

# **Evaluation of a management measure restricting catch below 60cm**

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# Resolution C-01-06

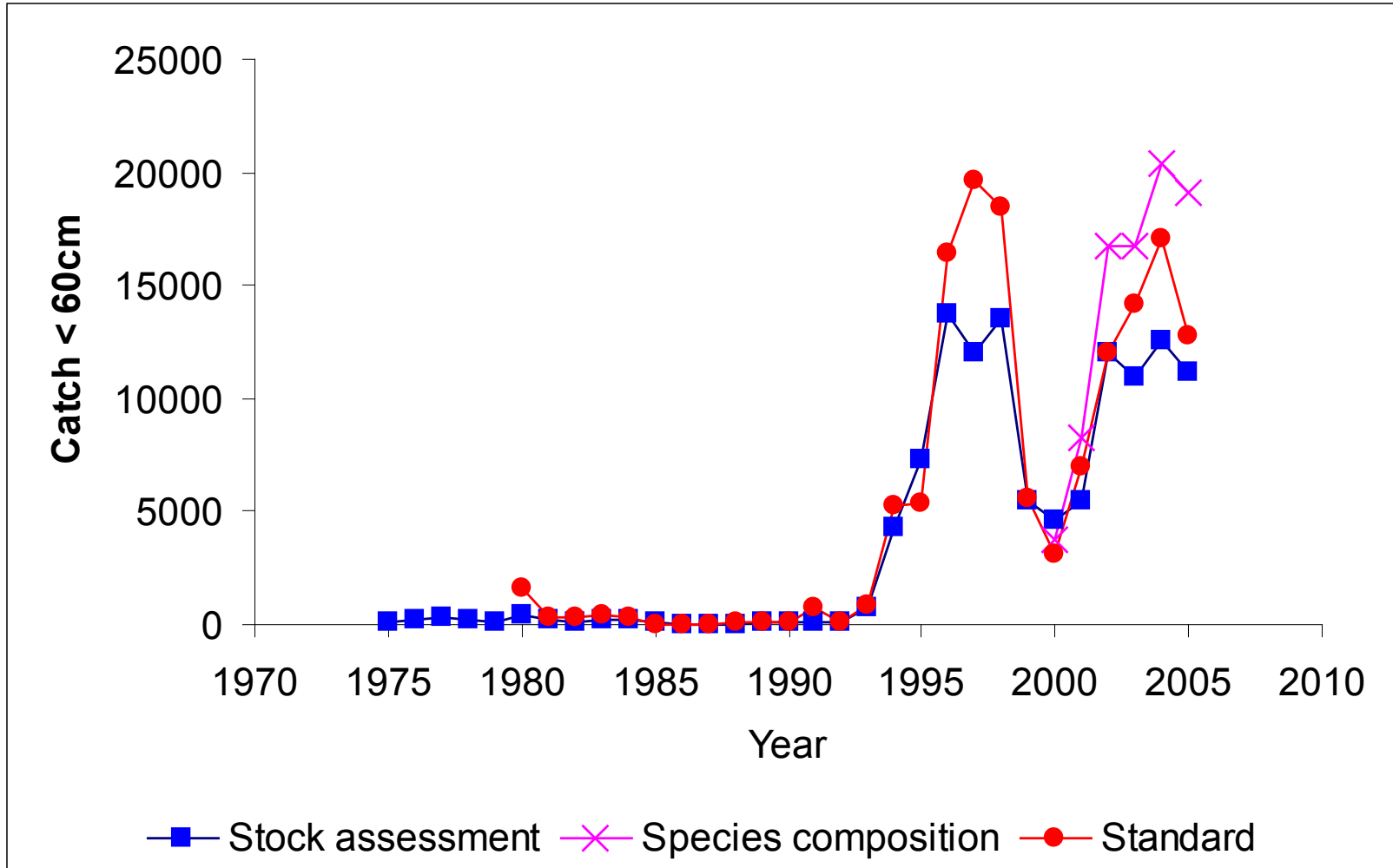
- The purse-seine fishery which takes bigeye tuna shall be closed if the Director determines, based on the best scientific and fishery data available, that the catch of bigeye tuna less than 60 centimeters has reached the level achieved in 1999, in which case he shall advise all Parties that the purse-seine fishery on floating objects shall close two weeks after such determination. However, in no event shall the fishery be closed before November 1, 2001.



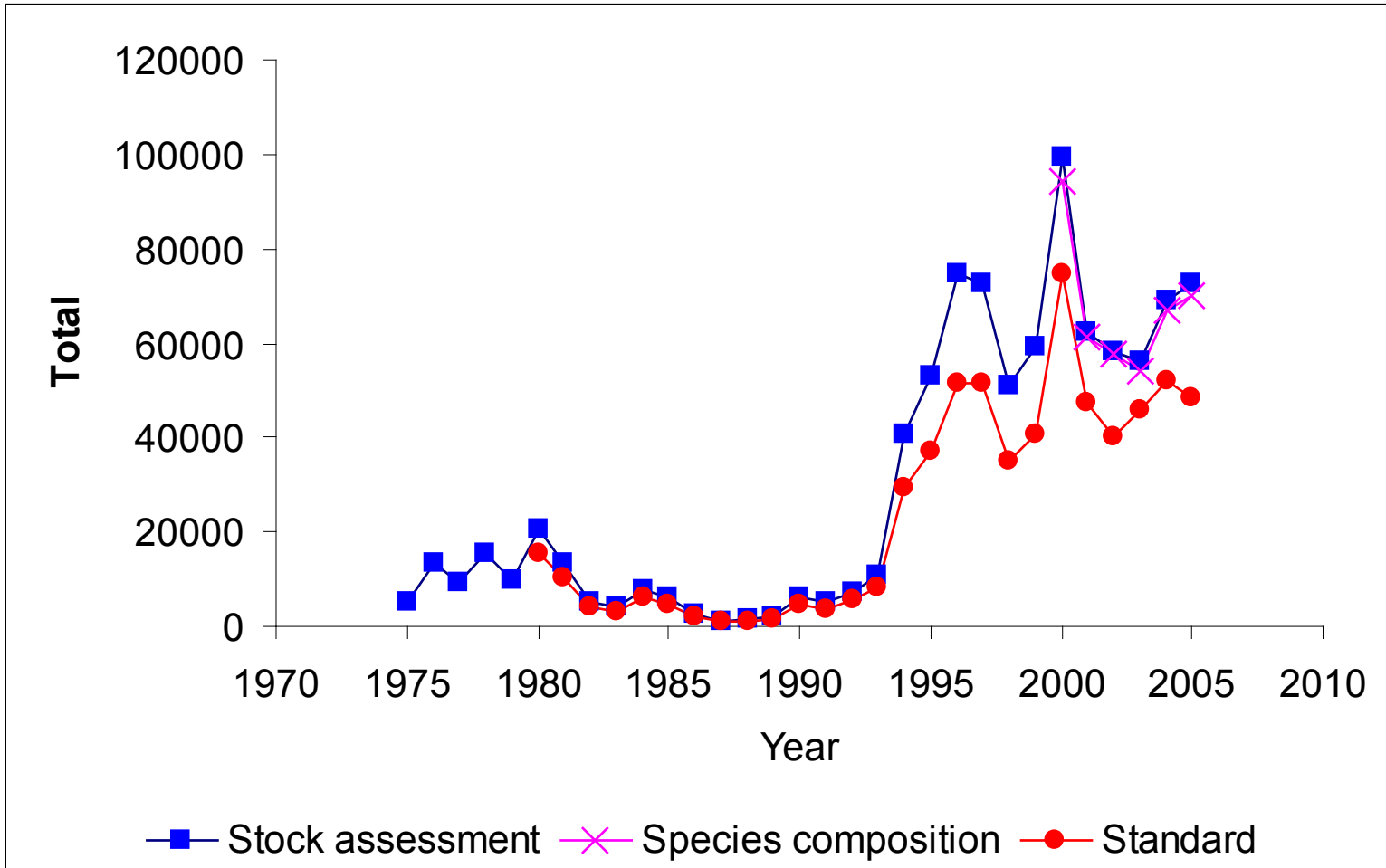
# The amount of bigeye tuna catch < 60cm was compared to indicators of stock status:

- 1) Catch < 60cm as a ratio of the total surface fleet catch
- 2) Catch < 60cm as a ratio of the total catch
- 3) Spawning biomass ratio
- 4) The scaling parameter to scale the fishing mortality in that year to the level that would produce MSY
- 5) Average weight in the catch
- 6) The fishery impact
- 7) Recruitment
- 8) Exploitation rate on fish < 60cm (ages 1-5 quarters)

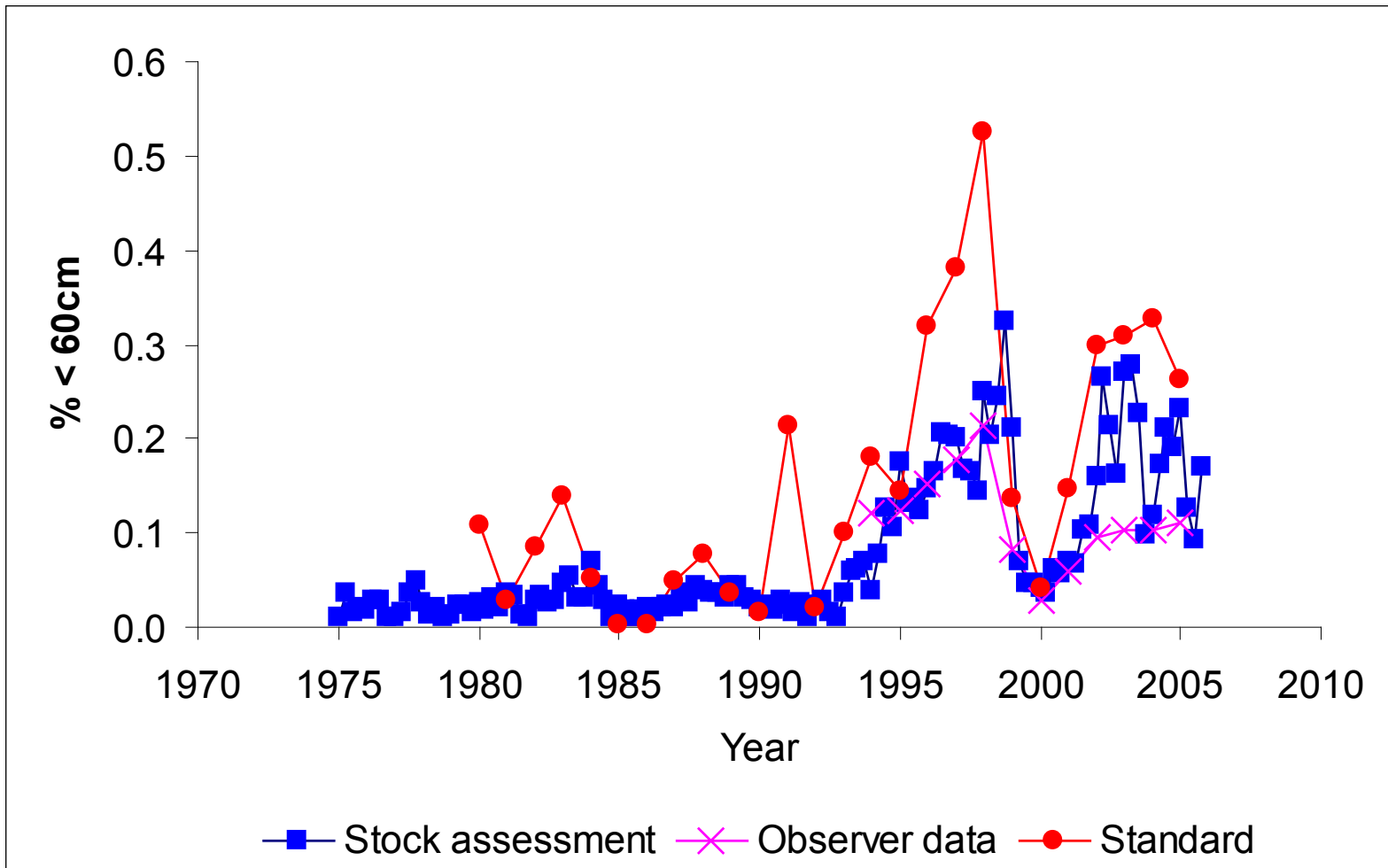
# Catch: <60cm



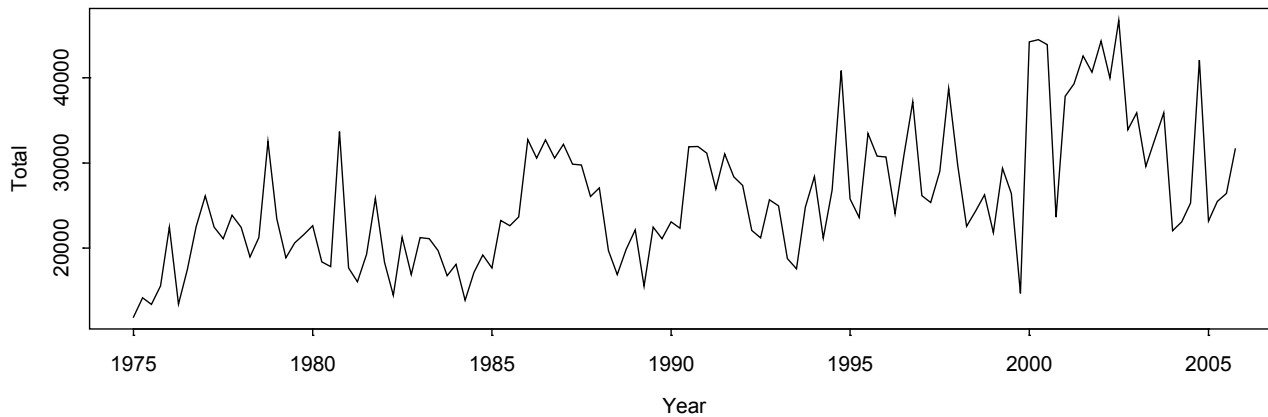
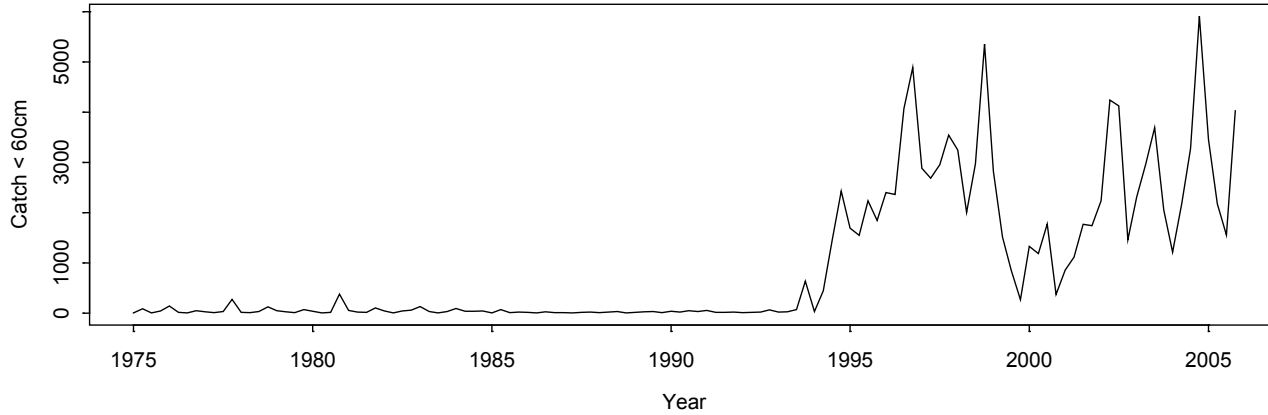
# Catch: Total



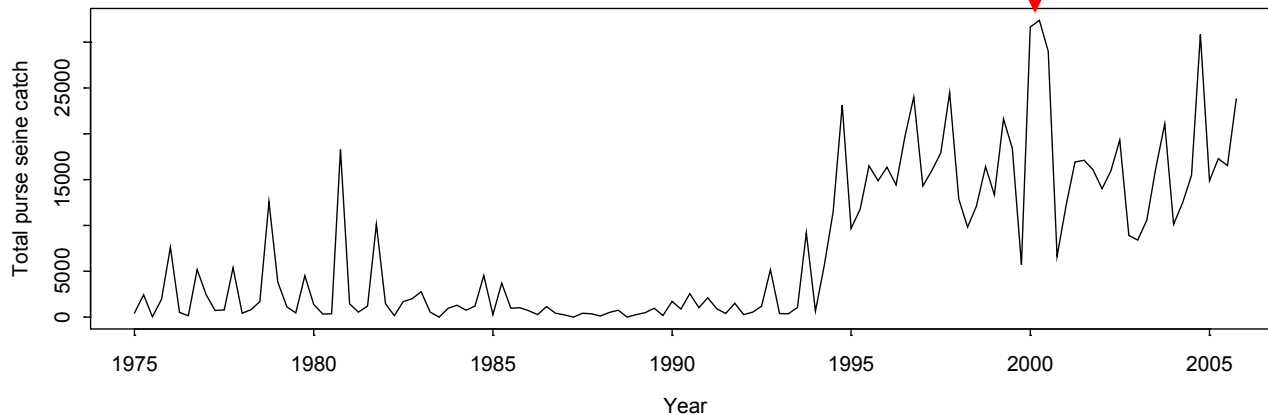
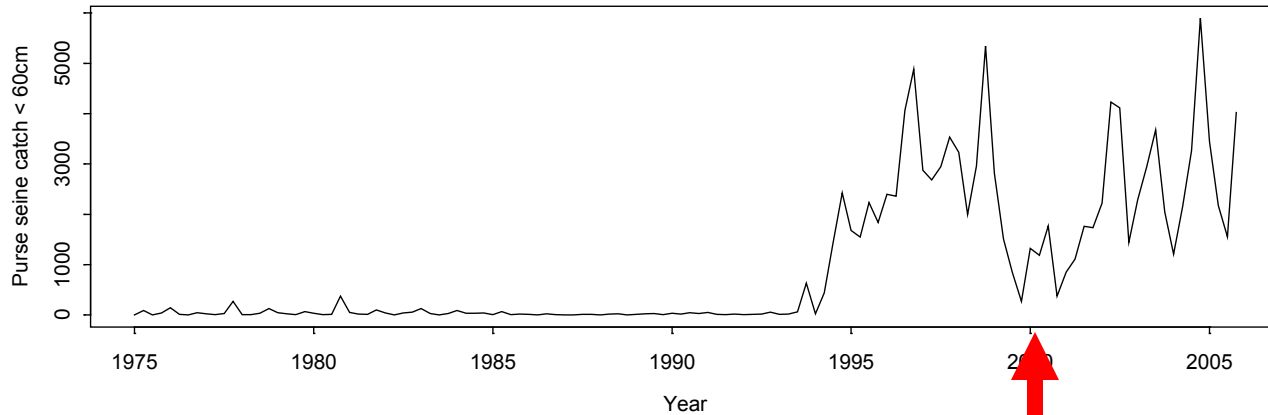
# Proportions



