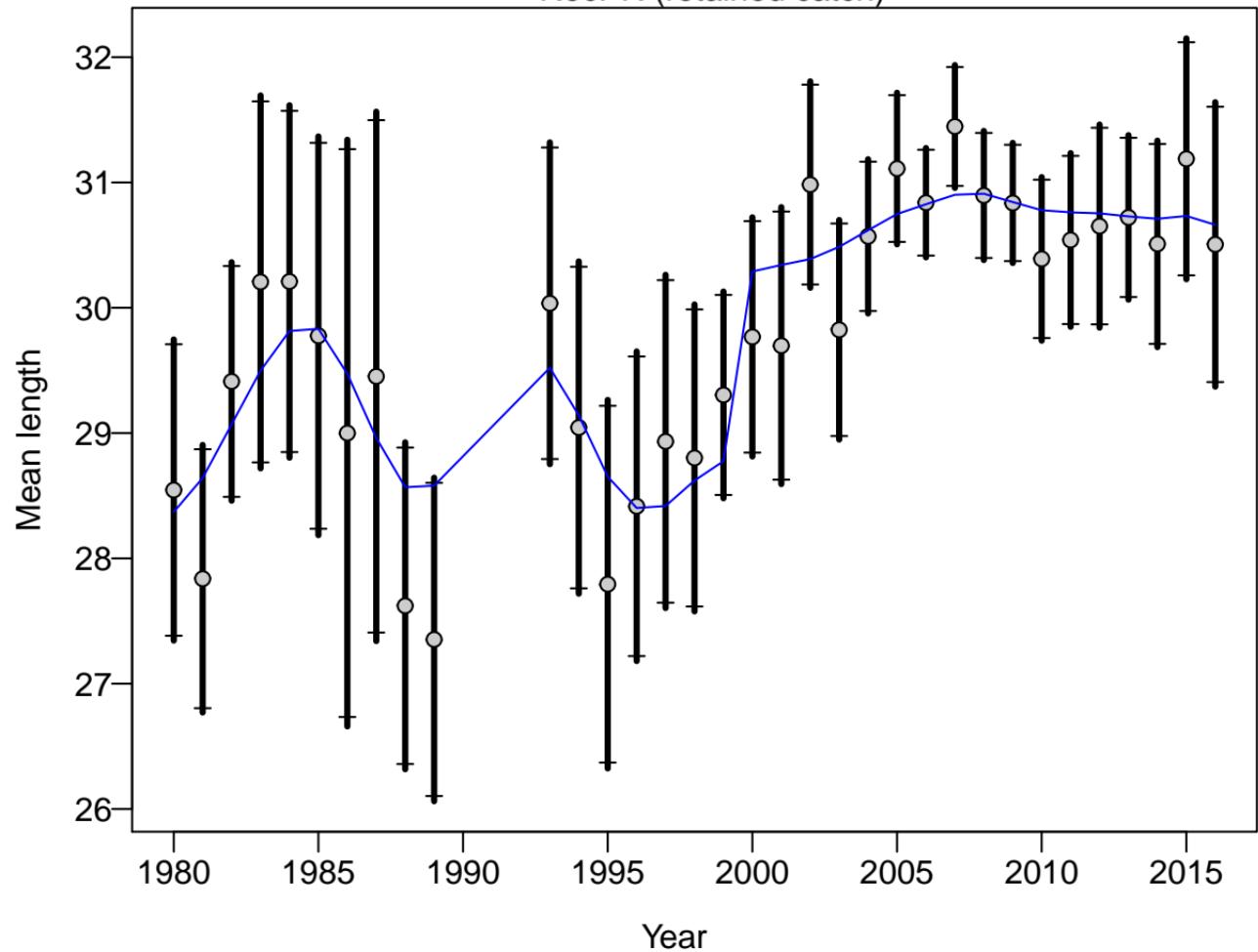
### Pearson residuals, retained, RecPR (max=5.95)



### N-EffN comparison, Length comps, retained, RecPR

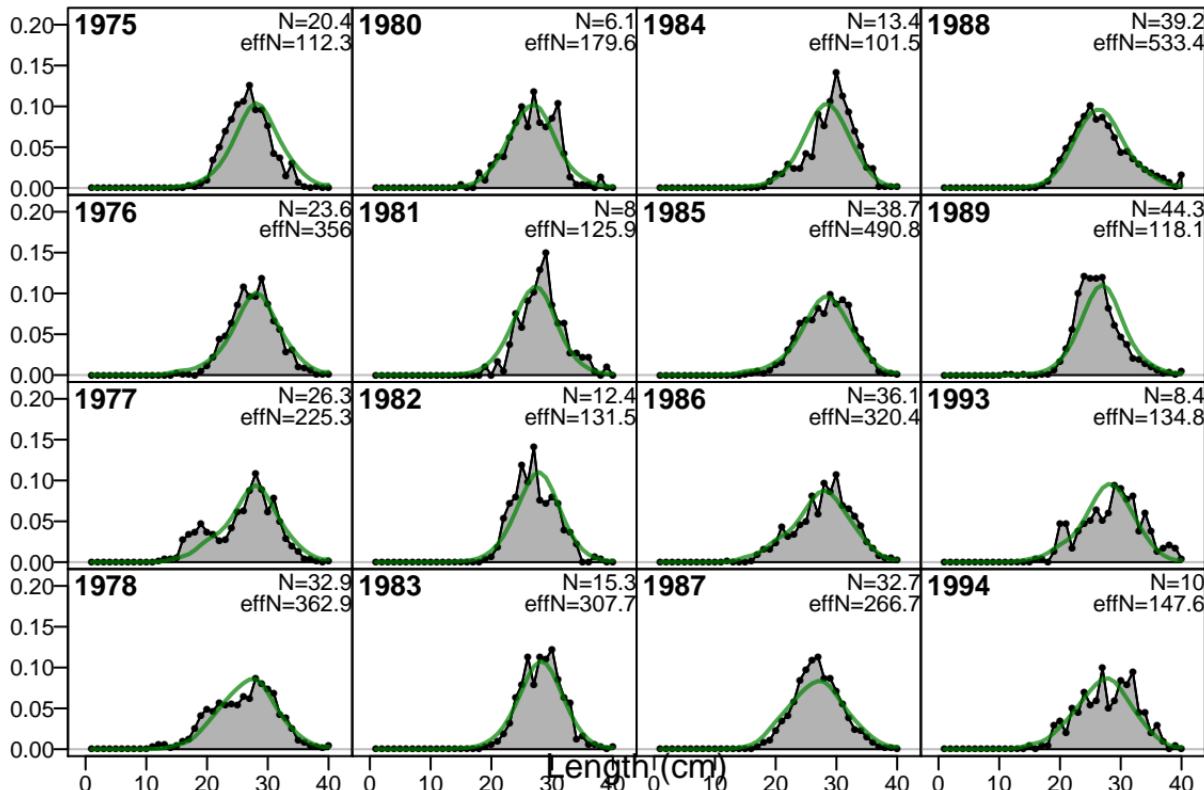


### RecPR (retained catch)



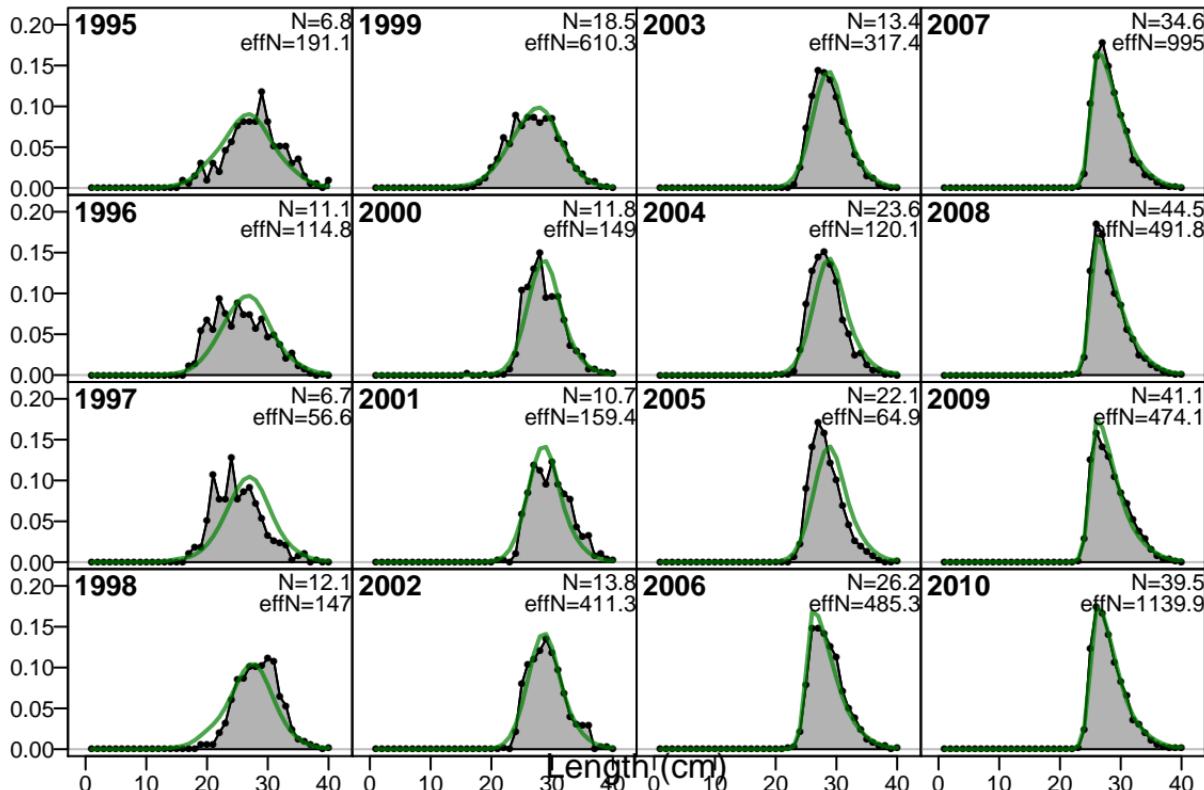
## Length comps, retained, RecPC

Proportion

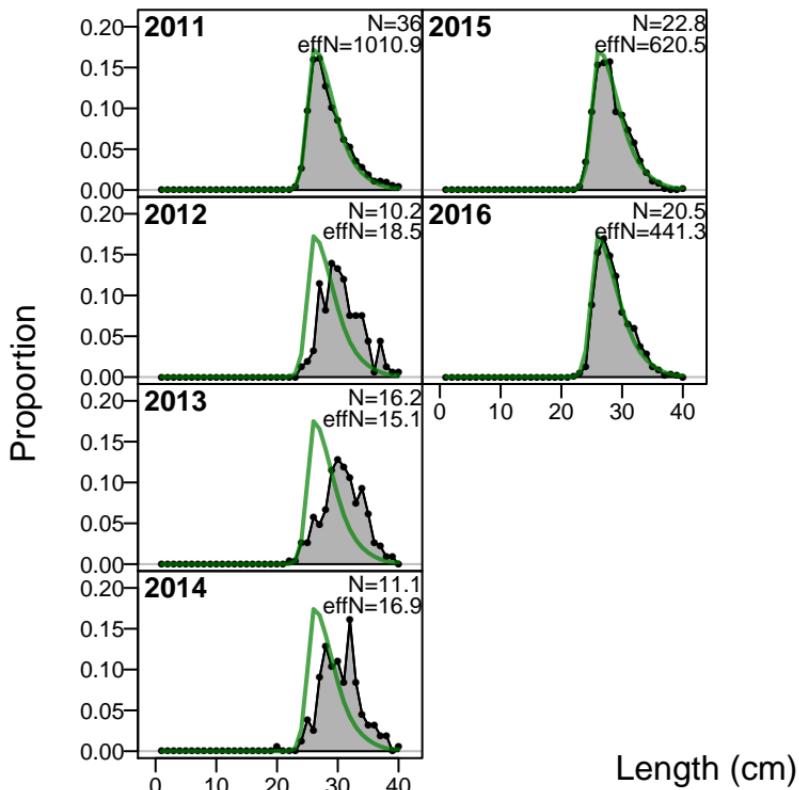


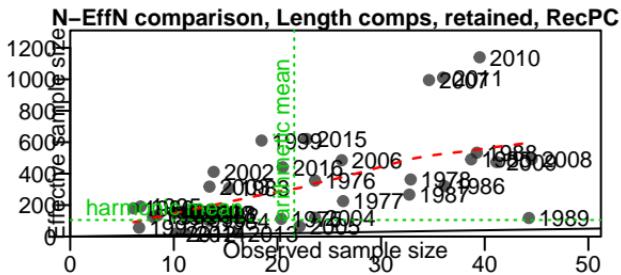
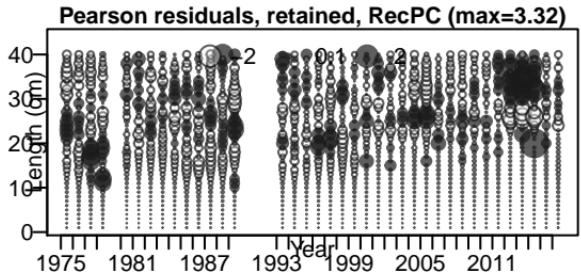
## Length comps, retained, RecPC

