

# 7/18 : 1-A-II

## ABT-MSE Operating model fitting report

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*January 18, 2017*

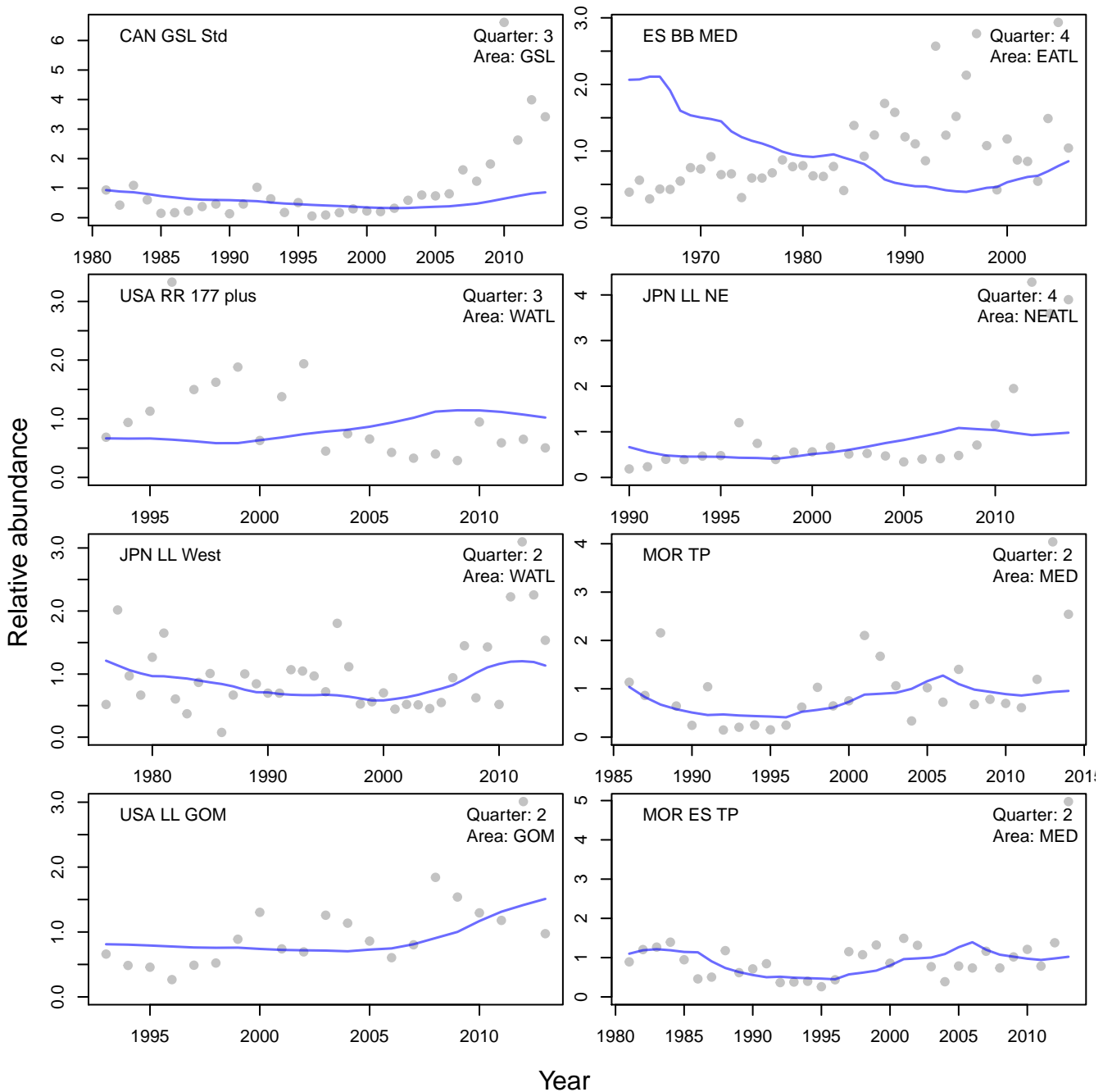
### Operating model scenario is:

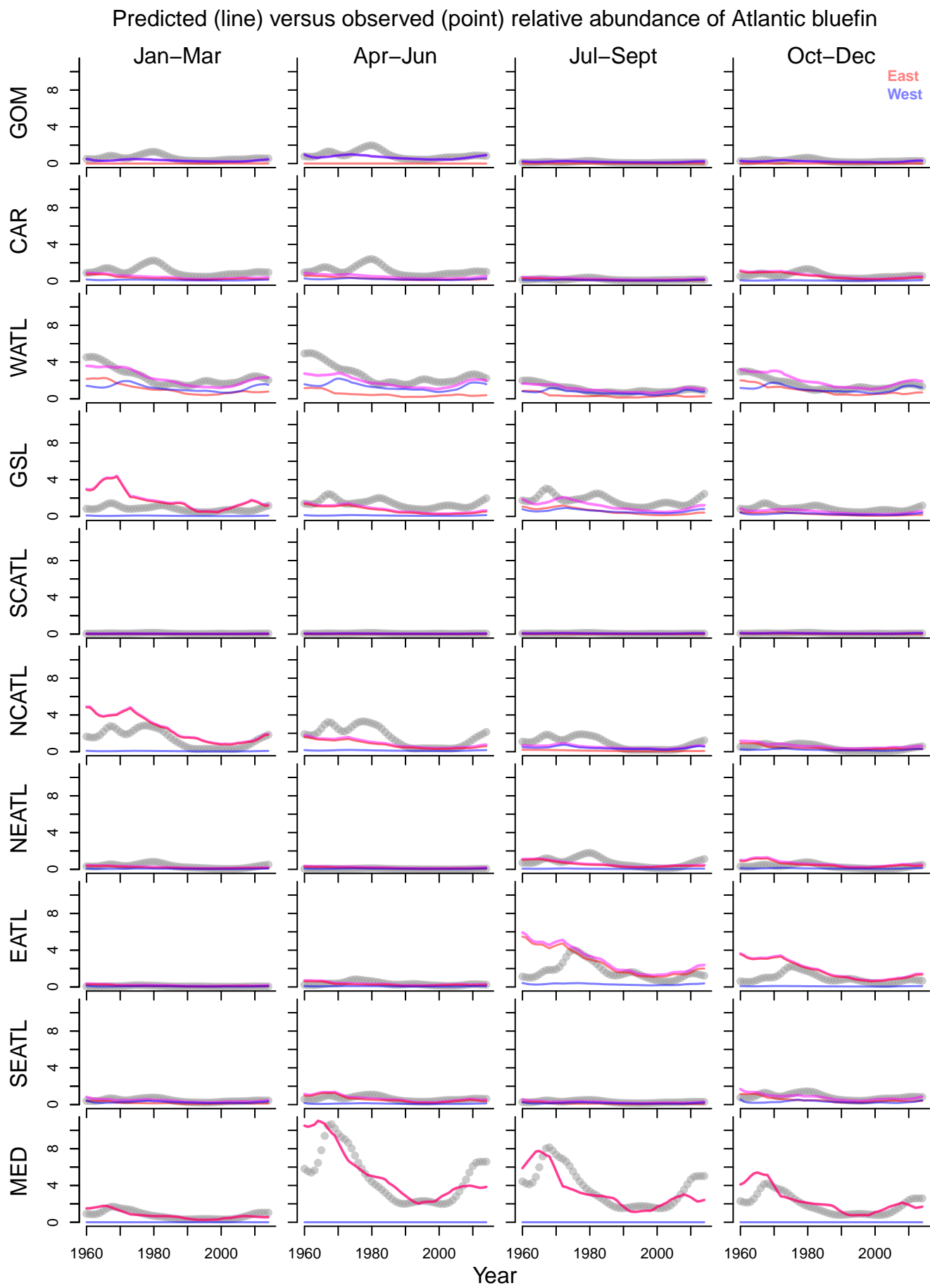
L1: West - Hockey stick, East - '83+ B-H  $h=0.98$

L1: West - Best estimate, East - Best estimate

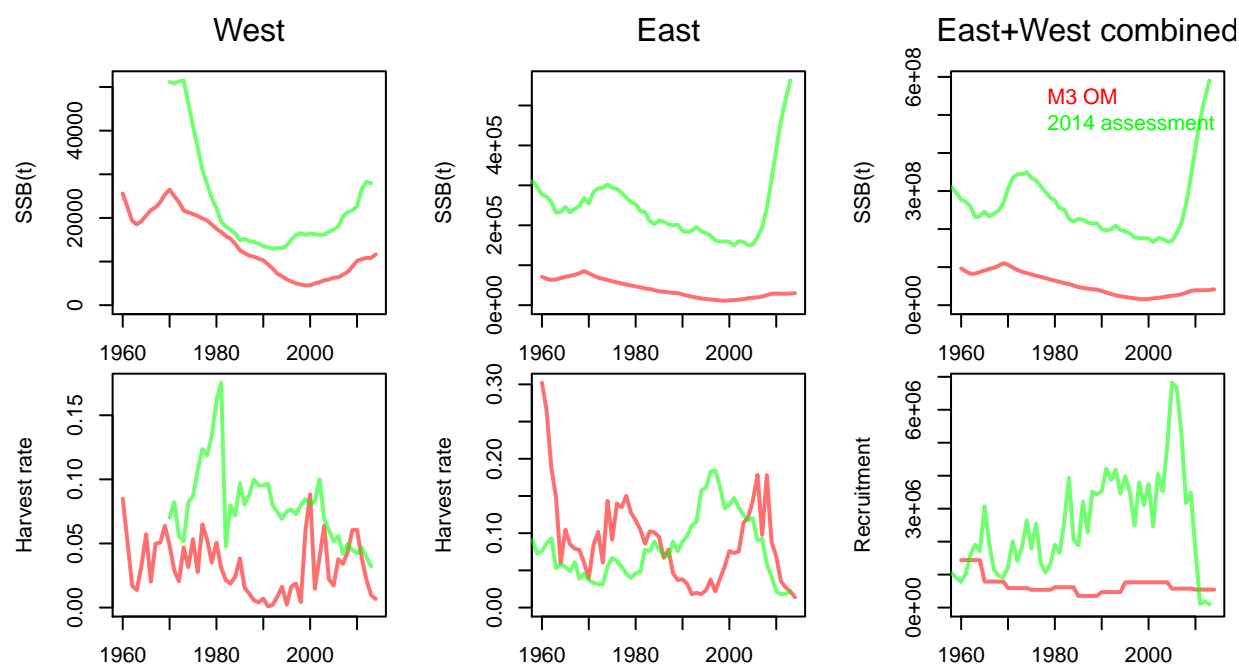
L2: West - M by age, older maturity, East - M constant, older maturity