# Catch: <60cm and total

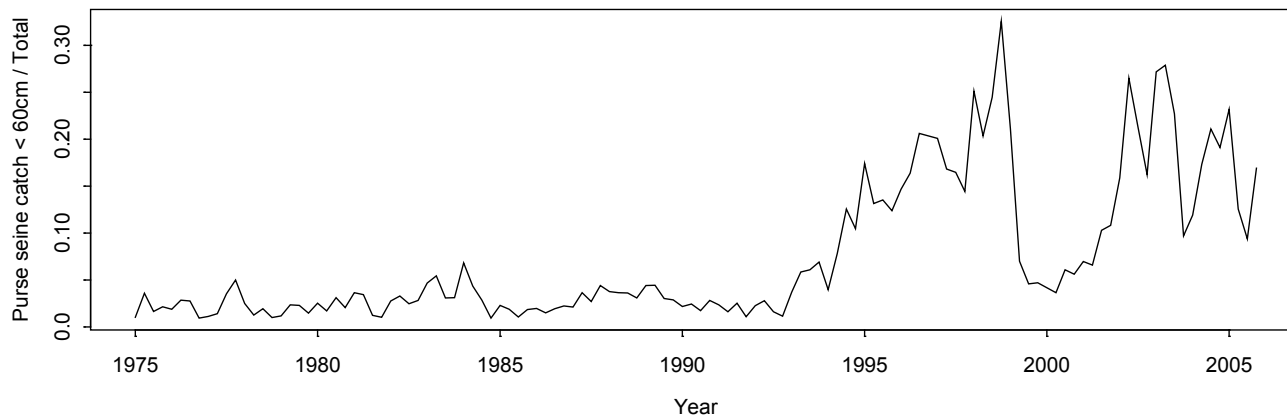
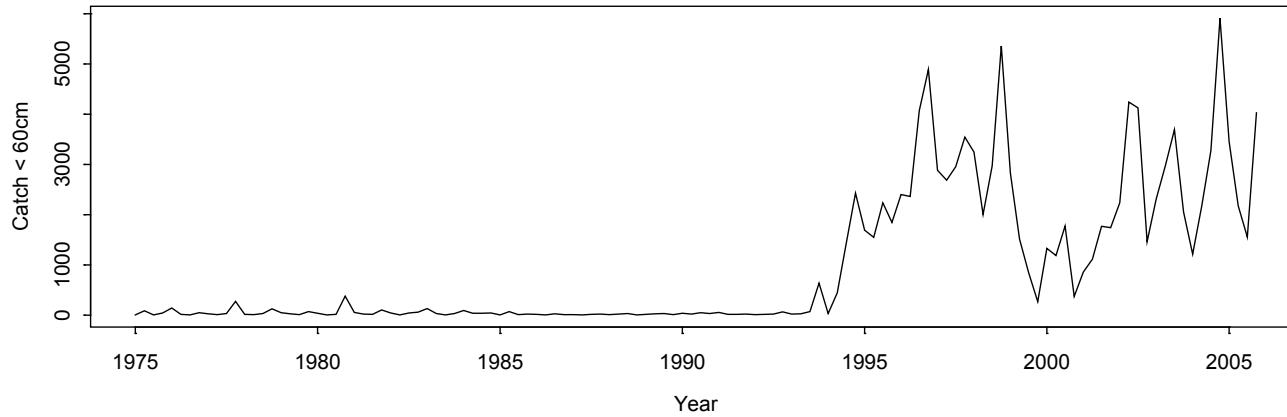


# Purse seine catch: <60cm and total

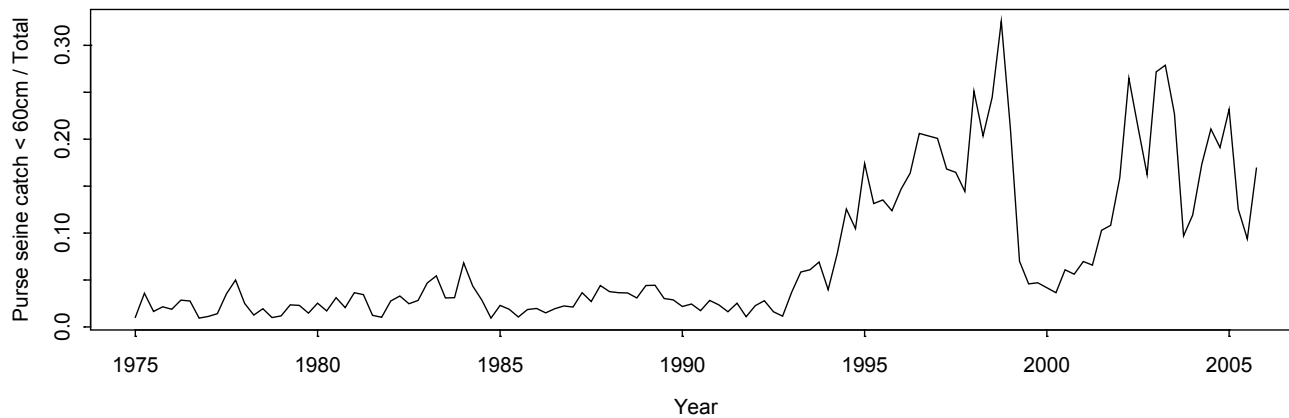
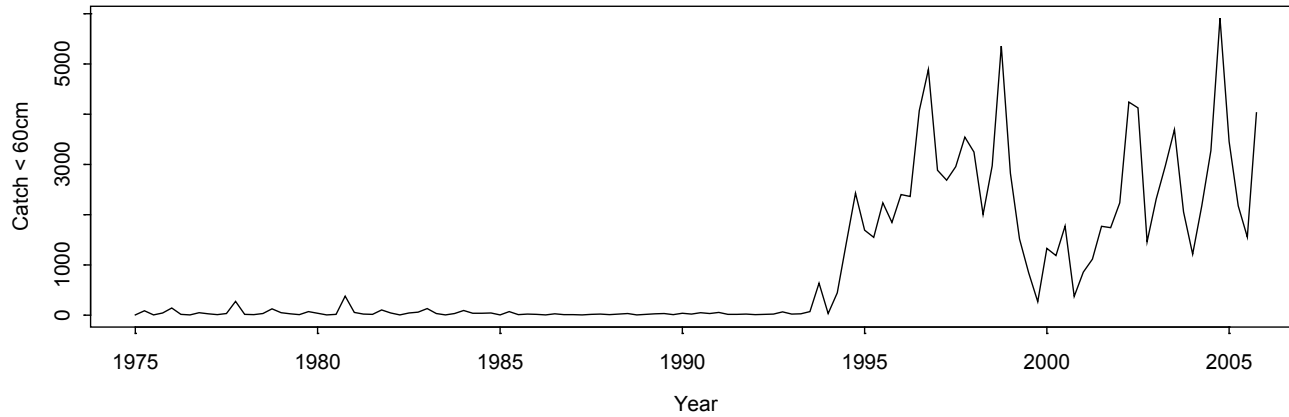