Proportion

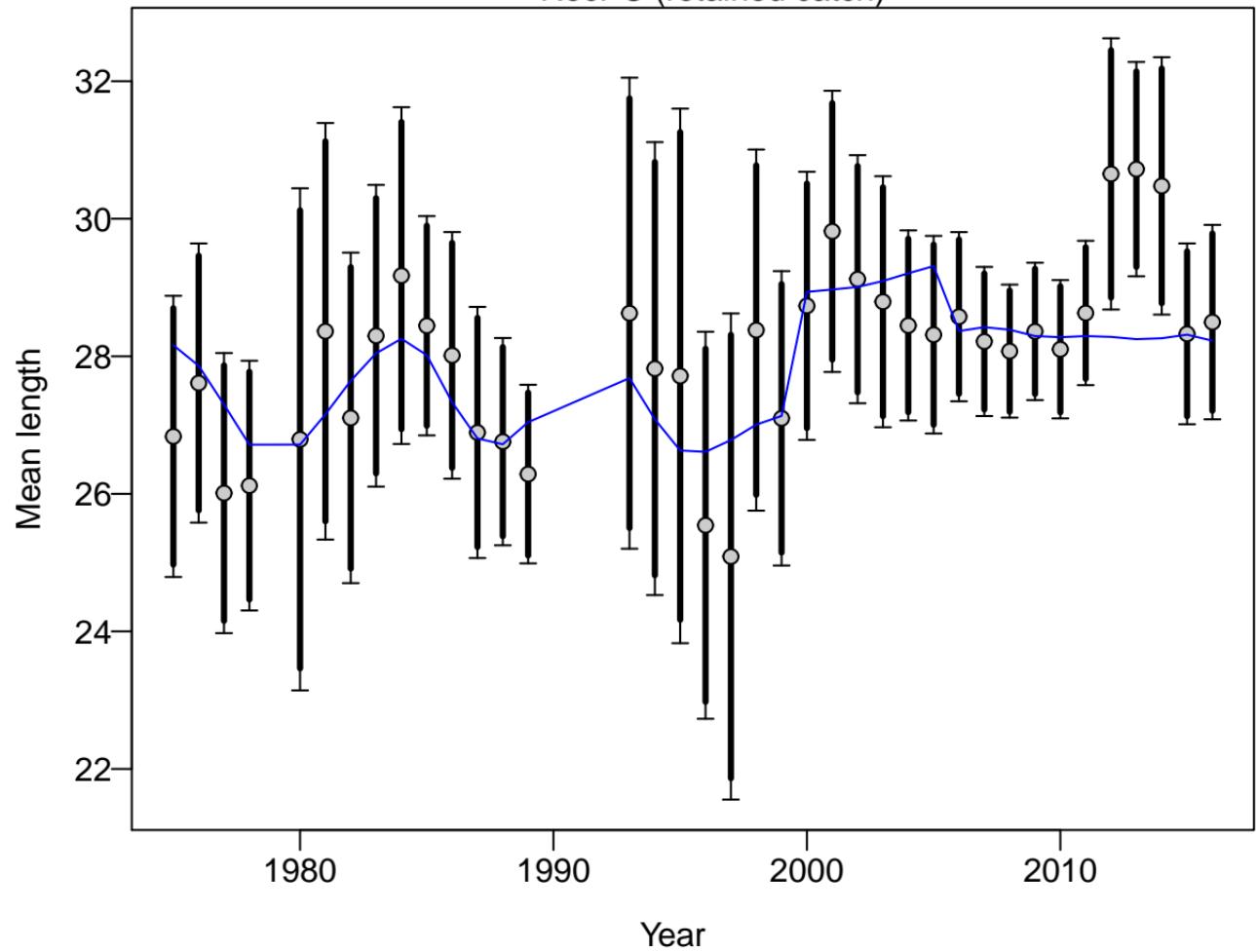


## Length comps, retained, RecPC



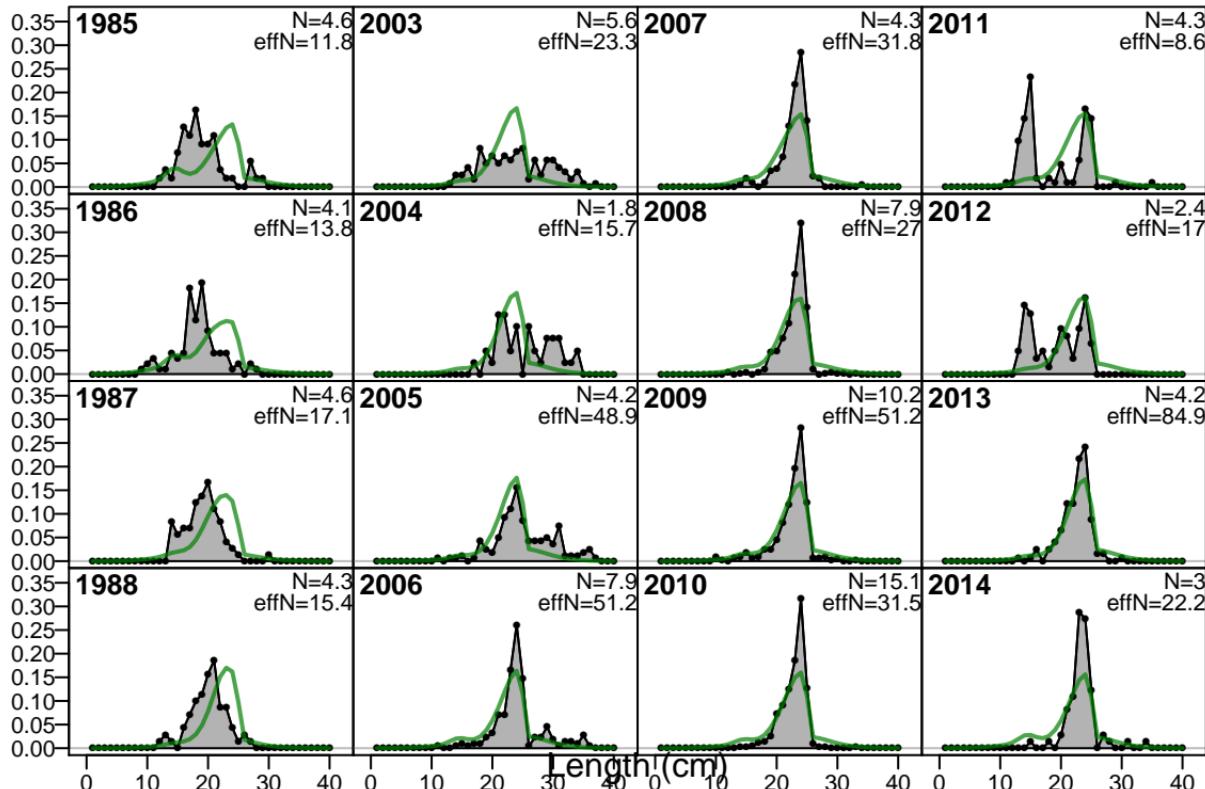


# RecPC (retained catch)



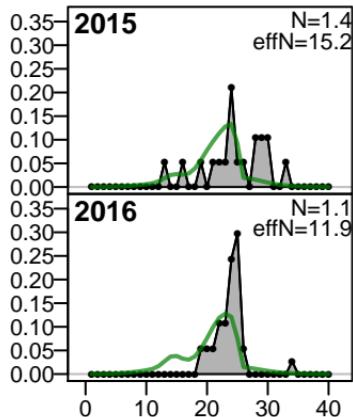
## Length comps, retained, RecDD

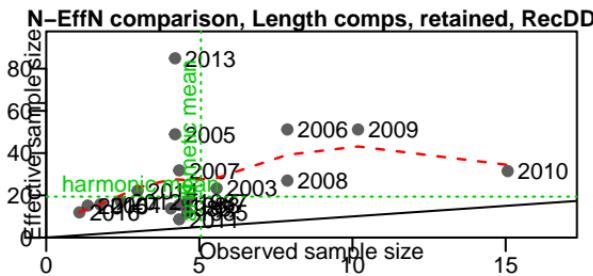
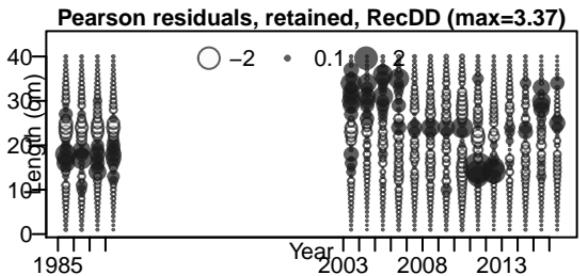
Proportion



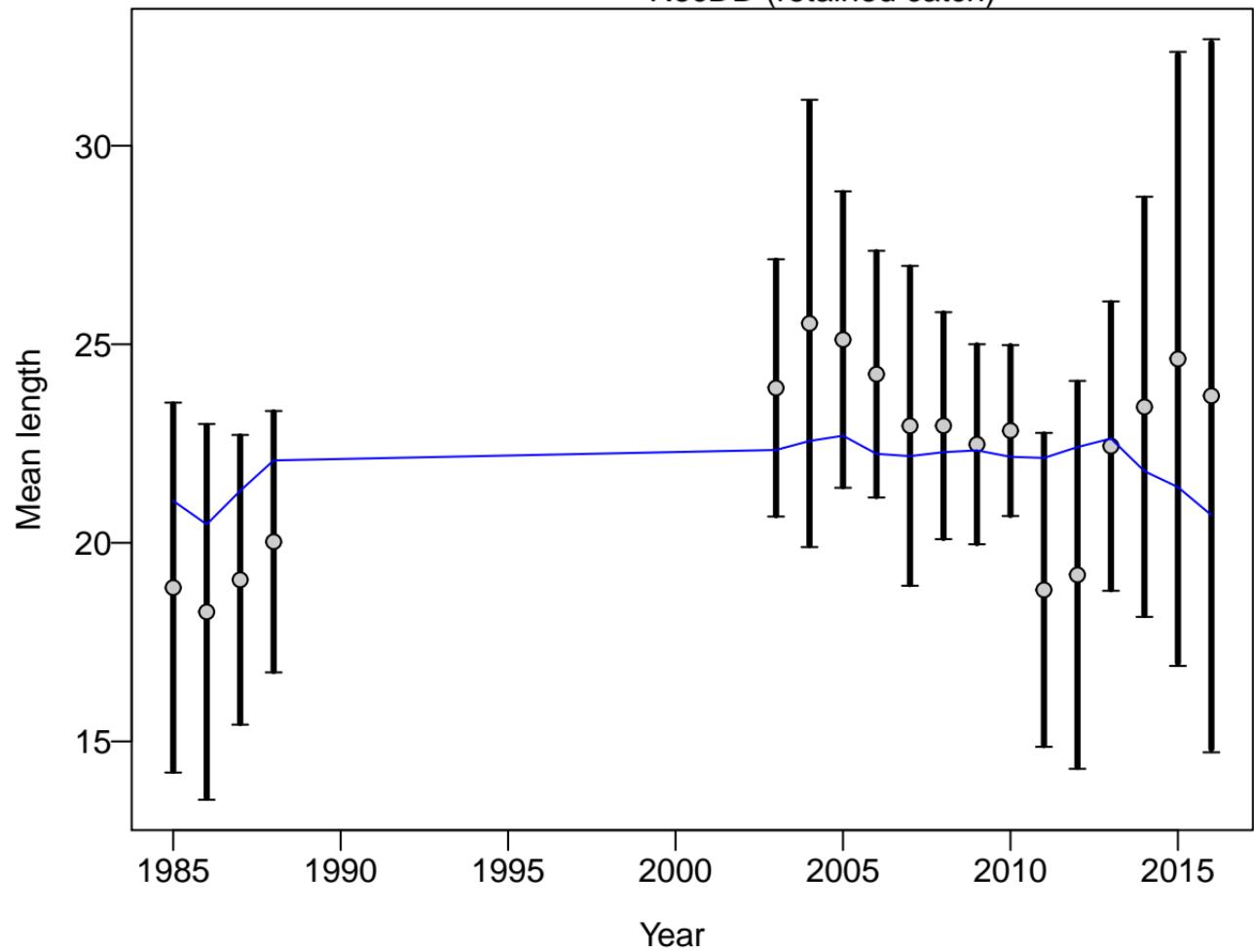
## Length comps, retained, RecDD

Proportion

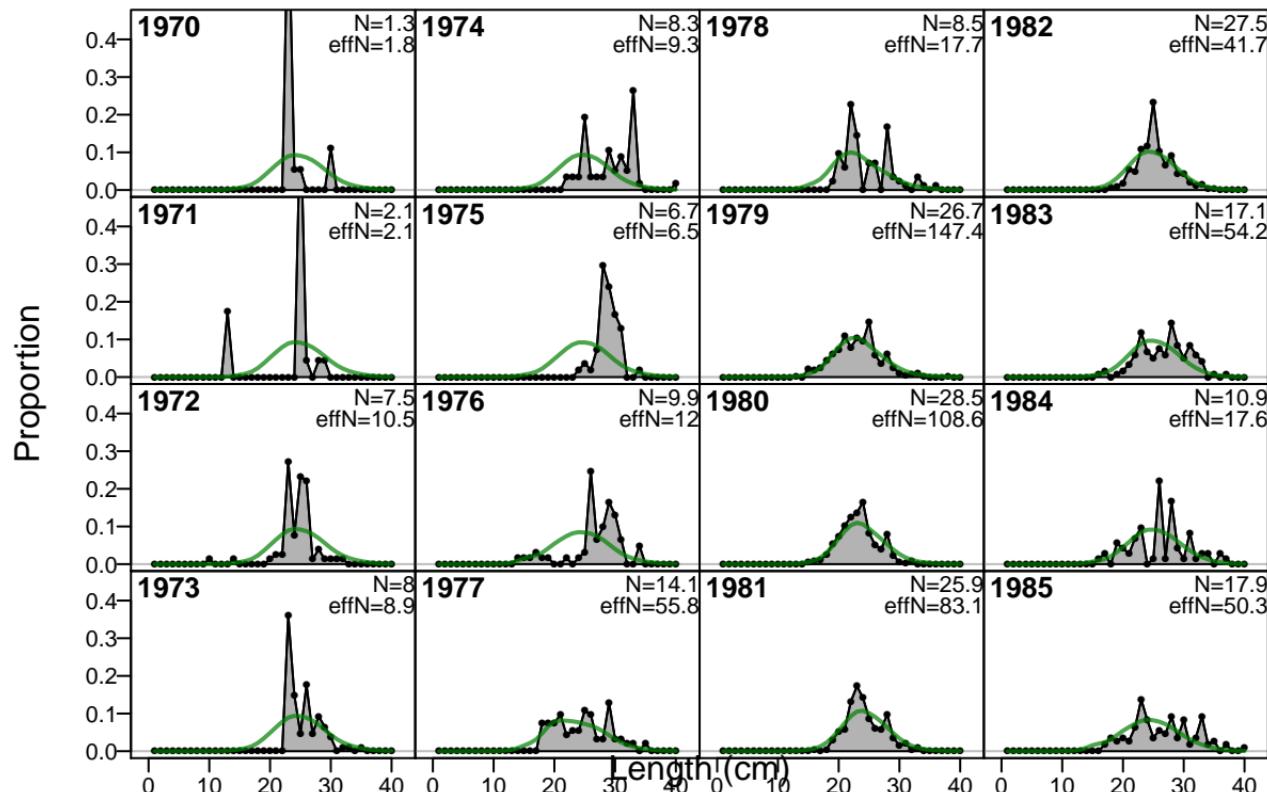




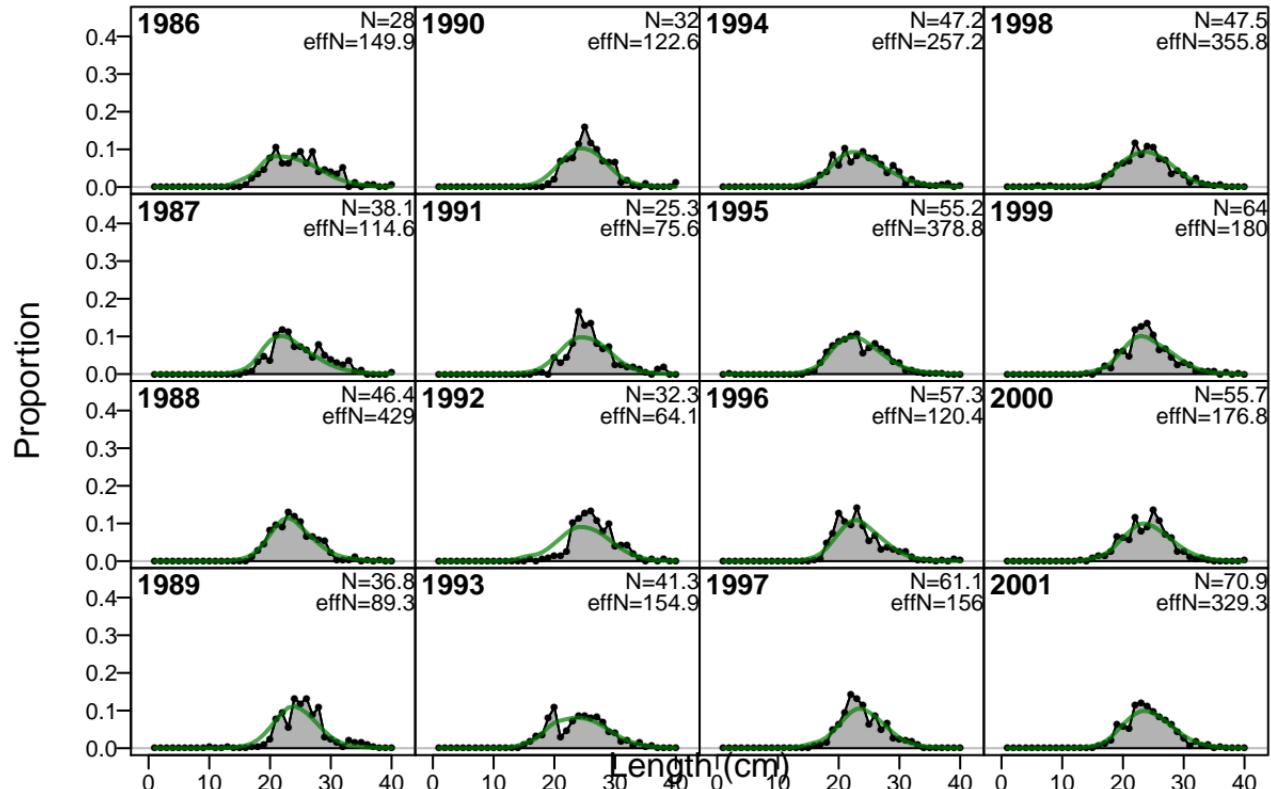
### RecDD (retained catch)