### Fits to CPUE indices of relative abundance

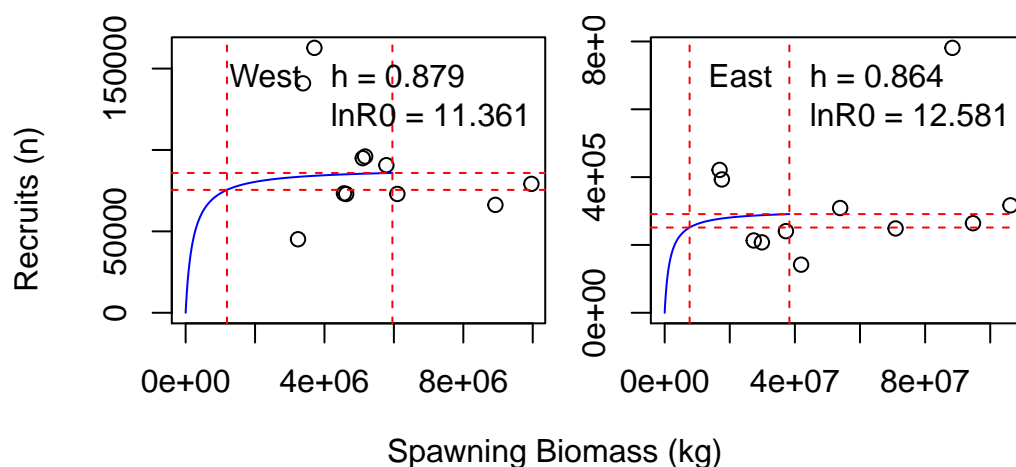




# SSB, recruitment and F comparison with 2014 assessment (by East/West area, not East/West stock)



## Stock-recruitment relationships (by East/West stock)



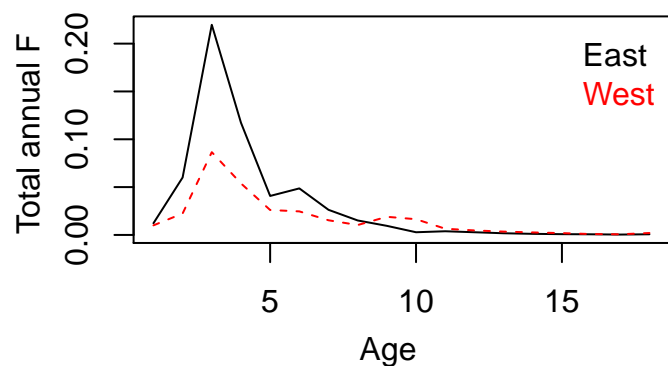
## MSY reference points (by East/West stock)

	MSY	FMSY <sub>ap</sub>	UMSY	BMSY	SSBM <sub>SY</sub>	BMSY_B0	SSBM <sub>SY</sub> _SSB0	RMSY_R0	F_FMSY	SSB_SSBMSY
East	4877	0.635	0.193	25264	10607	0.278	0.182	0.849	0.021	3.232
West	1689	0.478	0.172	9830	1763	0.304	0.170	0.856	0.019	3.224

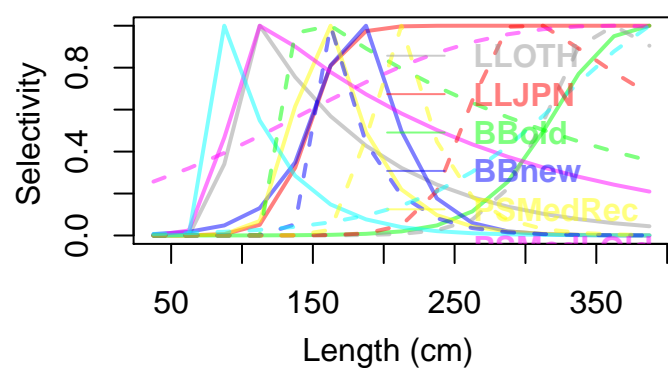
## 2014 Assessment MSY reference points (by East/West area)

	MSY	FMSY <sub>ap</sub>	UMSY	BMSY	SSBM <sub>SY</sub>	BMSY_B0	SSBM <sub>SY</sub> _SSB0	RMSY_R0	F_FMSY	SSB_SSBMSY
East	-	-	-	-	-	-	-	-	0.75	0.45
West	3056	0.23	-	-	13268	-	-	-	0.47-0.85	0.35-2.1