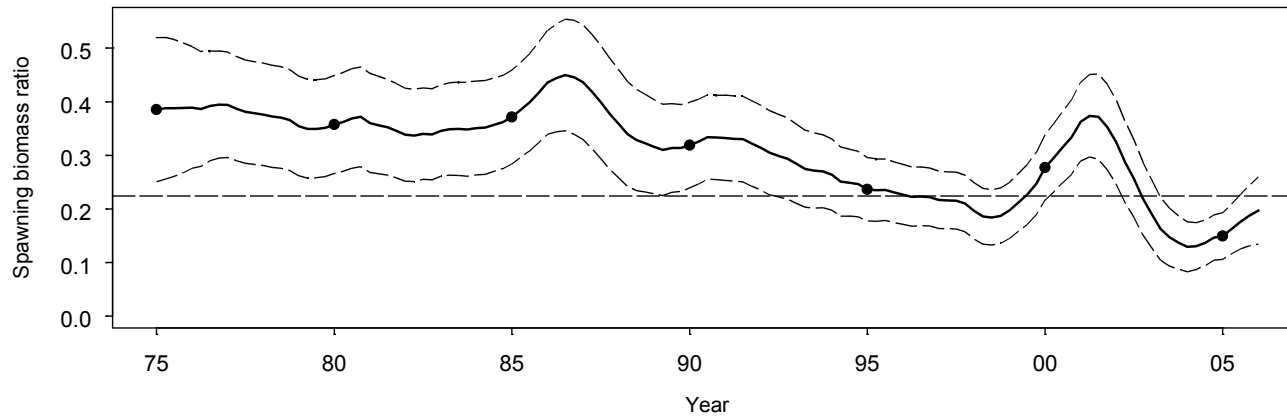
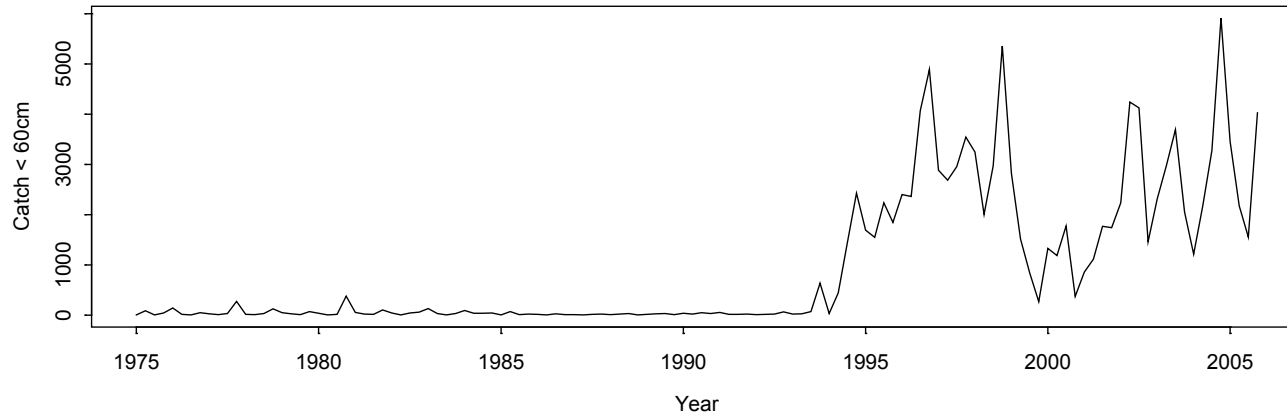
# Proportion <60cm



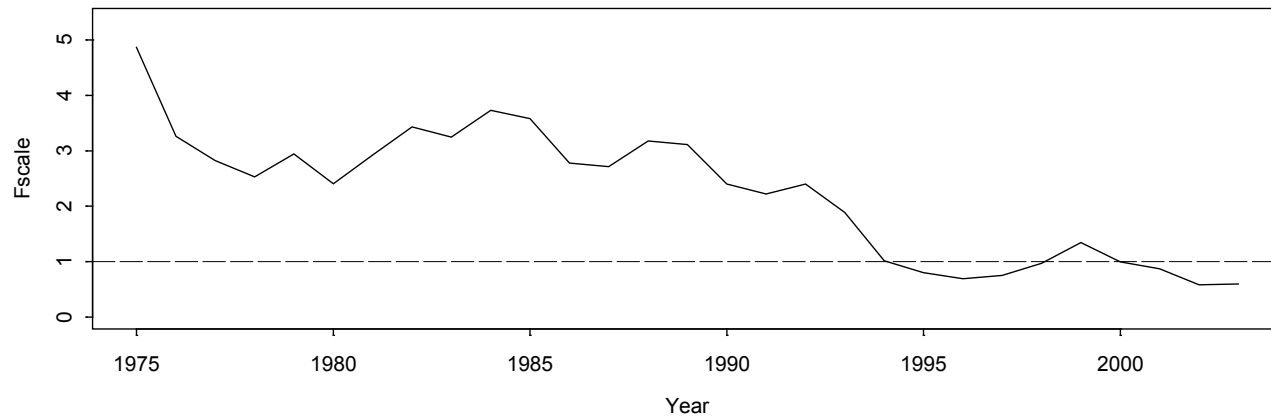
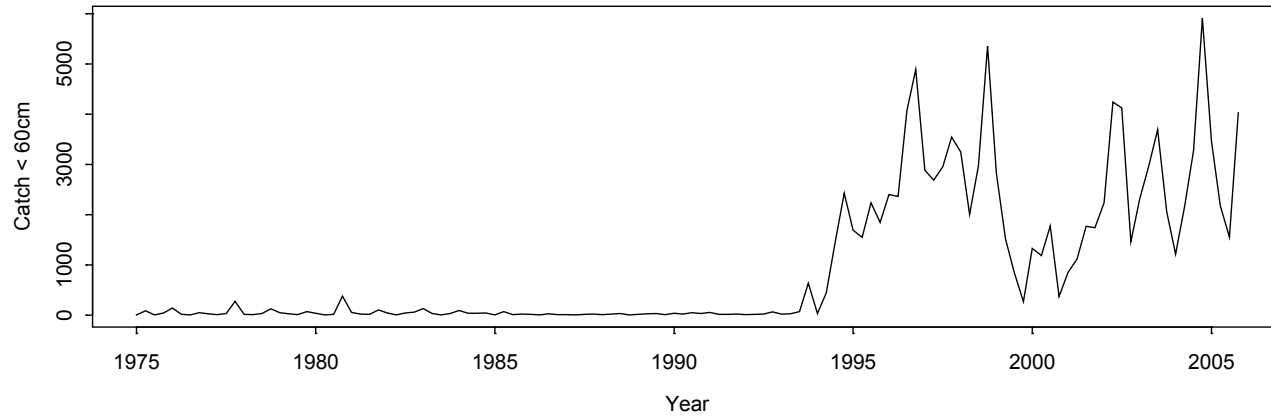
# Proportion purse seine catch <60cm