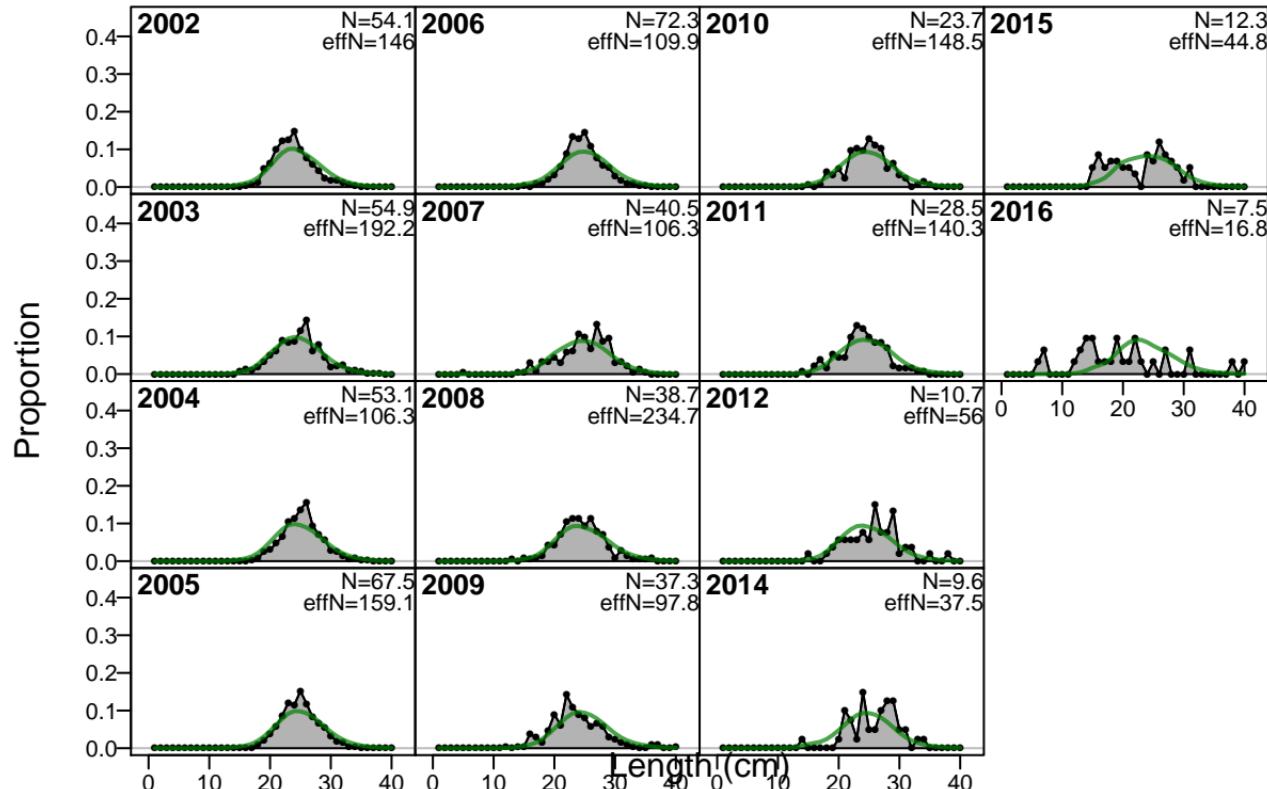
## Length comps, retained, Sanitation

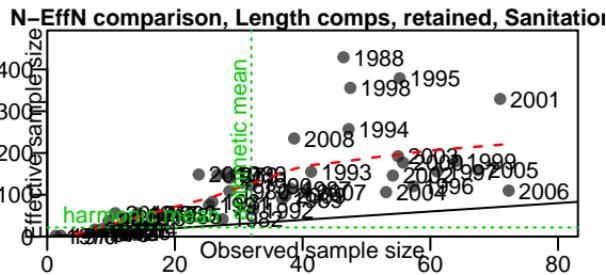
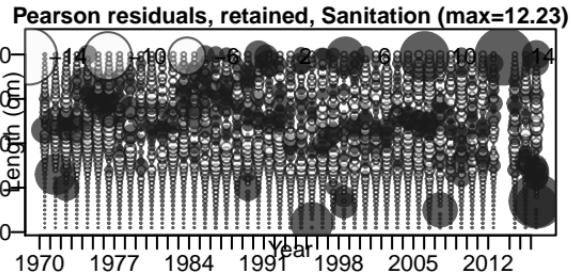


## Length comps, retained, Sanitation

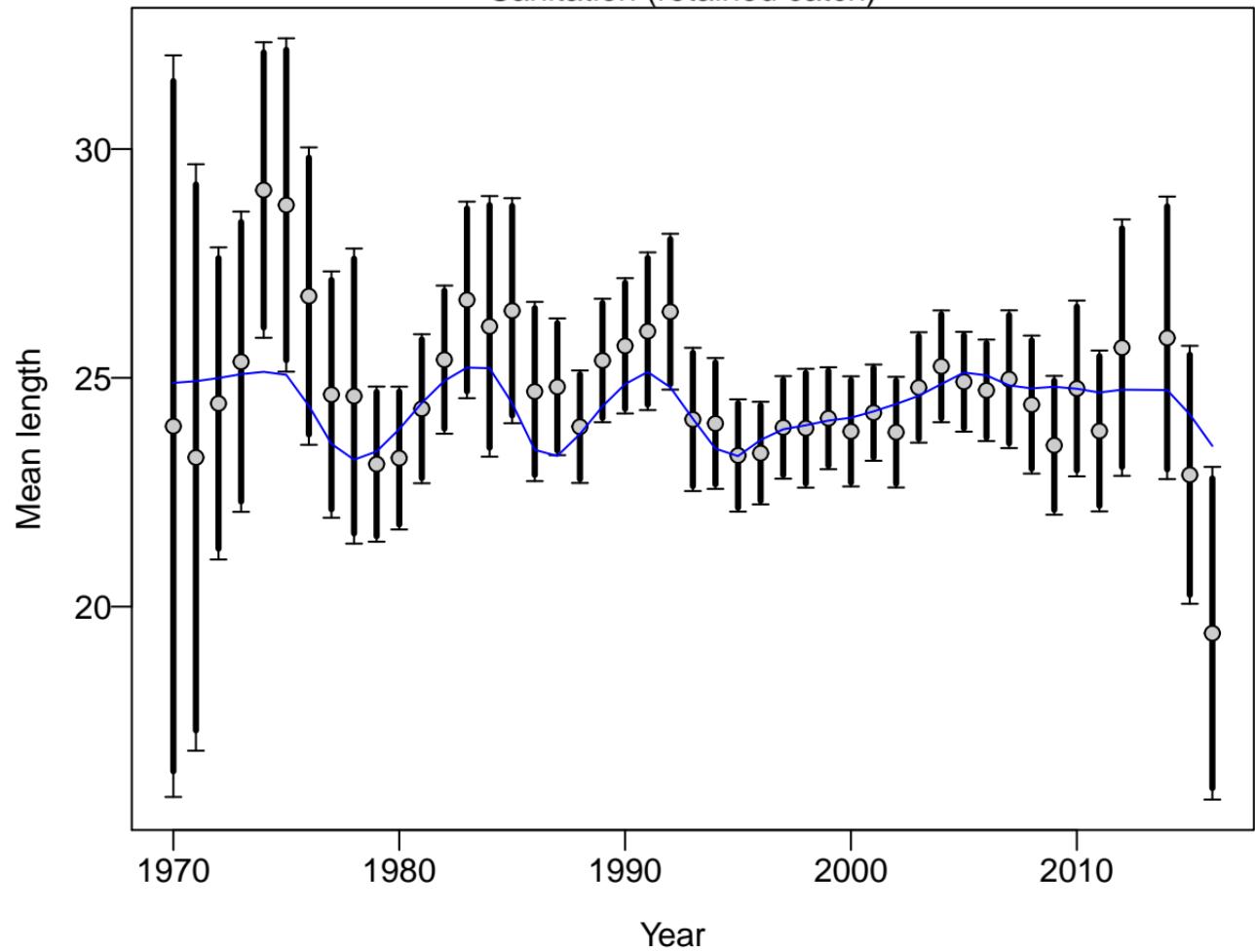


## Length comps, retained, Sanitation



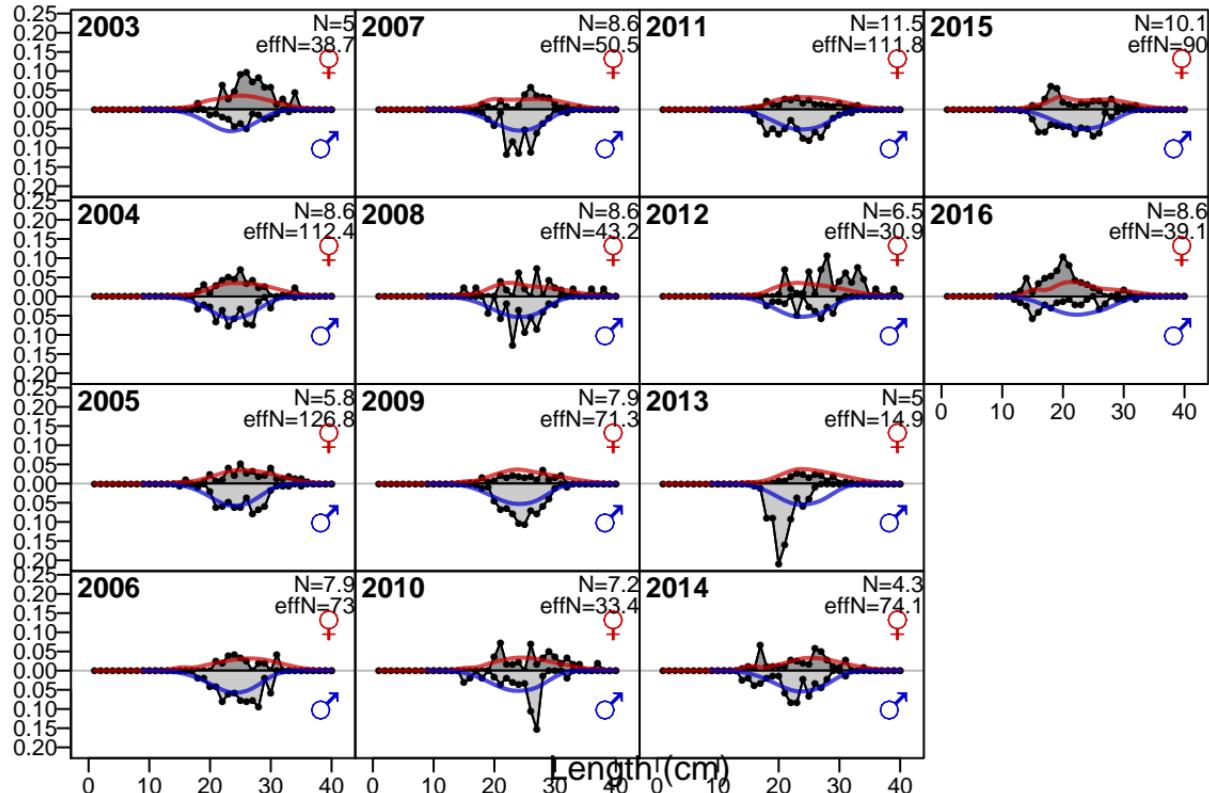


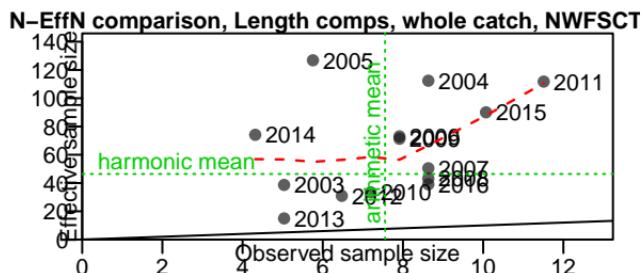
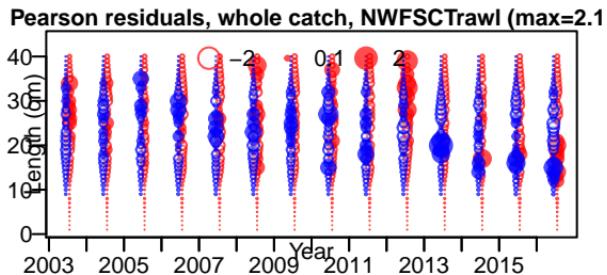
### Sanitation (retained catch)



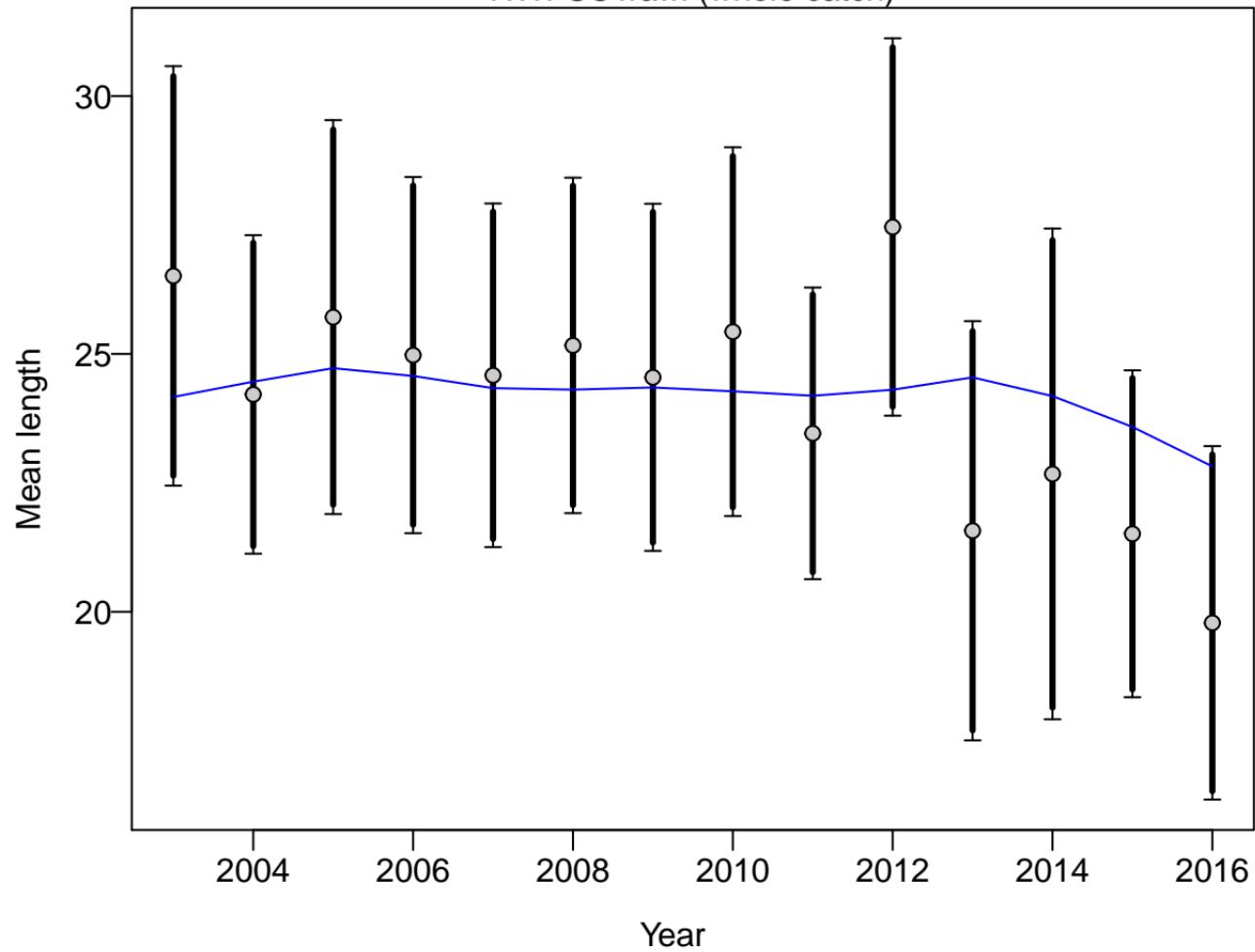
## Length comps, whole catch, NWFSC Trawl