# Current annual mean F-at-age profile, all fleets, seasons, areas

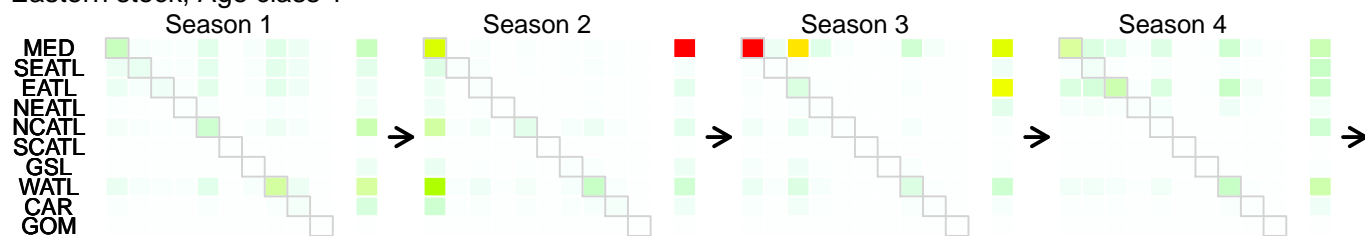


## Estimated size selectivity by fleet

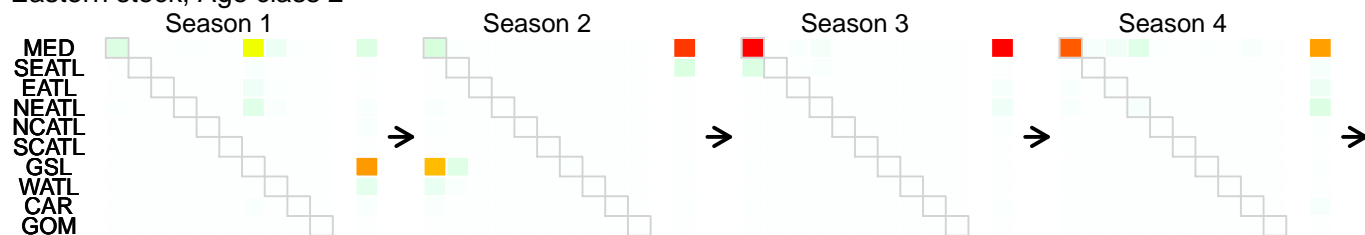


## Estimated unfished movement and spatial distribution

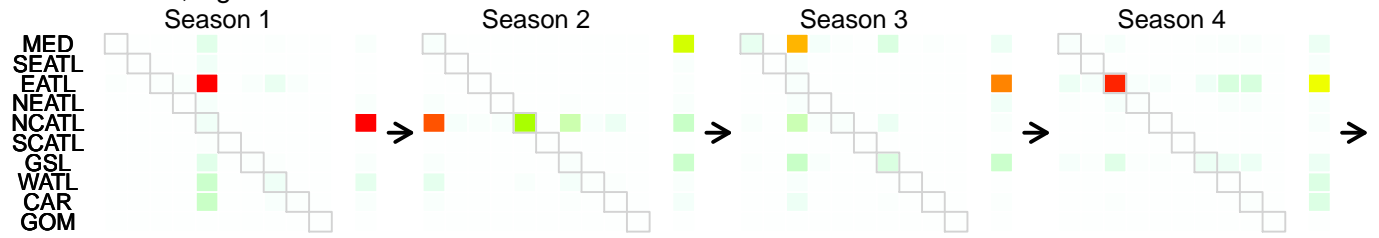