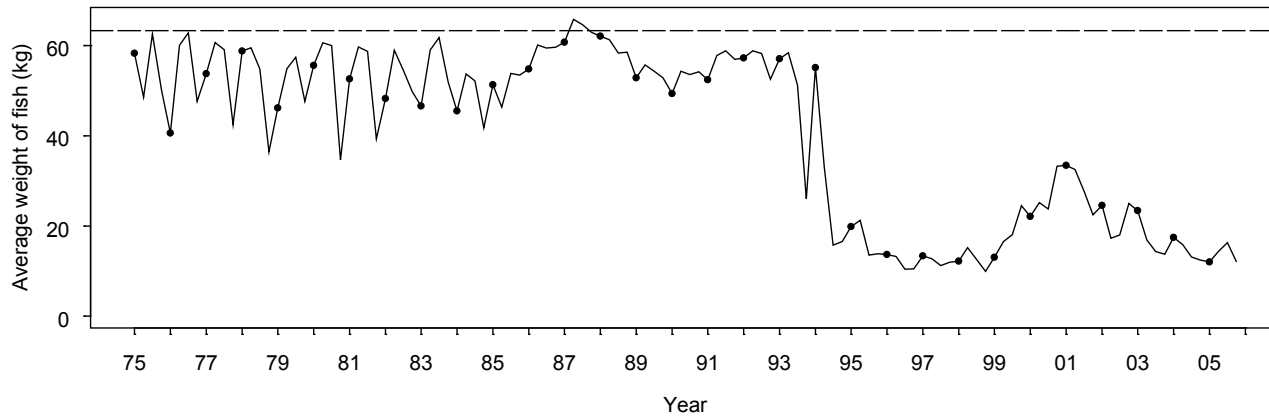
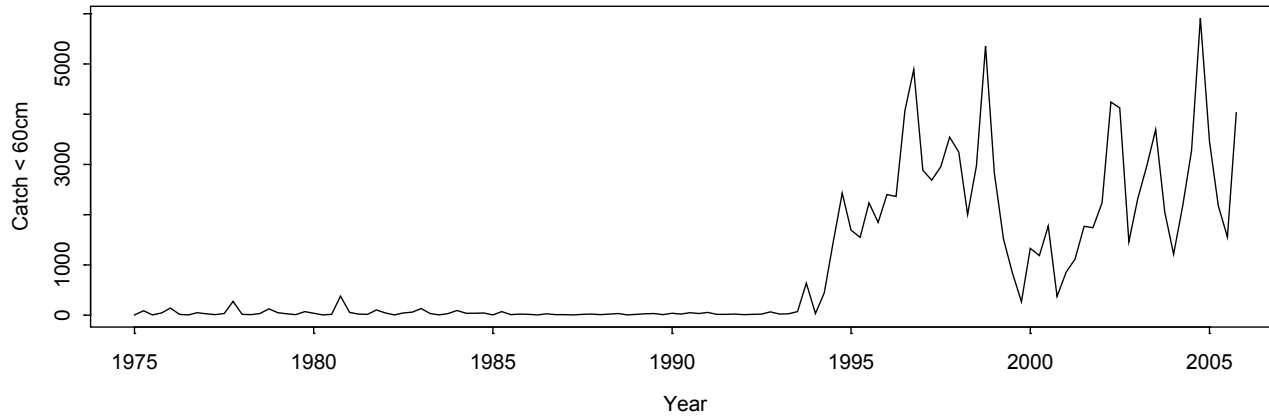
# SBR