Proportion



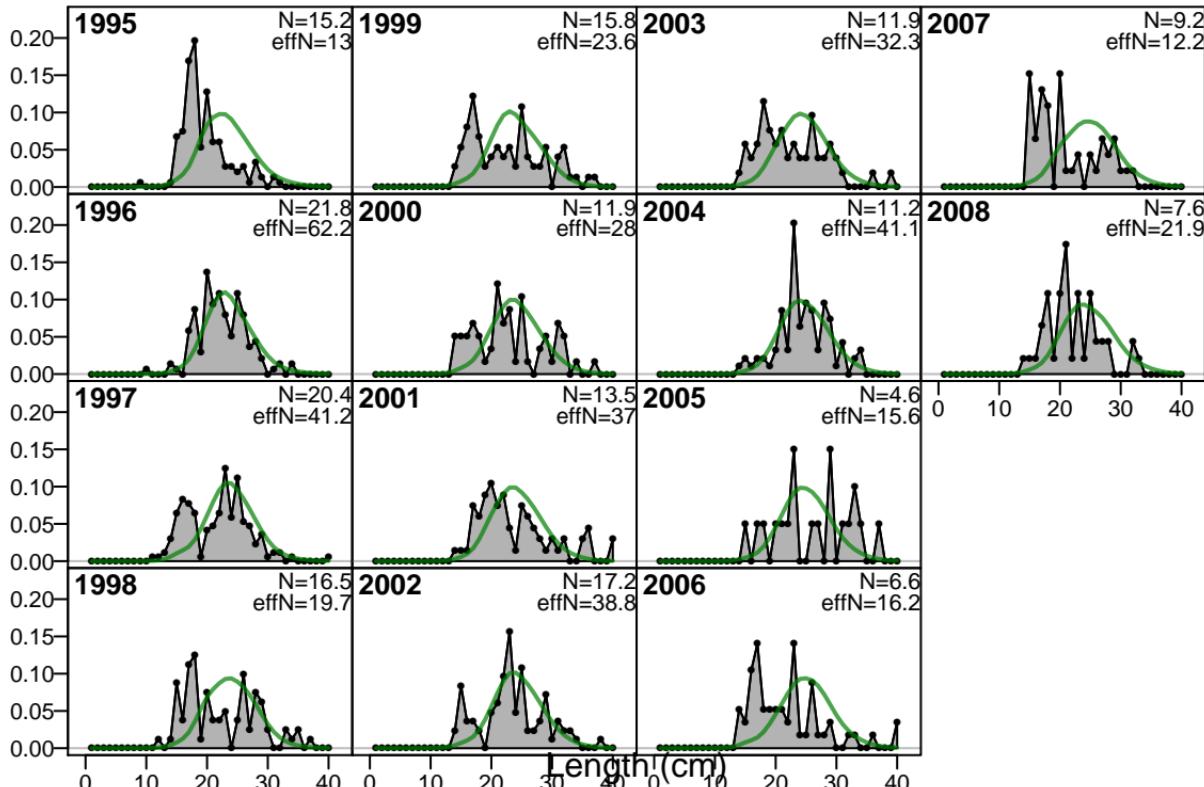


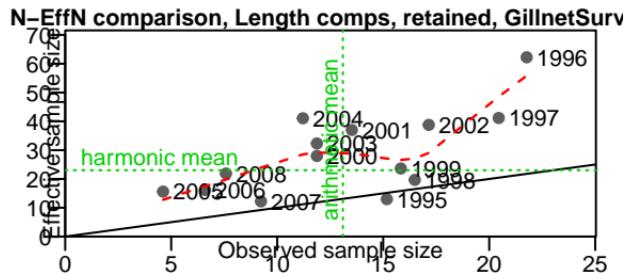
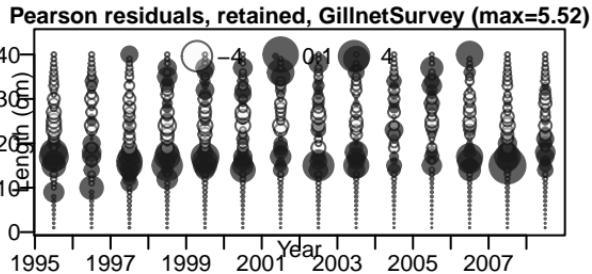
### NWFSCTrawl (whole catch)



## Length comps, retained, GillnetSurvey

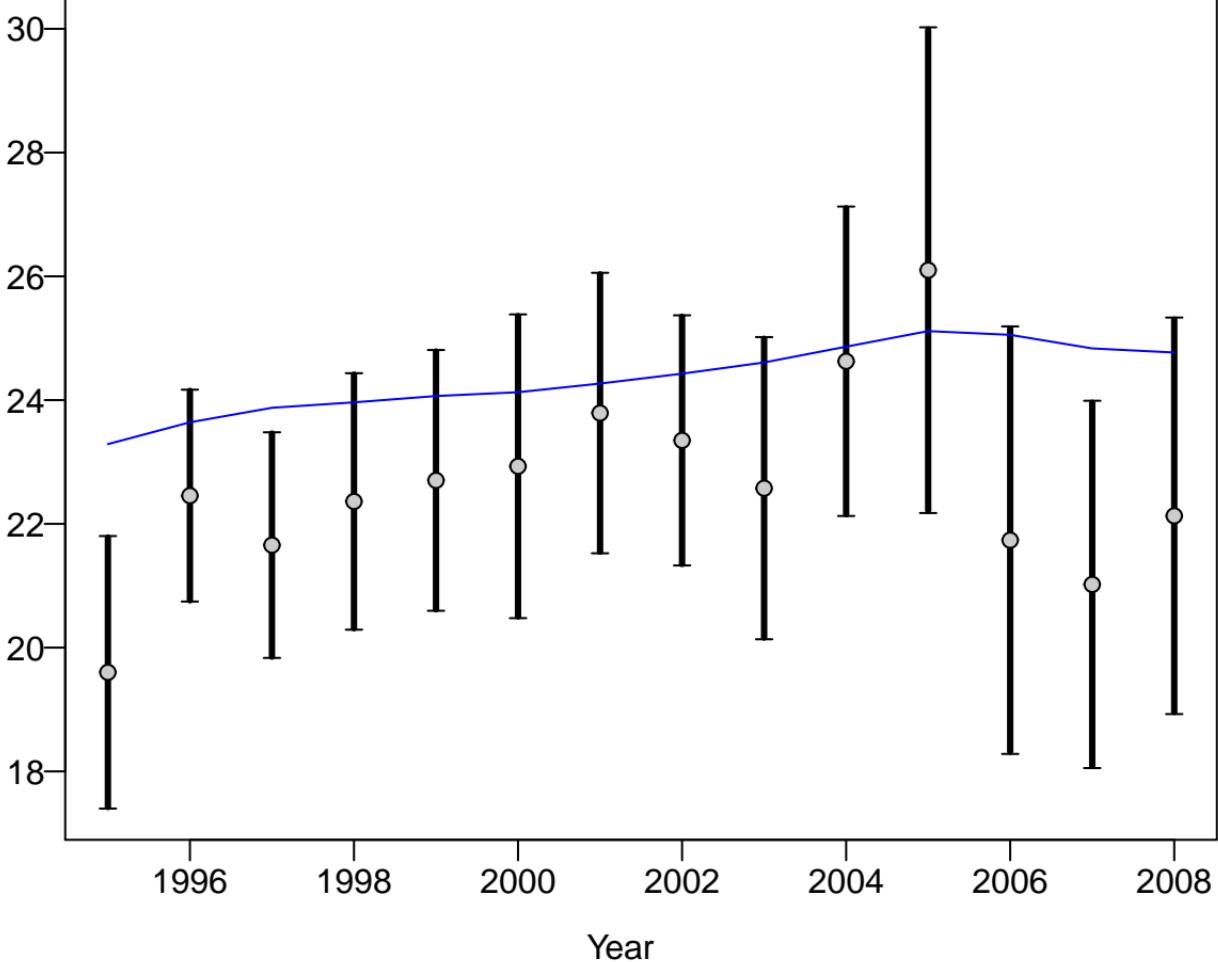
Proportion





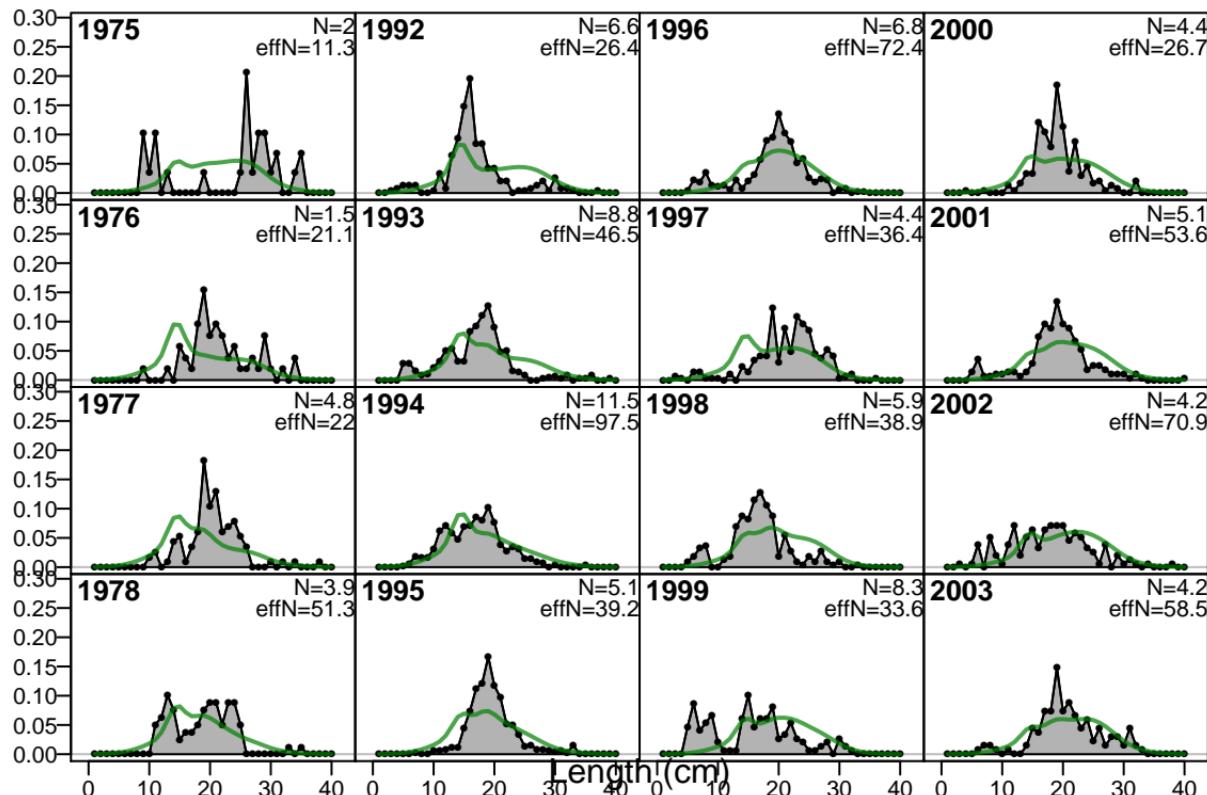
### GillnetSurvey (retained catch)

Mean length

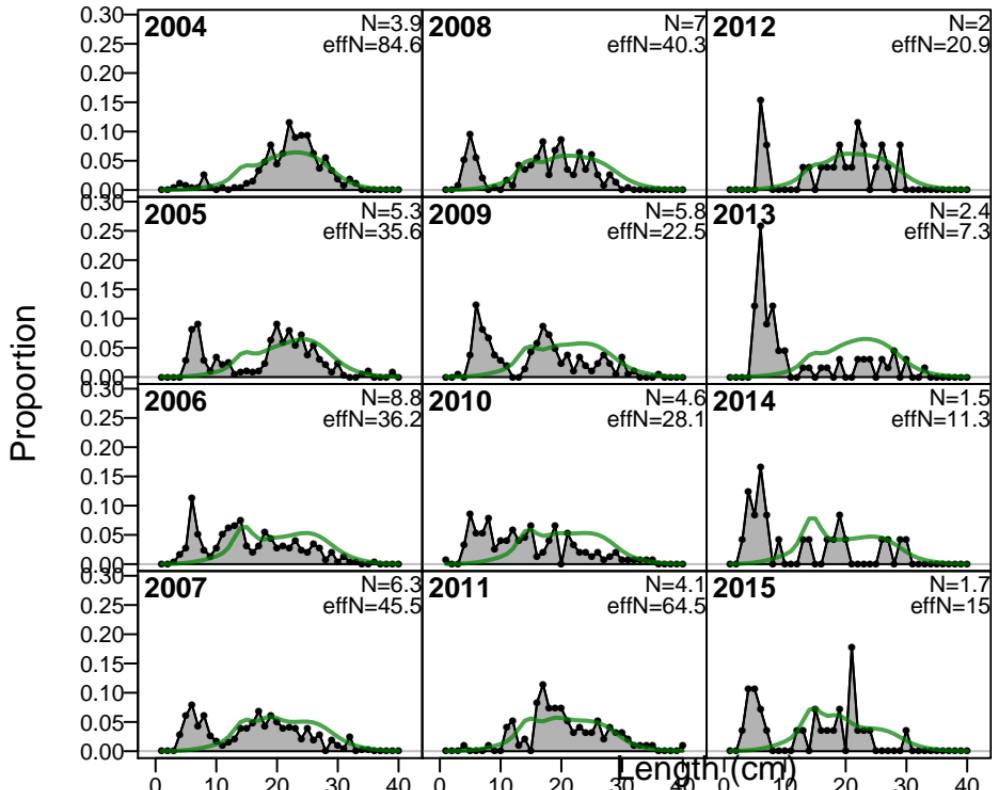


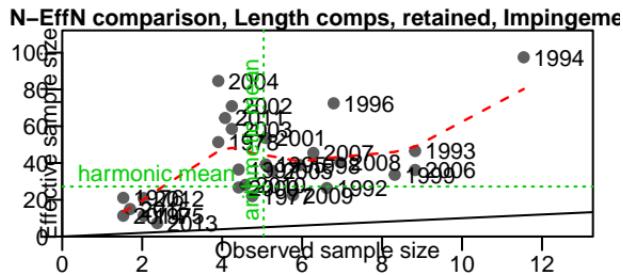
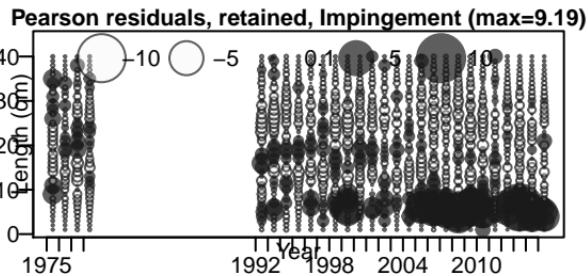
## Length comps, retained, Impingement