### Eastern stock, Age class 1



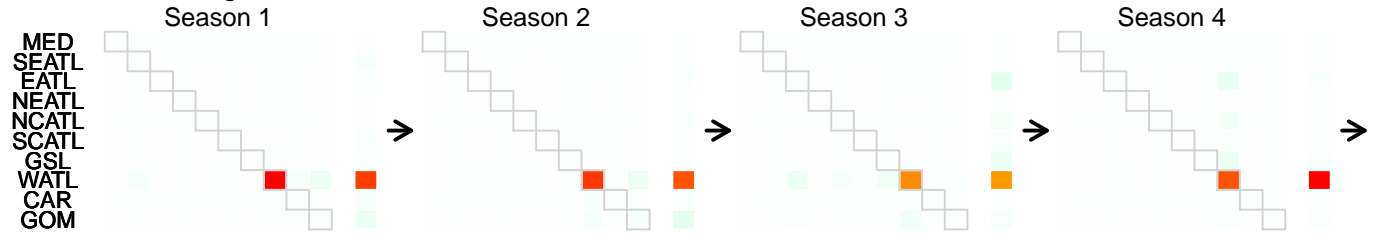
### Eastern stock, Age class 2



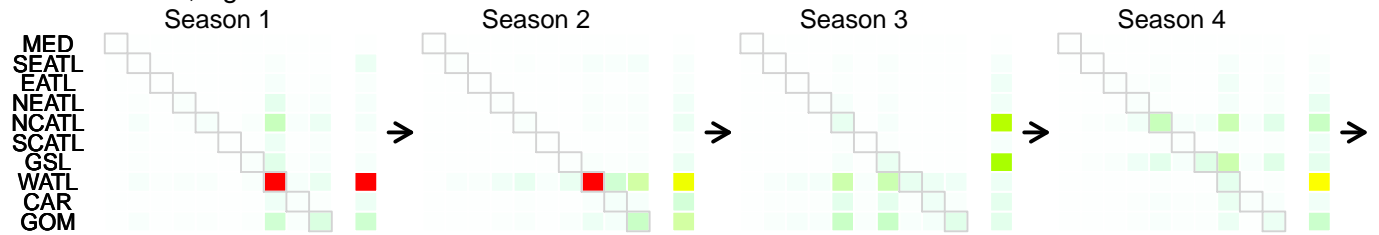
### Eastern stock, Age class 3



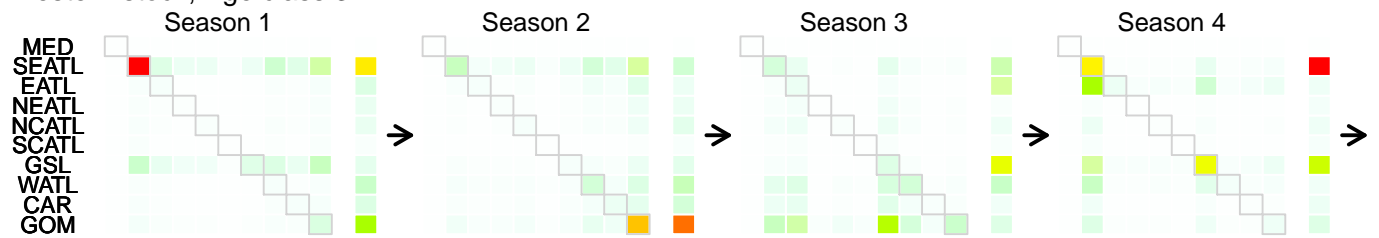
### Western stock, Age class 1



### Western stock, Age class 2

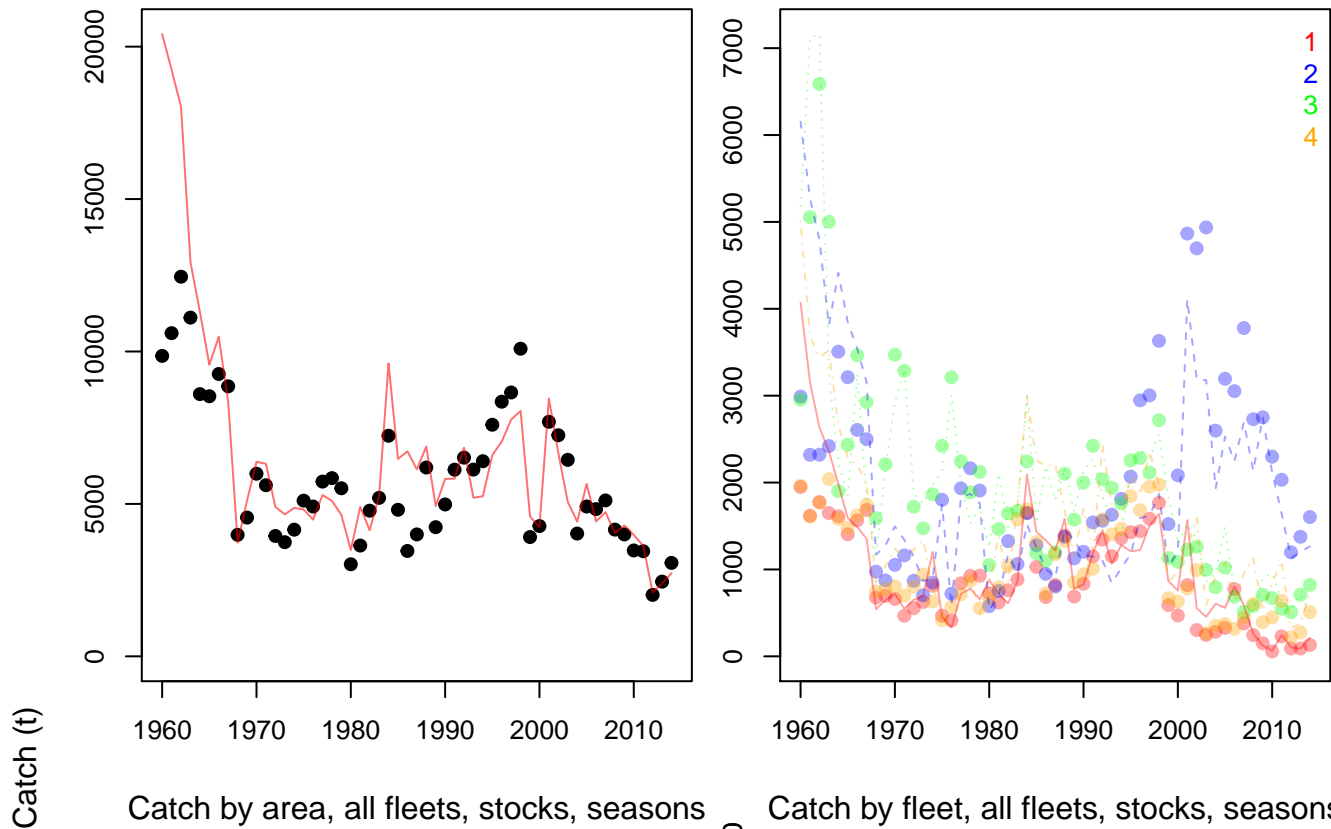