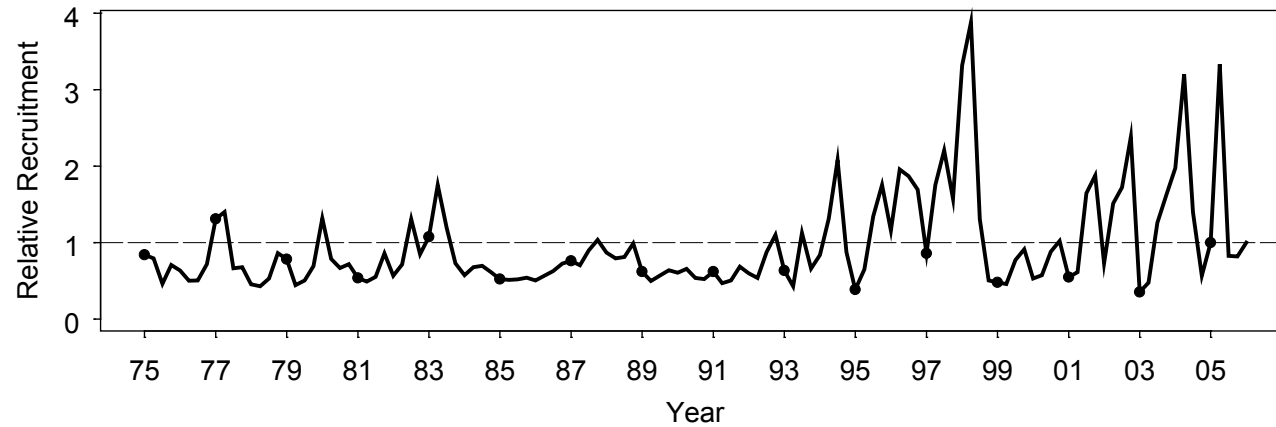
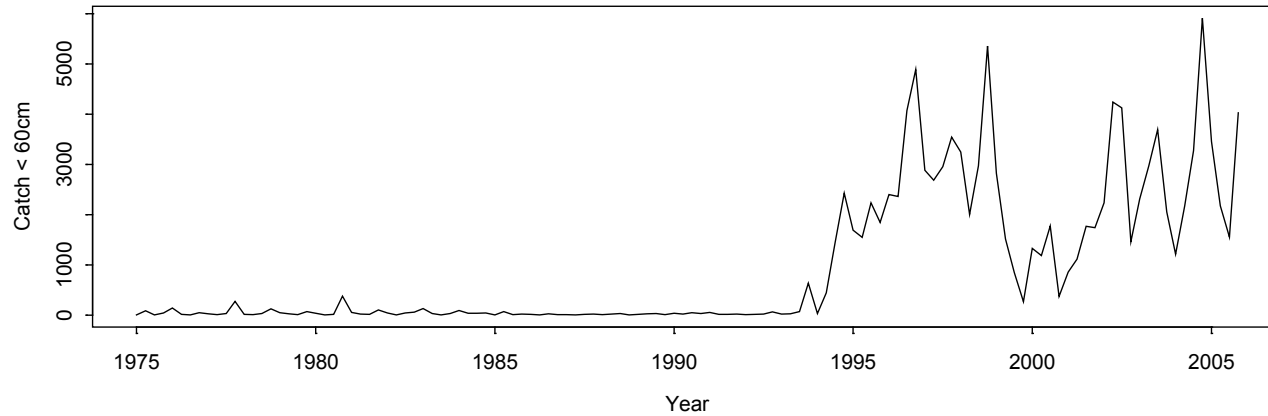
# F multiplier



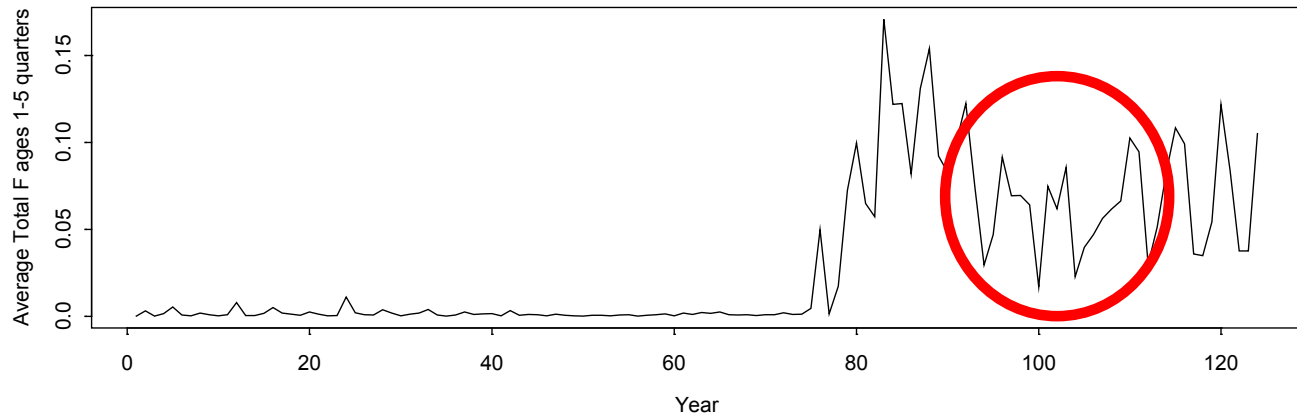
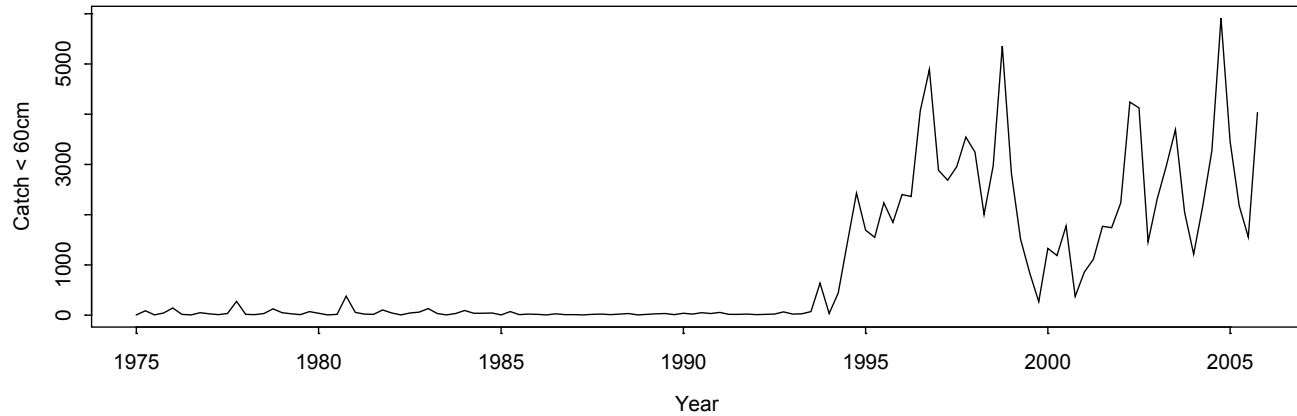
# Average weight