Proportion

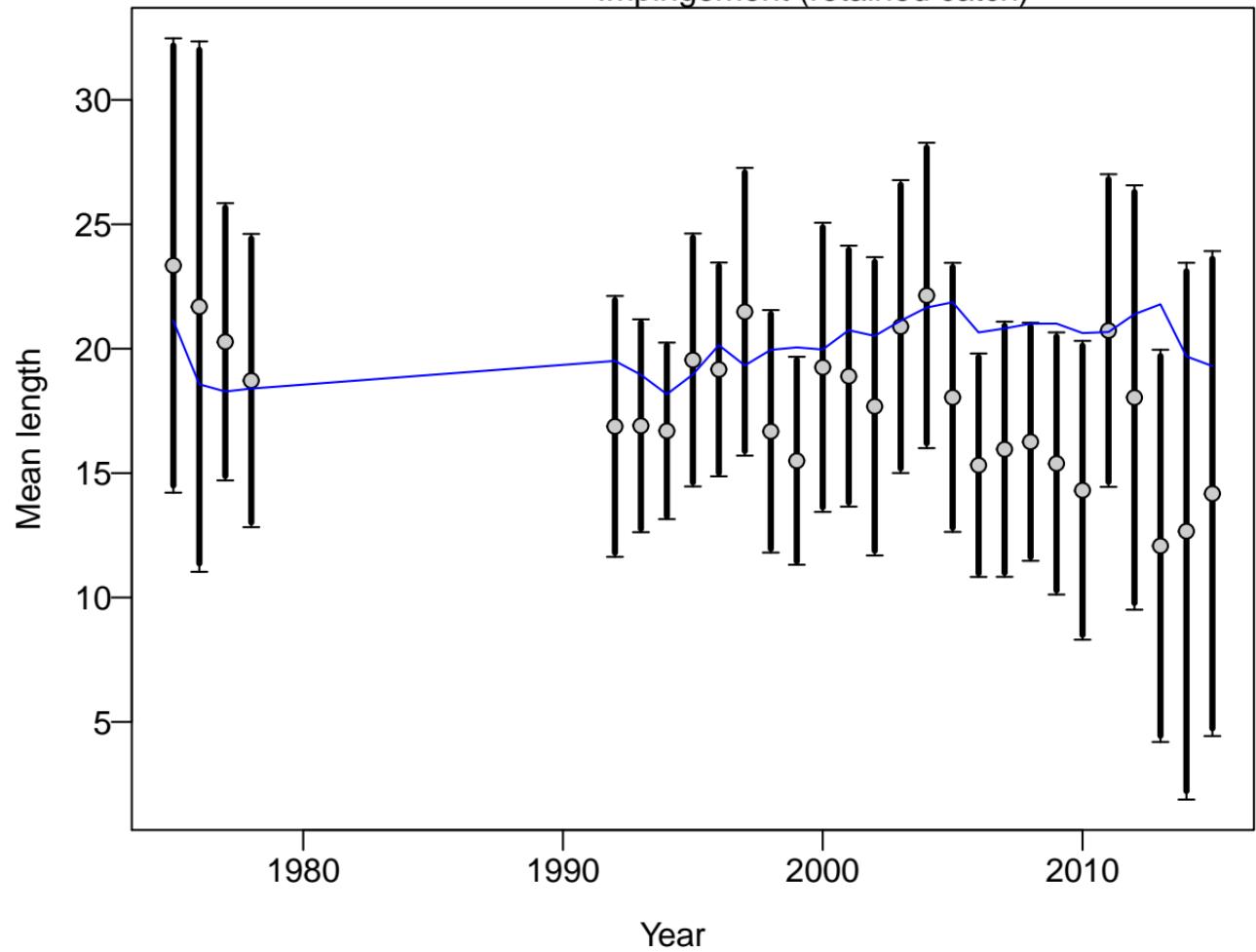


## Length comps, retained, Impingement



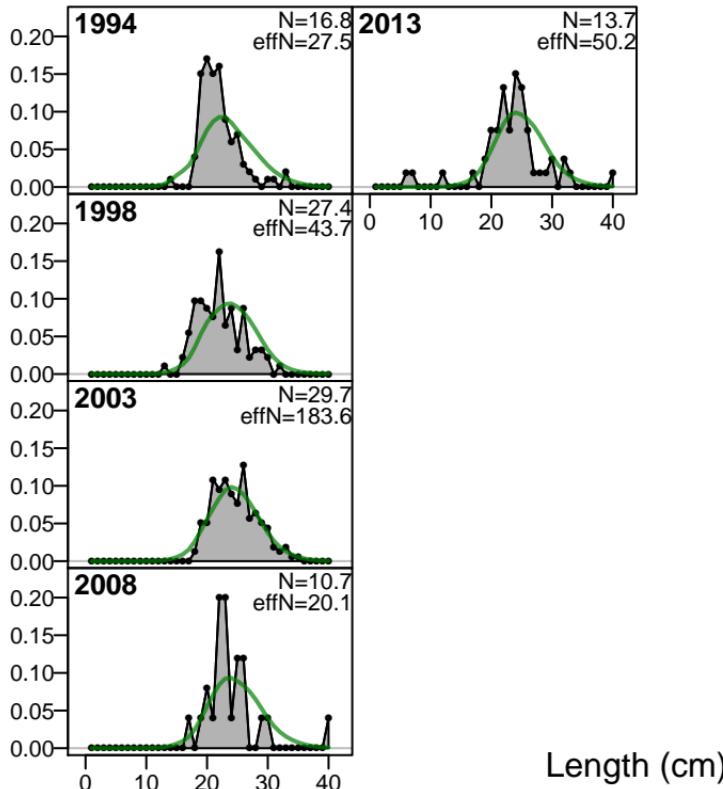


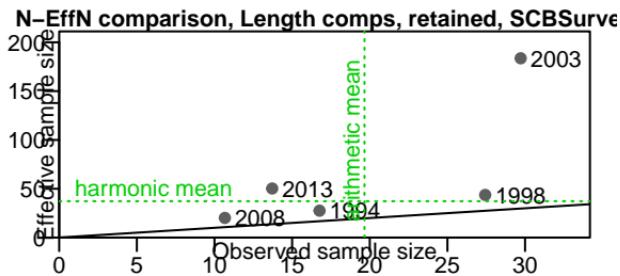
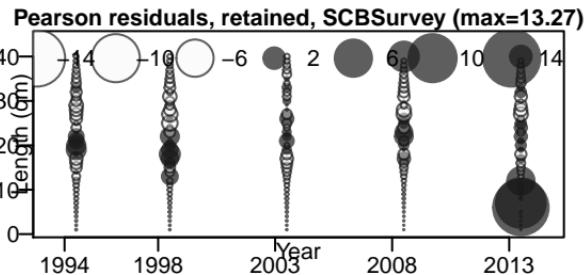
### Impingement (retained catch)