### Western stock, Age class 3

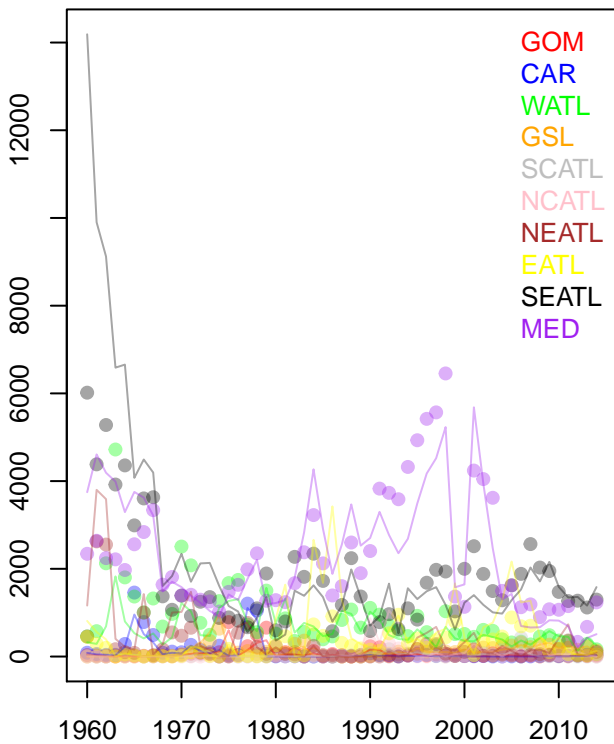


## Fit to aggregate catches

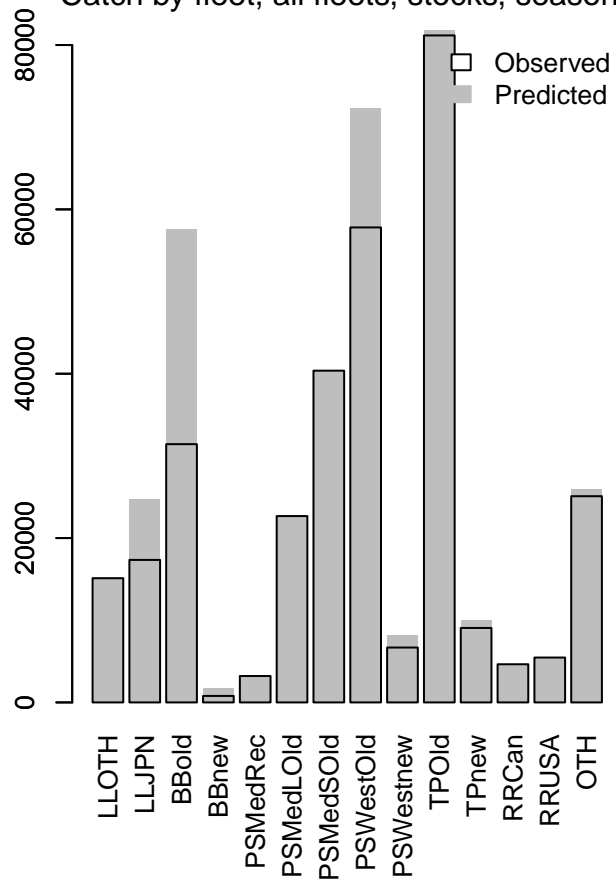
Total catch, all fleets, stocks, areas, seasons      Catch by quarter, all fleets, stocks, season



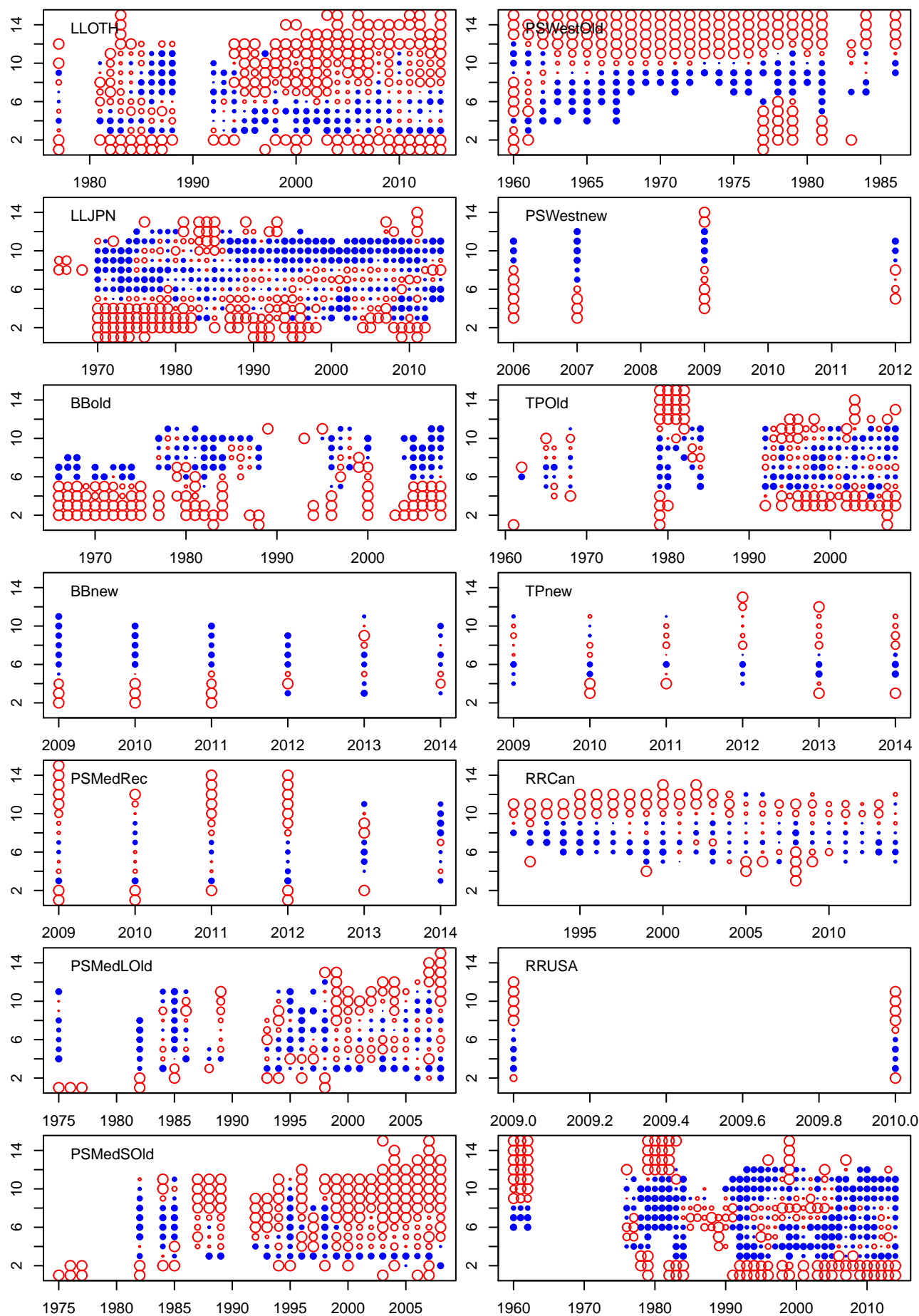
Catch by area, all fleets, stocks, seasons