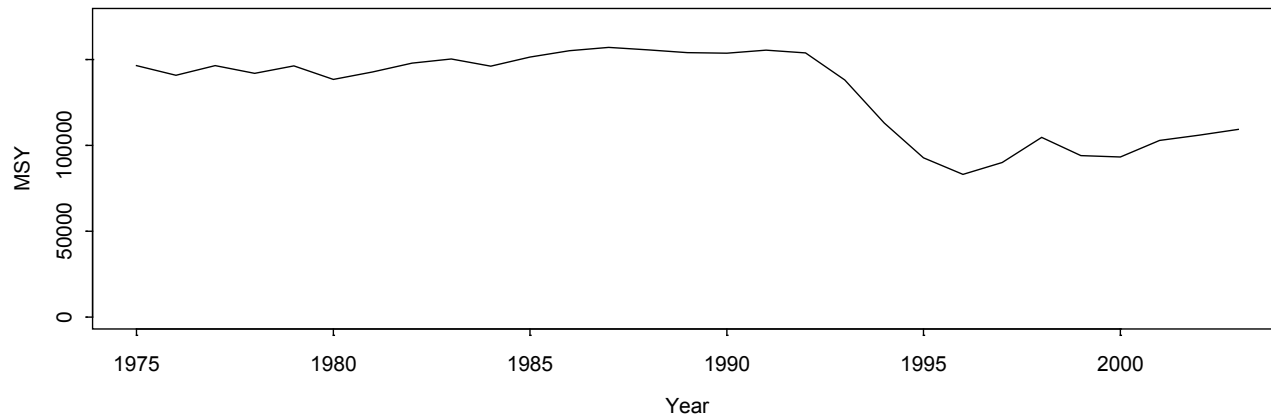
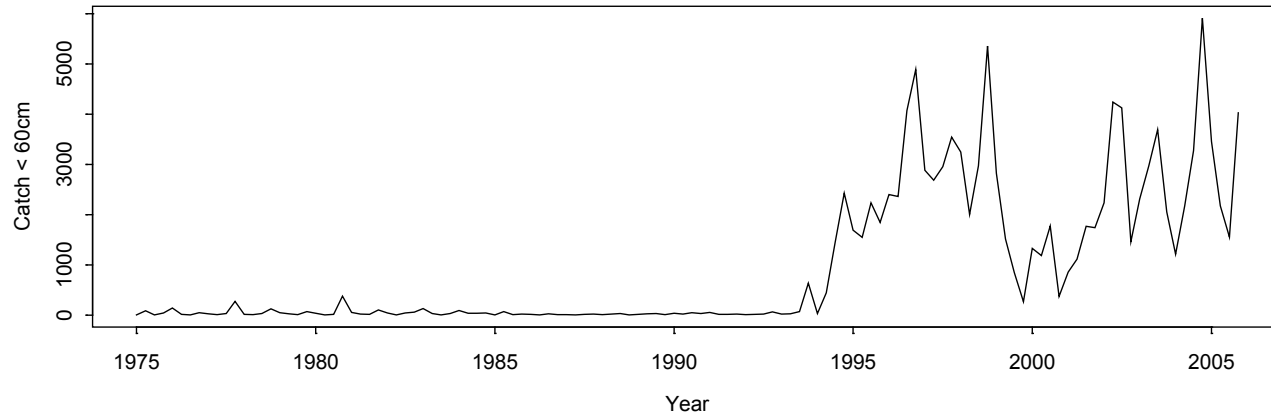
# Recruitment



# Fishing mortality <60cm



# Recruitment





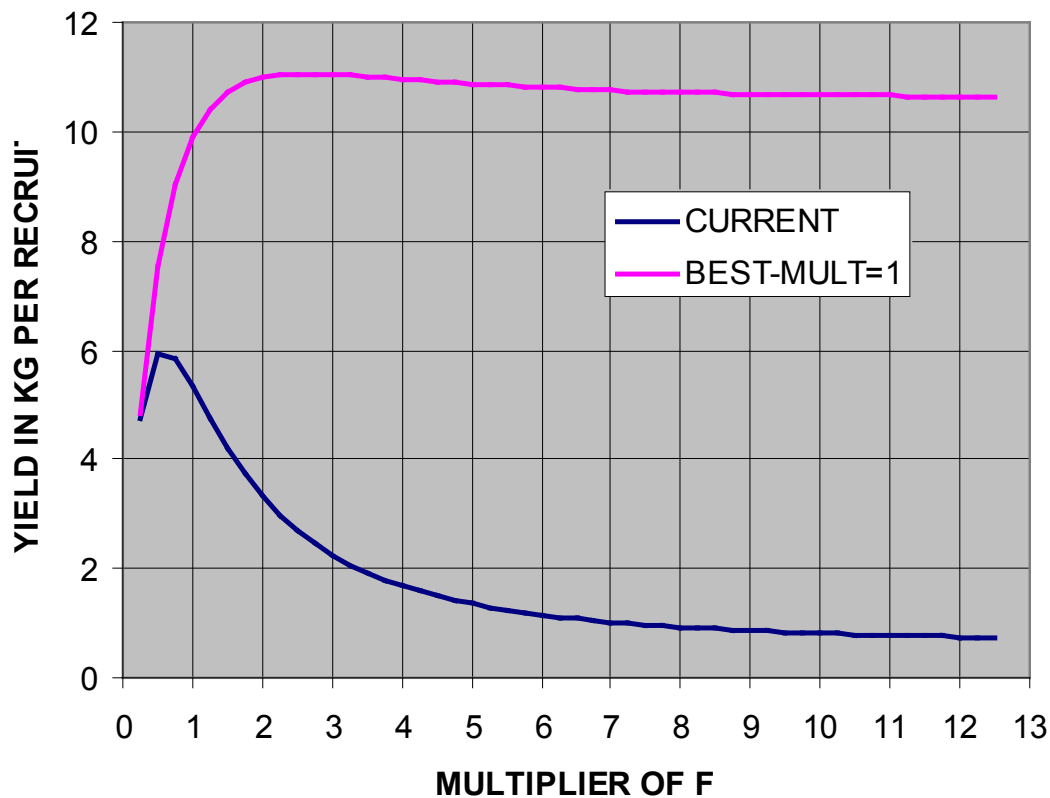
# Yield per recruit analysis conducted under three scenarios:

1. No change in the relative age-specific fishing mortality;
2. 50% reduction in  $F$  for ages 5 quarters and younger; and
3.  $F = 0$  for ages 5 quarters and younger.

# Recruitment

Scenario	Y/R < 60 cm	Y/R all sizes	Percent small	Percent increase
1	0.7562	5.3363	14.2	0 %
2	0.4614	6.6741	6.9	25 %
3	0.0000	8.4546	0.0	58 %

# YPR 1) current age-specific fishing mortality and 2) age-at-entry (age 11 quarters) maximizing YPR under current effort levels (Best-Mult).



**YPR 1) current age-specific fishing mortality and 2) F for 5 quarters and less = 0 (ENTER QR 6).**