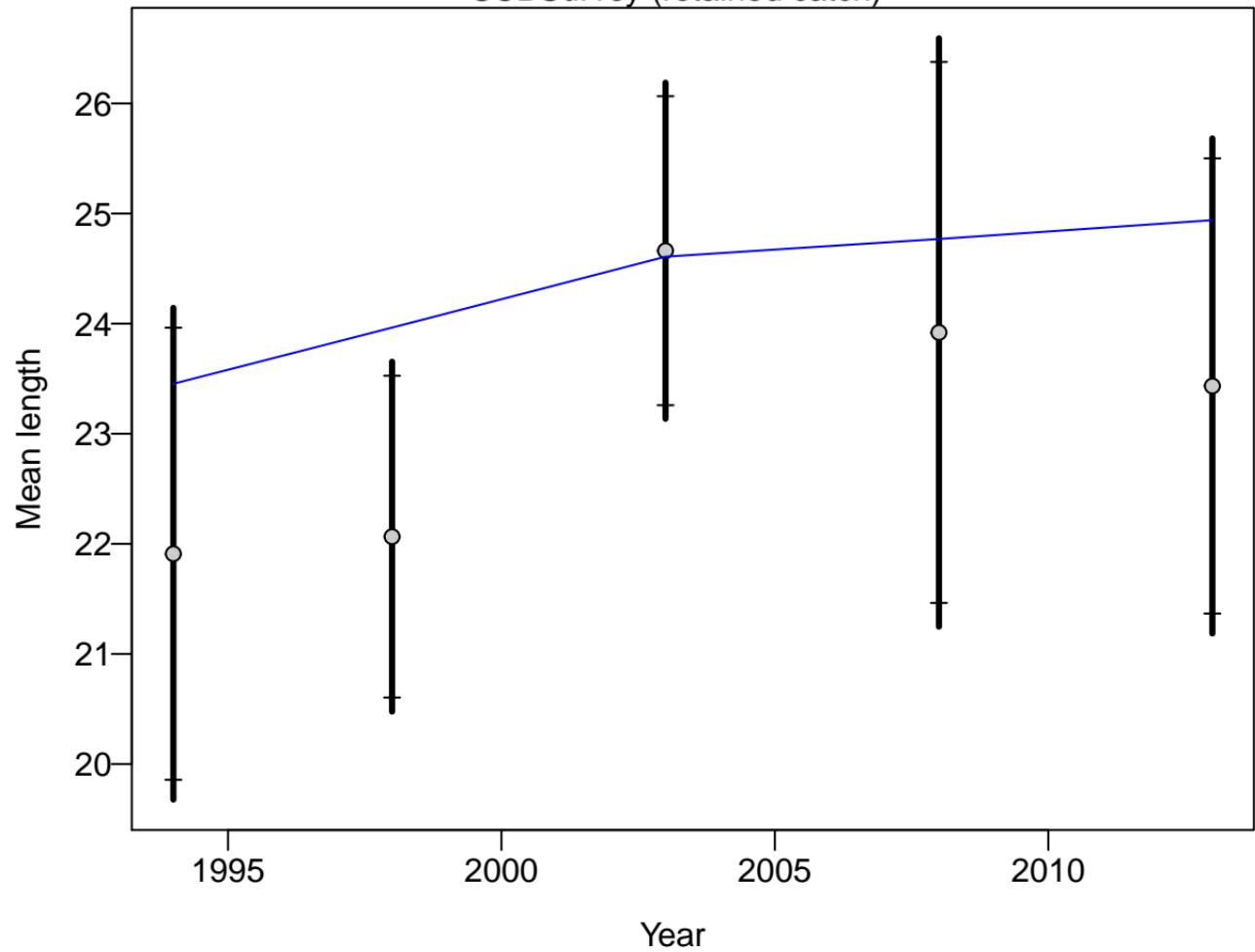
## Length comps, retained, SCBSurvey

Proportion

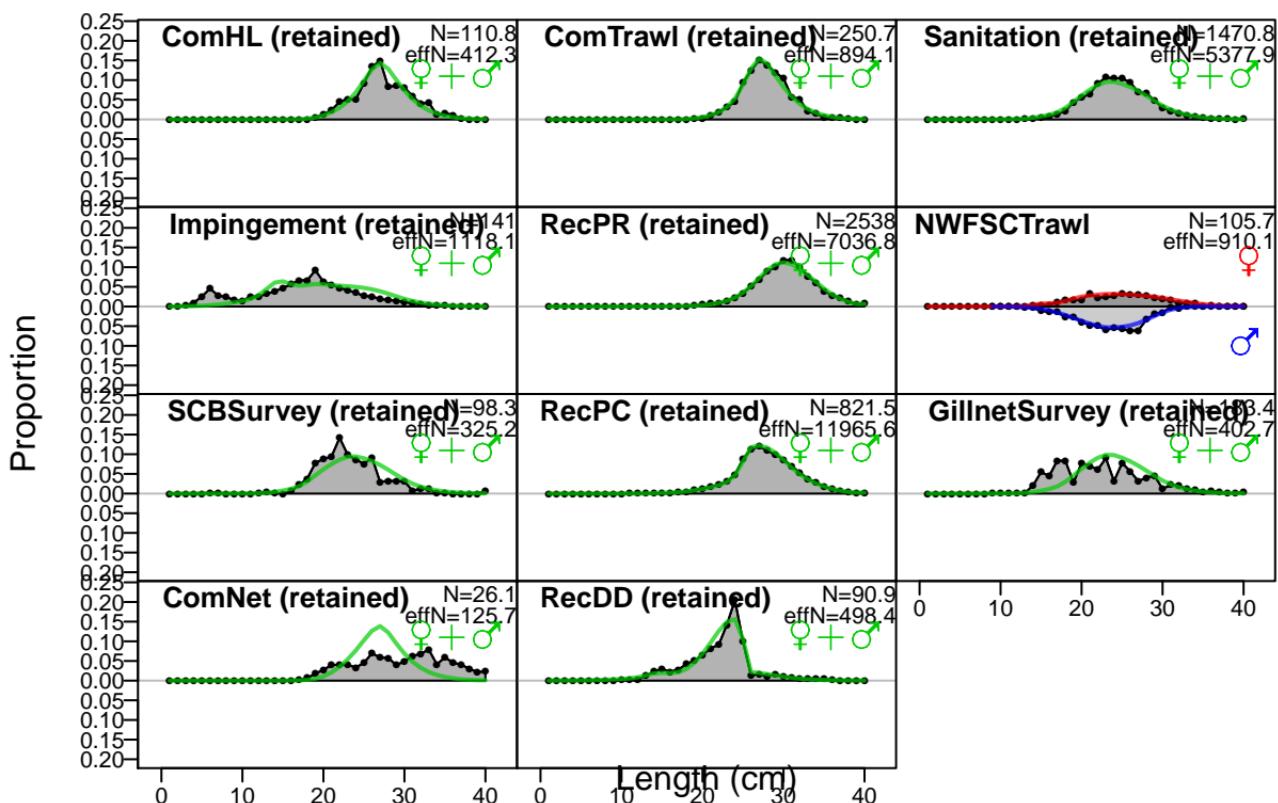




### SCBSurvey (retained catch)



## Length comps, aggregated across time by fleet

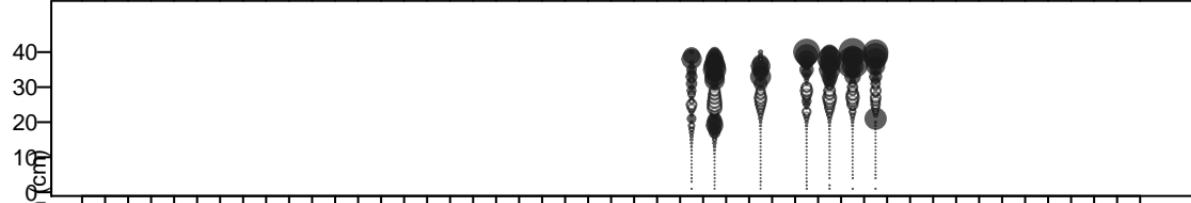


## Pearson residuals, sexes combined, retained, comparing across fleets

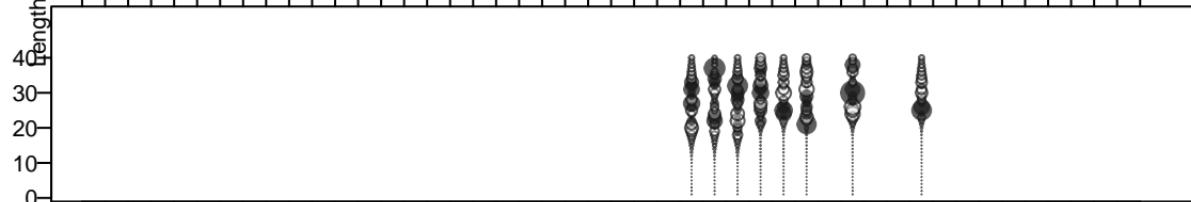
nHL



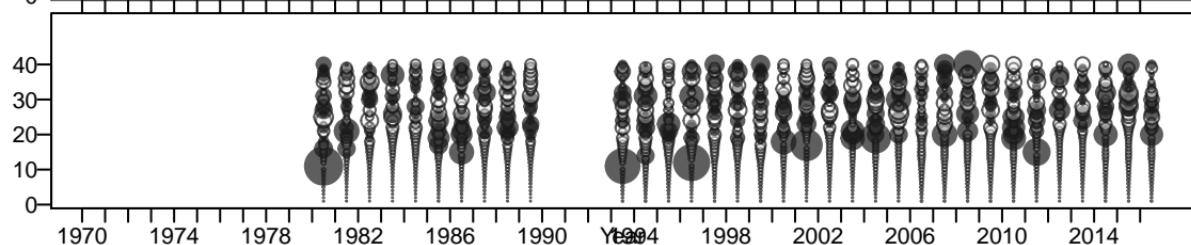
nNet



crawl



cPR

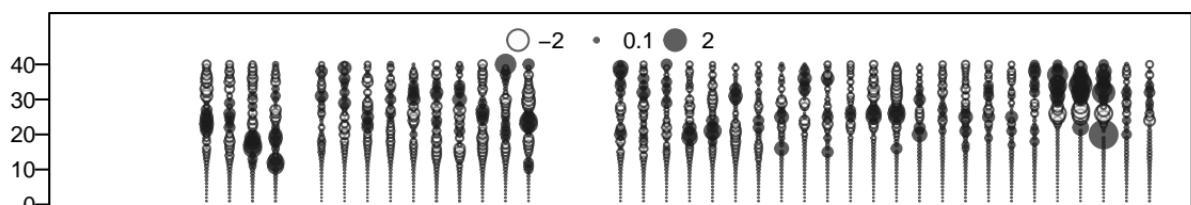


1970 1974 1978 1982 1986 1990 1994 1998 2002 2006 2010 2014

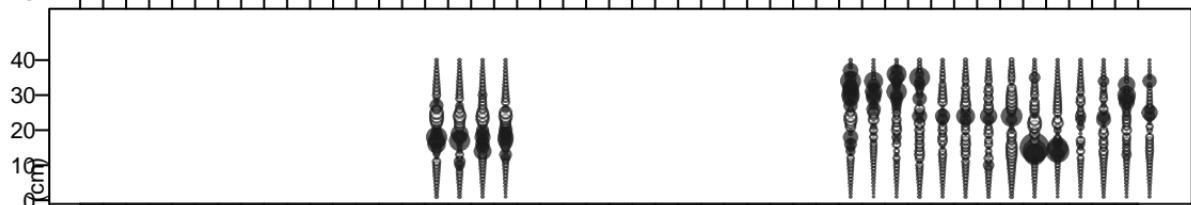
○ -2 • 0.1 ● 2

## Pearson residuals, sexes combined, retained, comparing across fleets

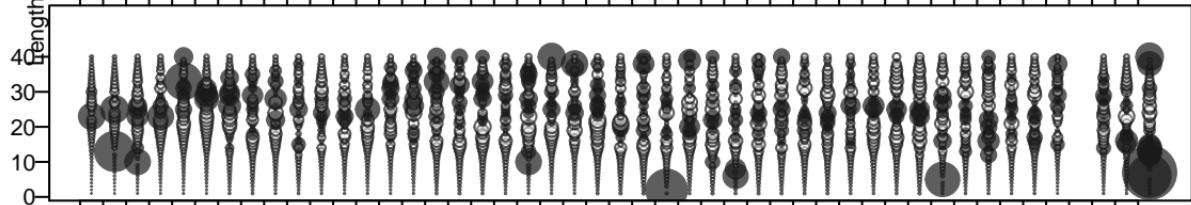
cPC



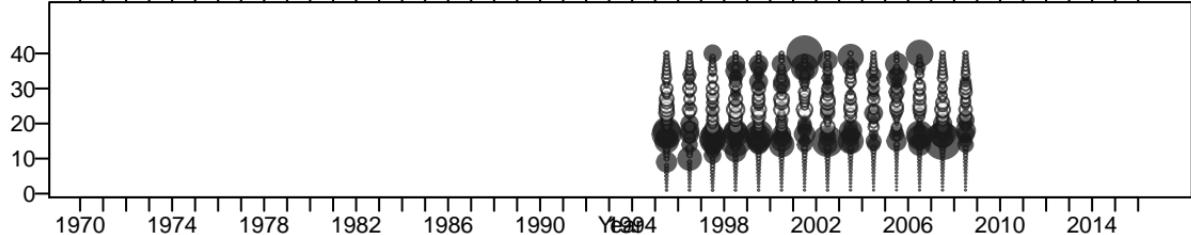
cDD



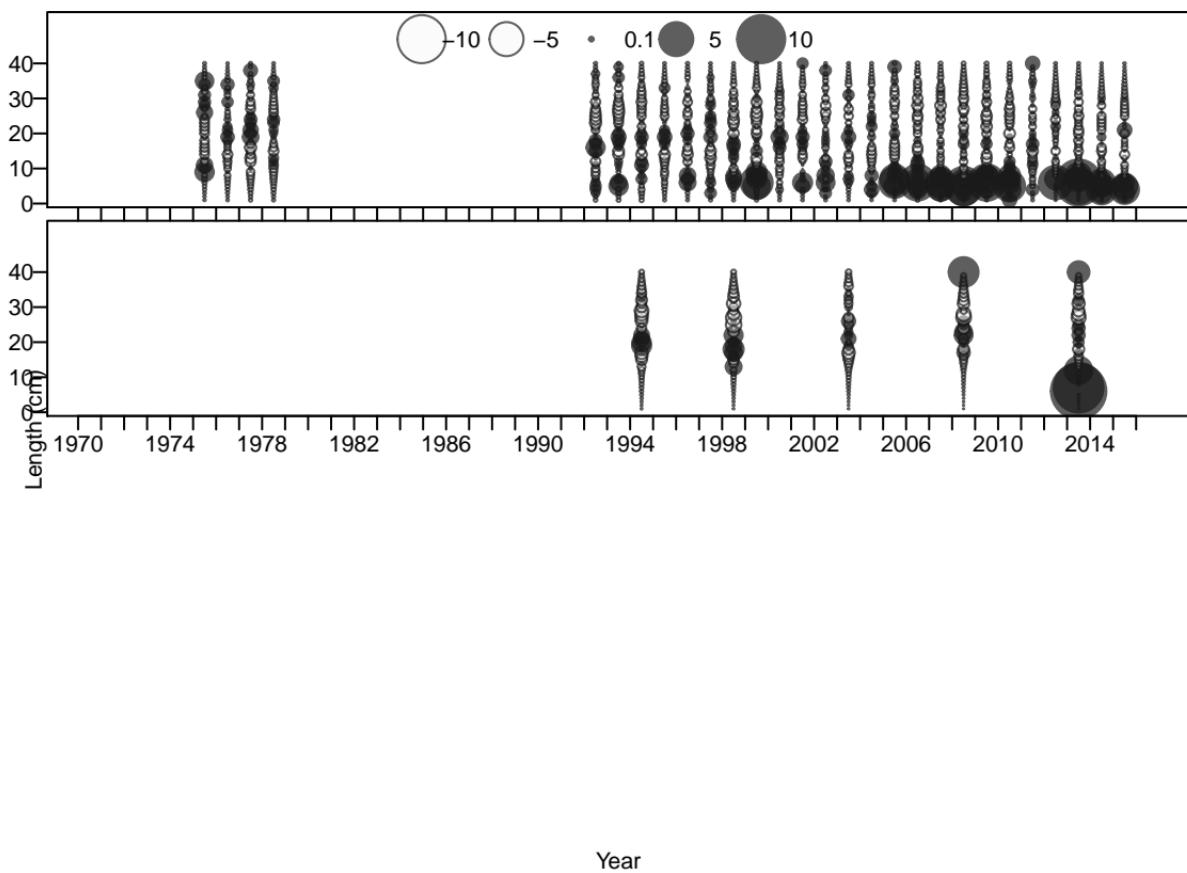
ation



urvey

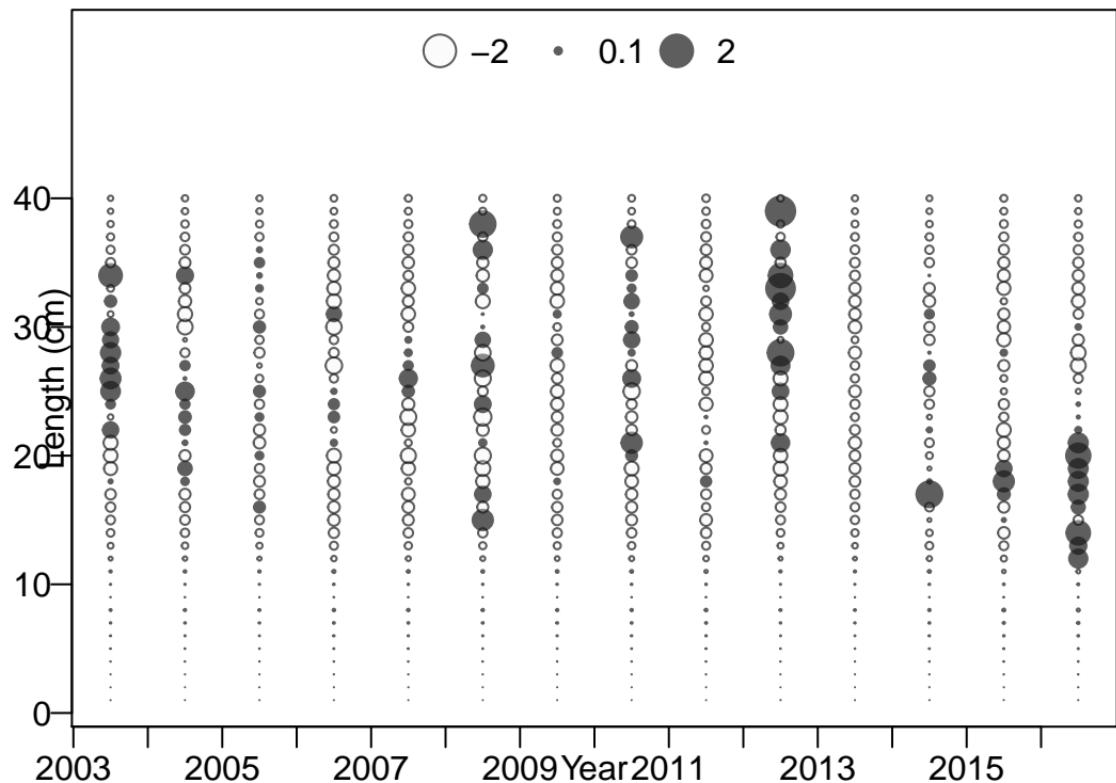


# Pearson residuals, sexes combined, retained, comparing across fleets



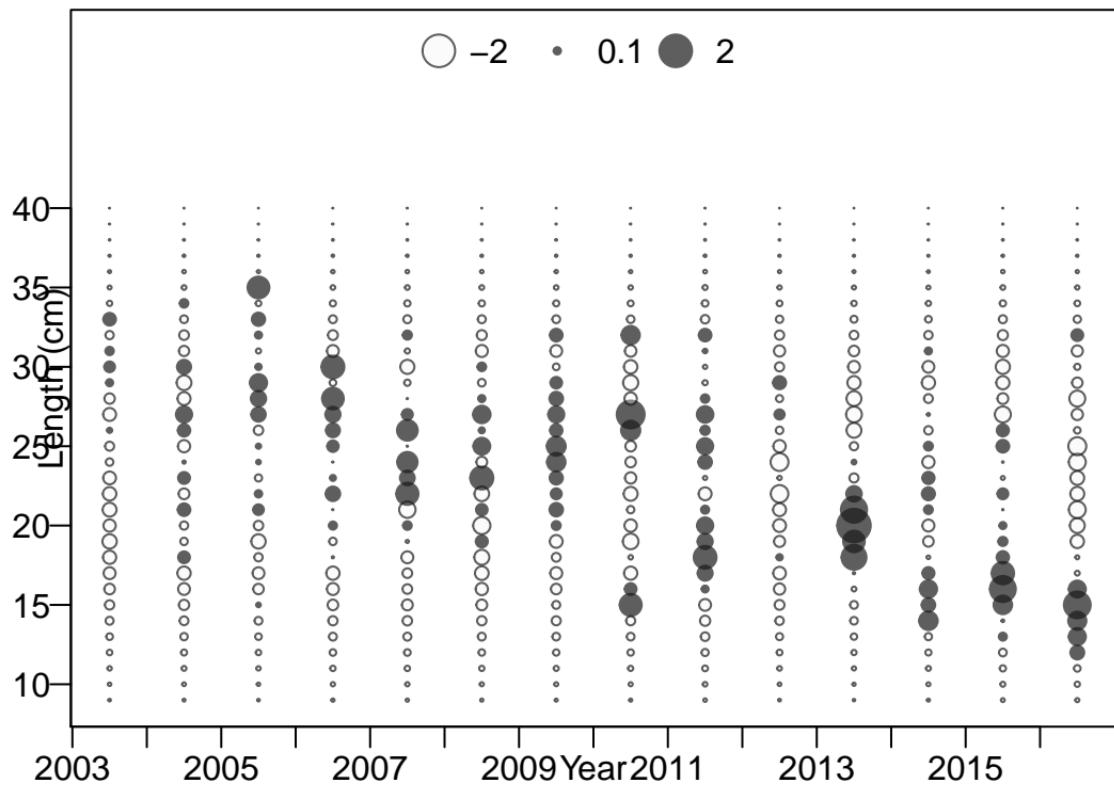
# Pearson residuals, female, whole catch, comparing across fleet