Catch by fleet, all fleets, stocks, seasons



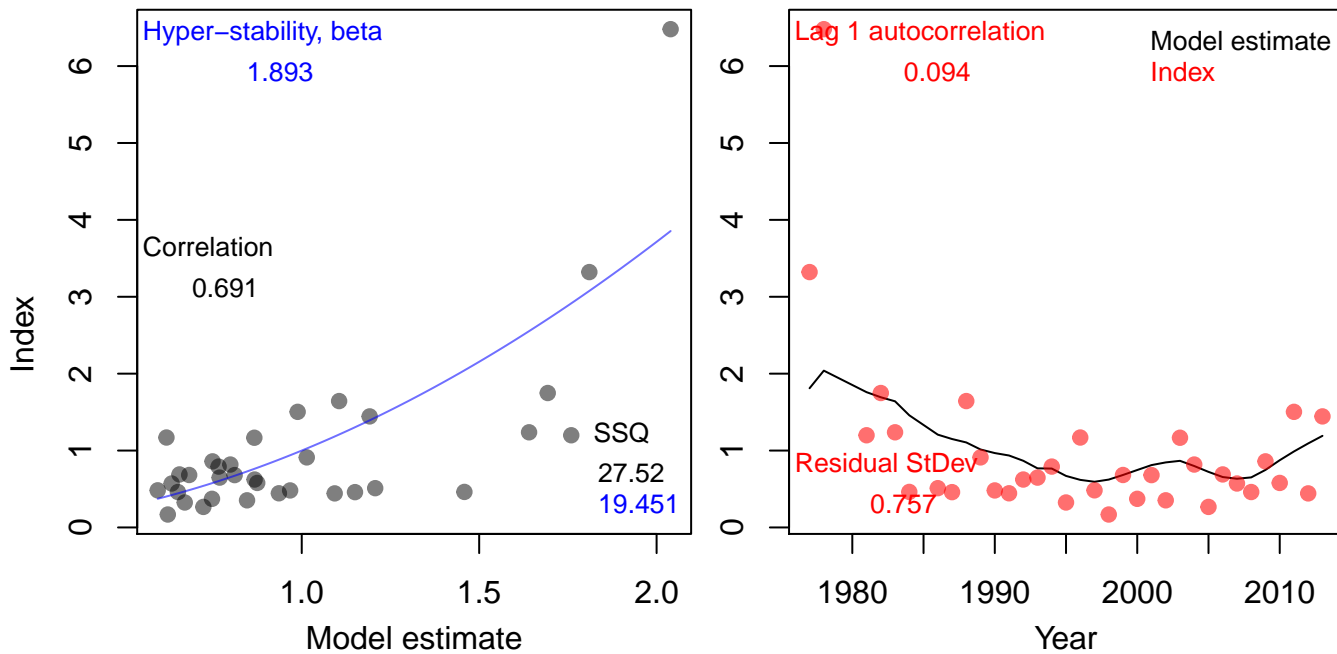
# Fit to aggregate length composition



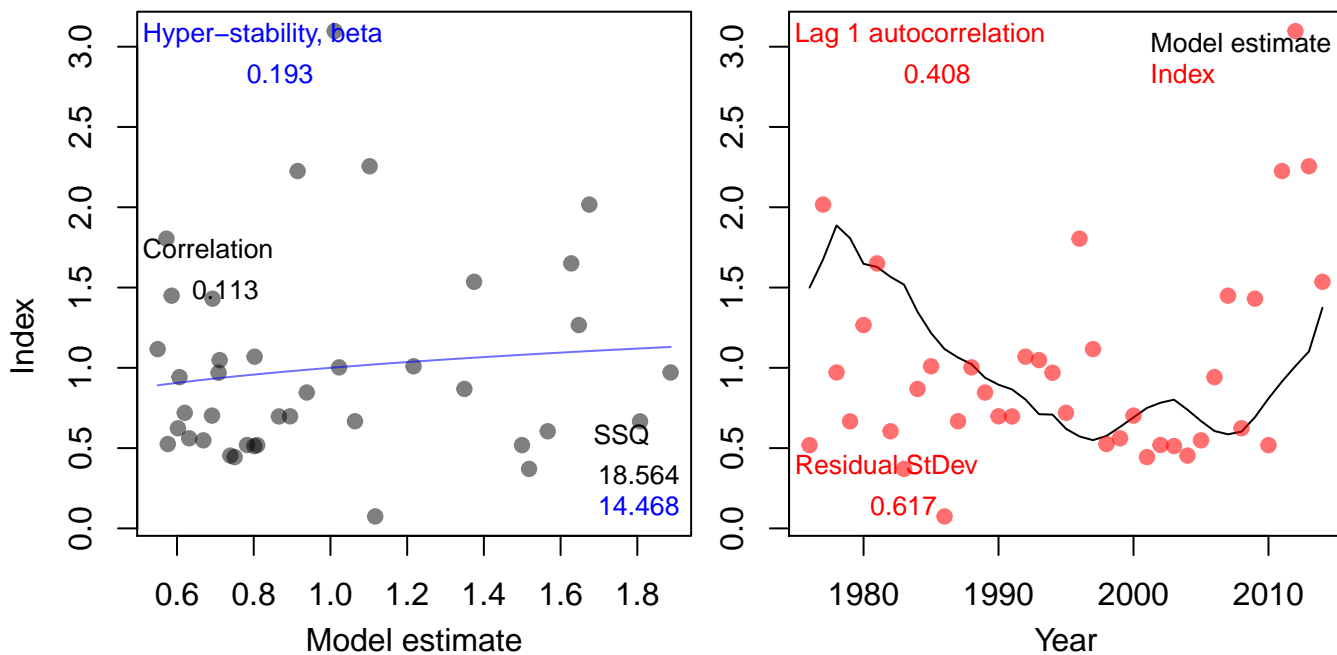
## Other model estimates and fits

### Statistical properties of