trawl

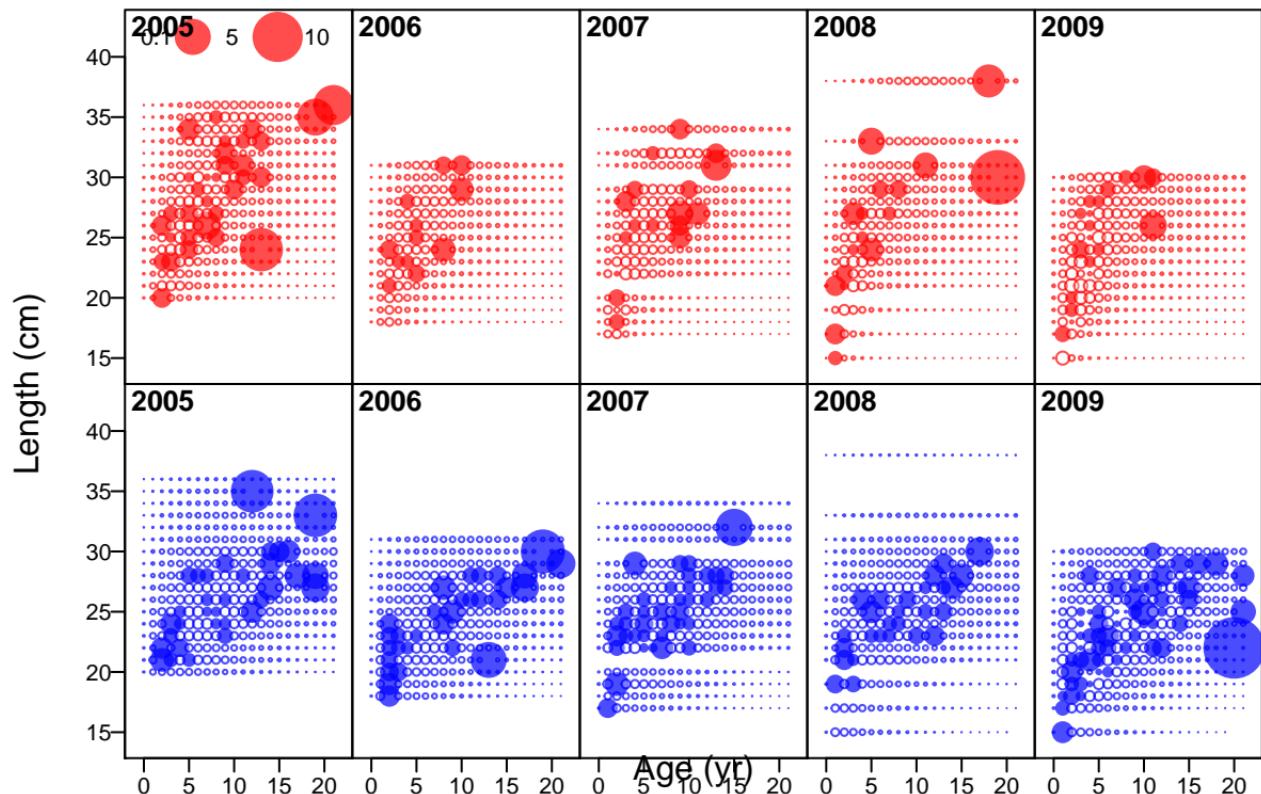


# Pearson residuals, male, whole catch, comparing across fleet

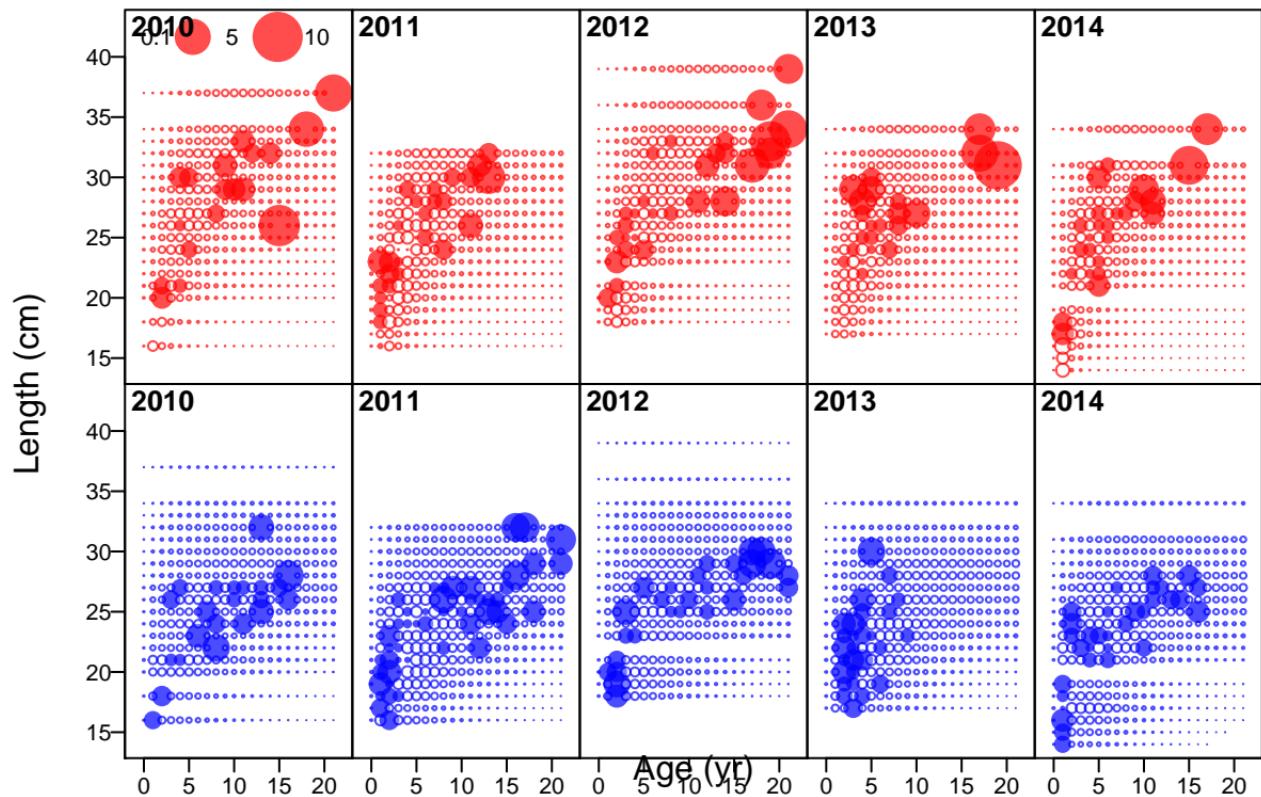
trawl



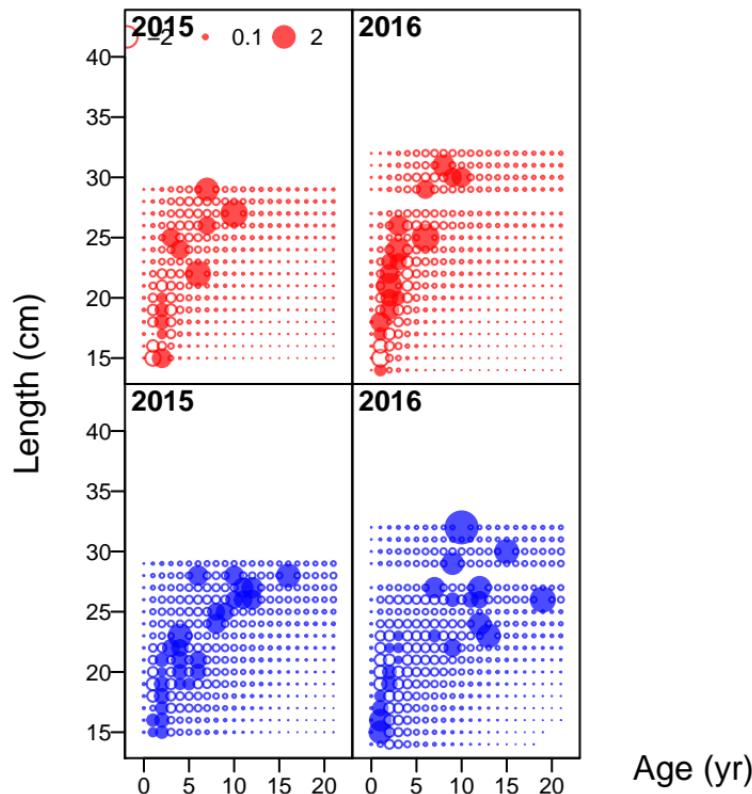
## Pearson residuals, whole catch, NWFSC Trawl (max=15.28)



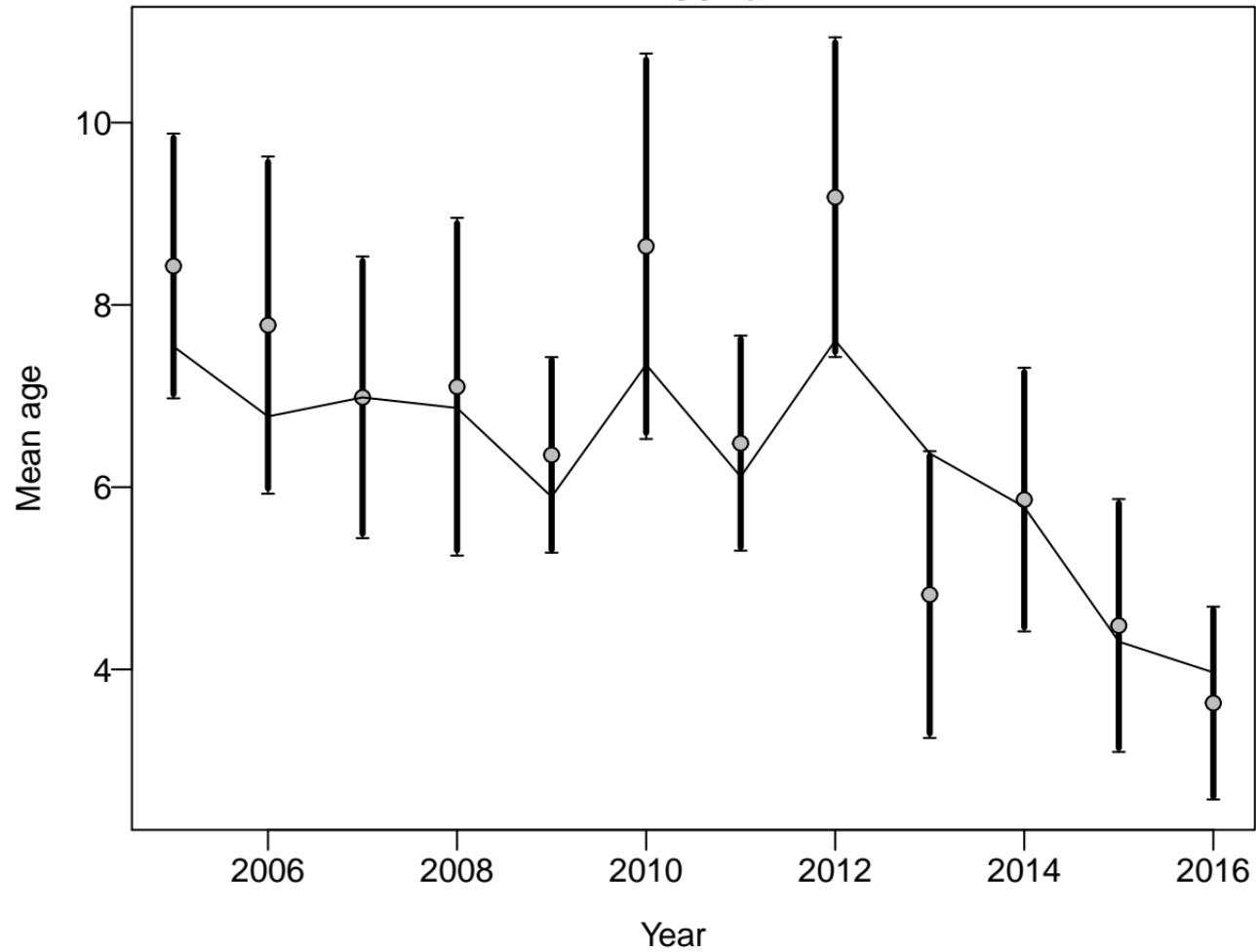
## Pearson residuals, whole catch, NWFSC Trawl (max=15.28)



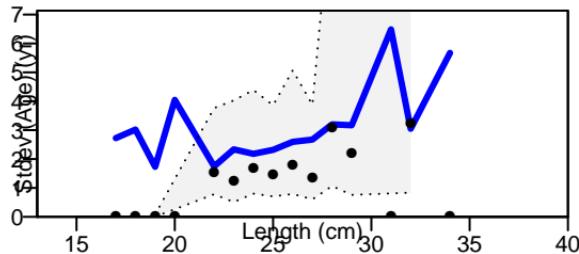
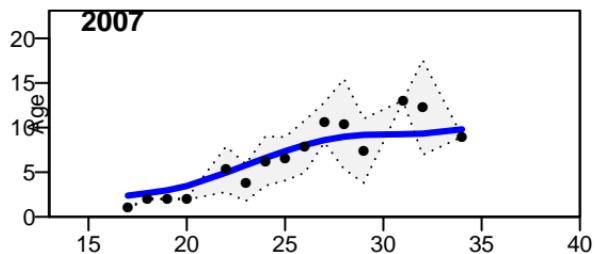
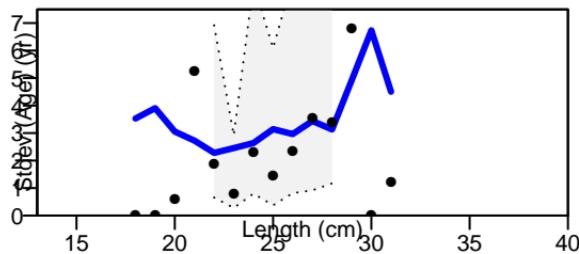
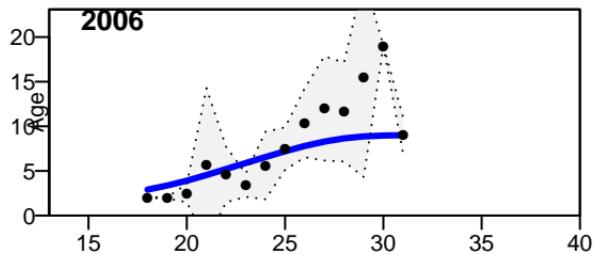
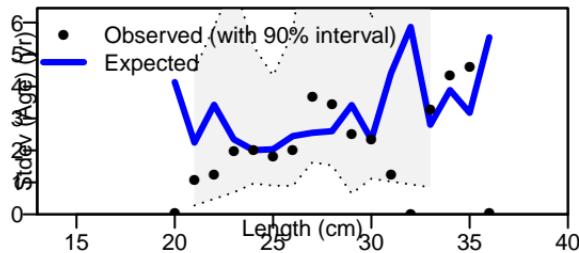
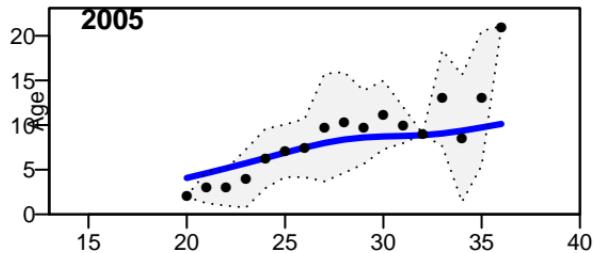
## Pearson residuals, whole catch, NWFSC Trawl (max=15.28)



### NWFSC Trawl

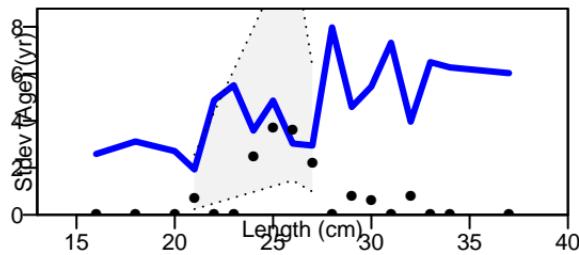
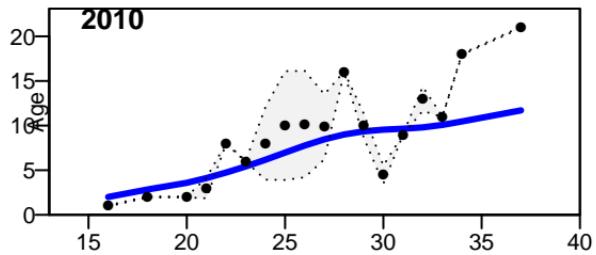
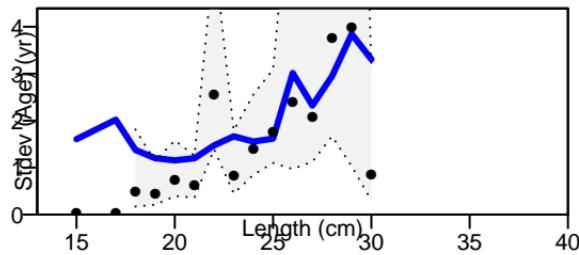
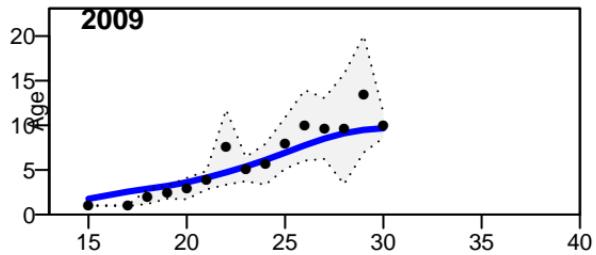
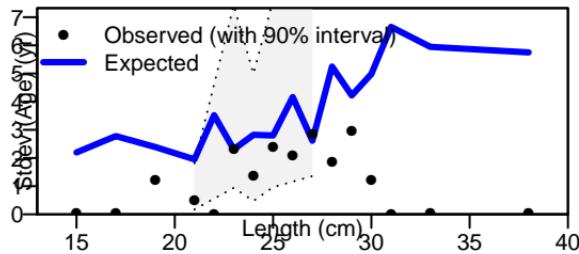
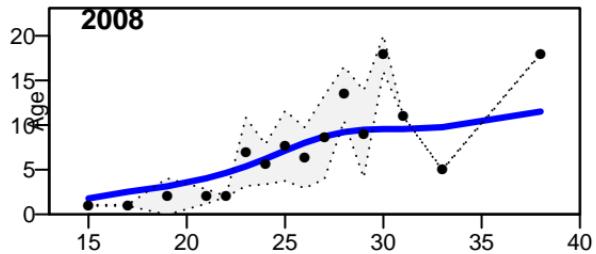


### Conditional AAL plot, whole catch, NWFSC Trawl



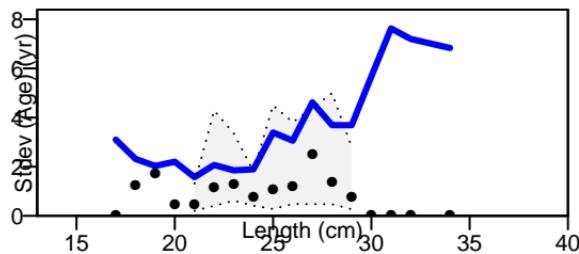
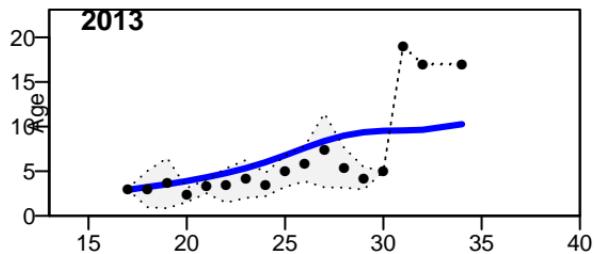
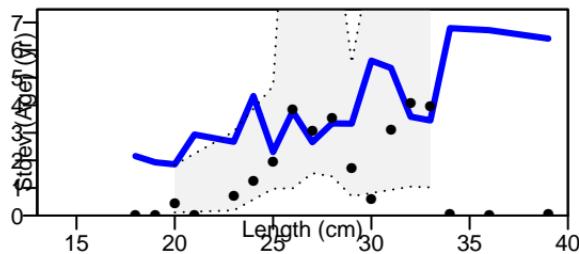
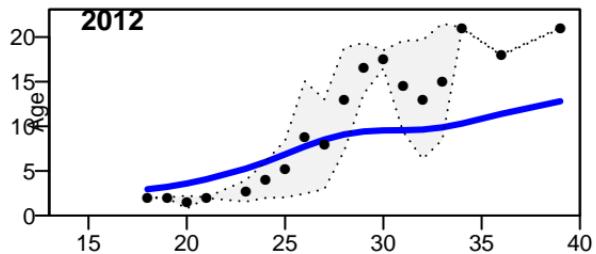
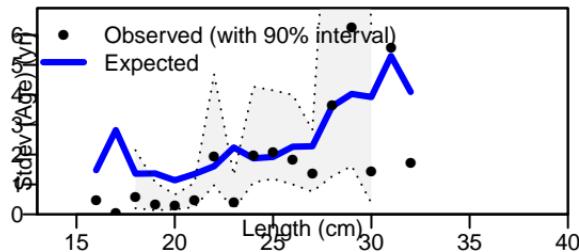
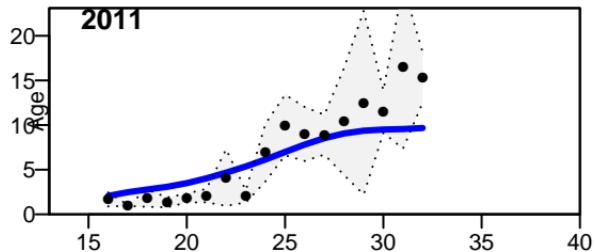
Length (cm)

### Conditional AAL plot, whole catch, NWFSC Trawl



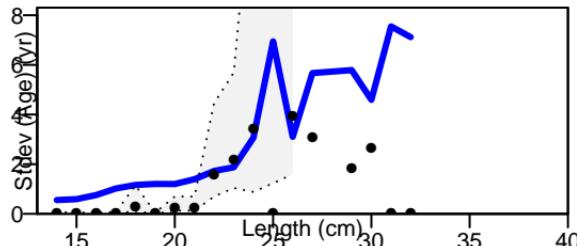
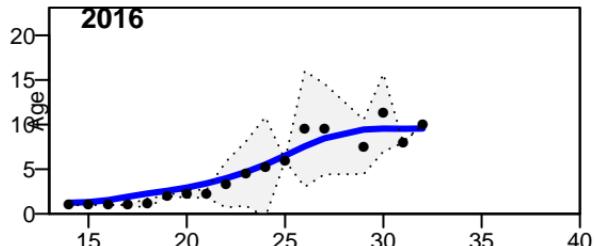
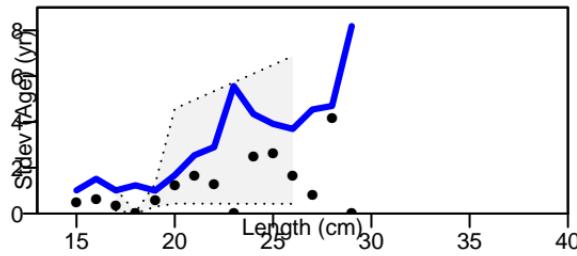
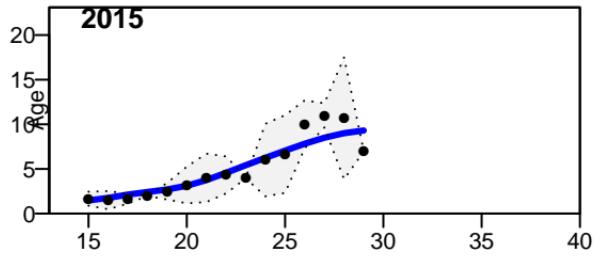
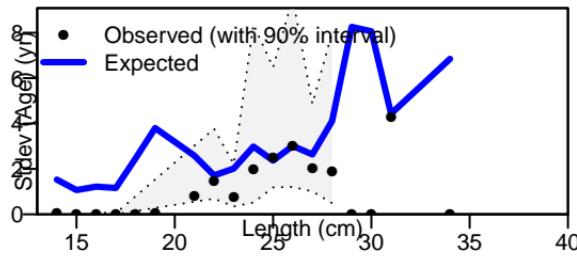
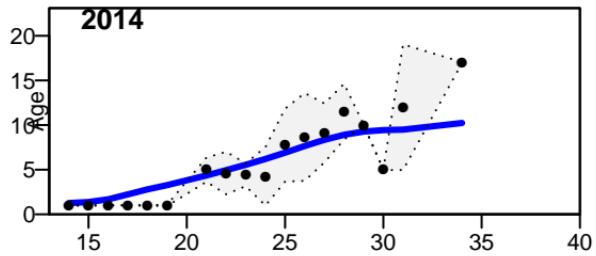
Length (cm)

## Conditional AAL plot, whole catch, NWFSC Trawl

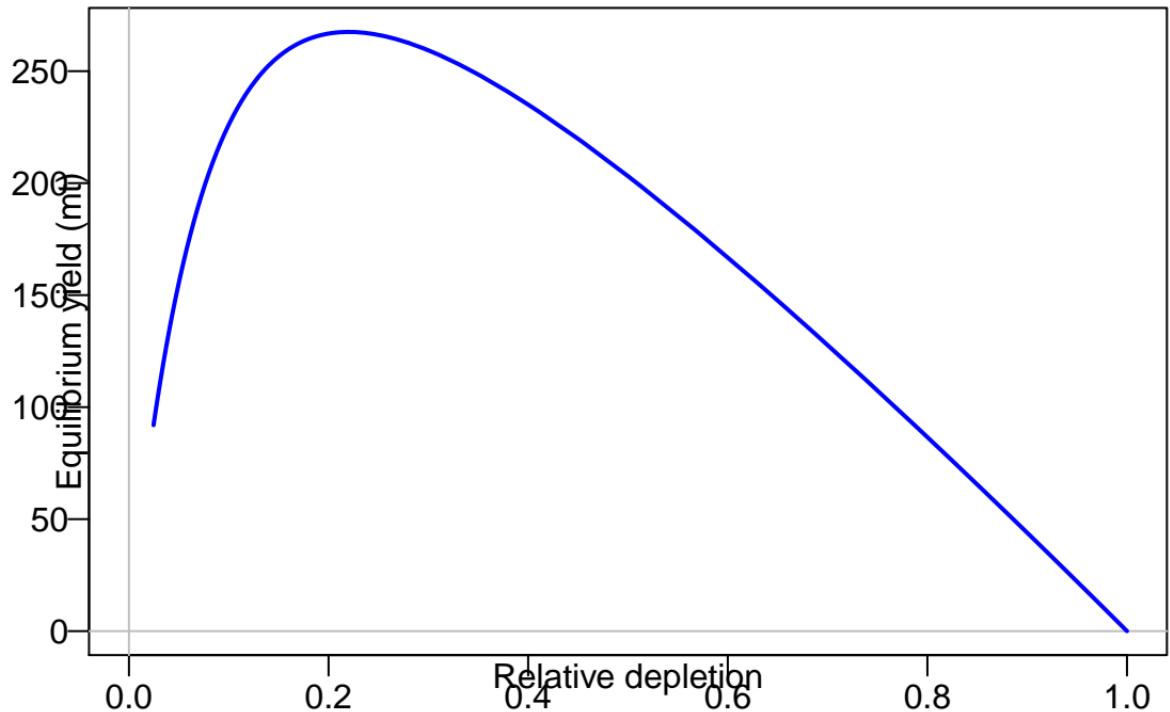


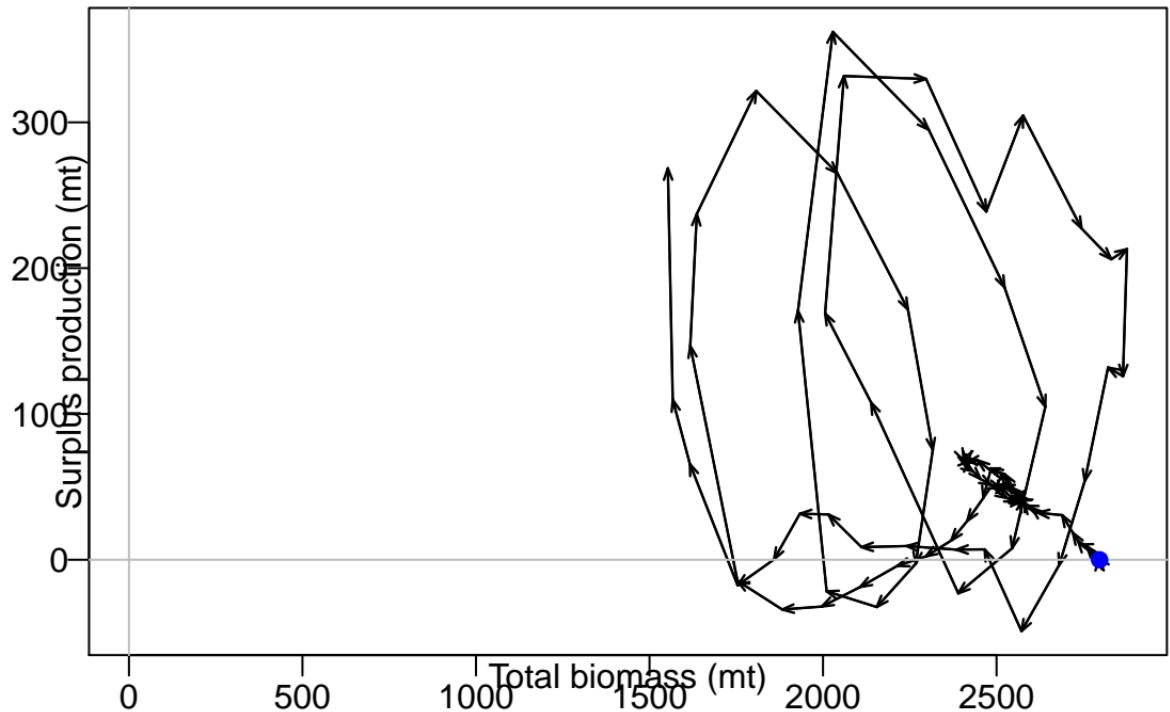
Length (cm)

## Conditional AAL plot, whole catch, NWFSC Trawl

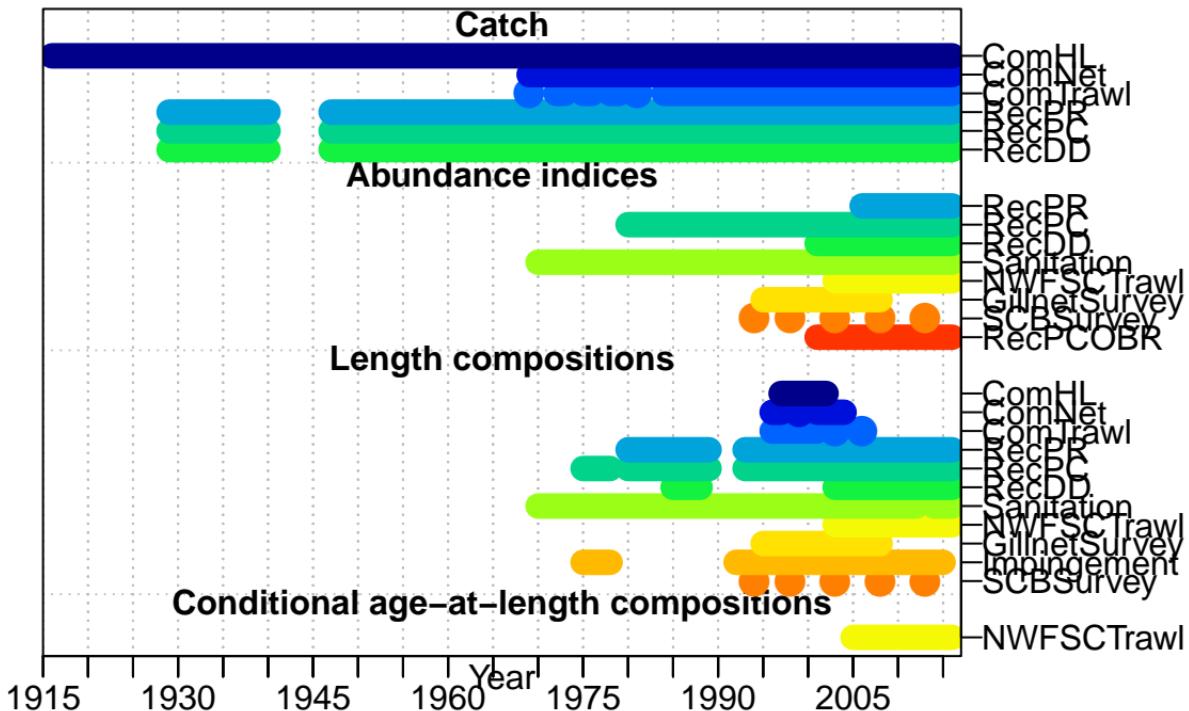


Length (cm)





## Data by type and year



Data by type and year, circle area is relative to precision within data type