indices for use in Management Procedures

#### Index fit and statistical properties for GOM\_Larval

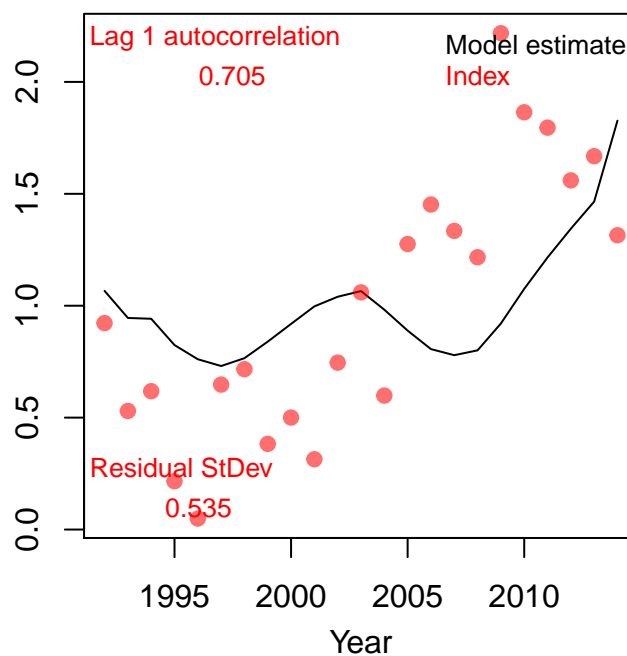
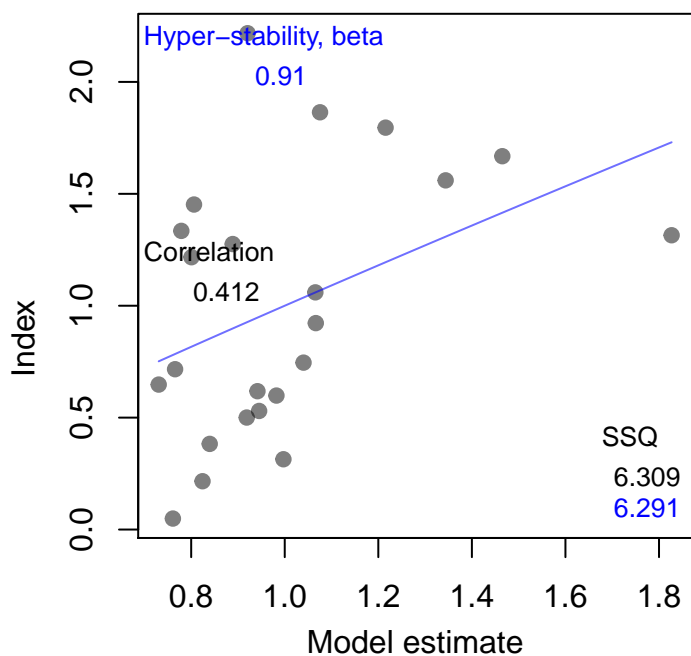


#### Index fit and statistical properties for JP\_LL\_W

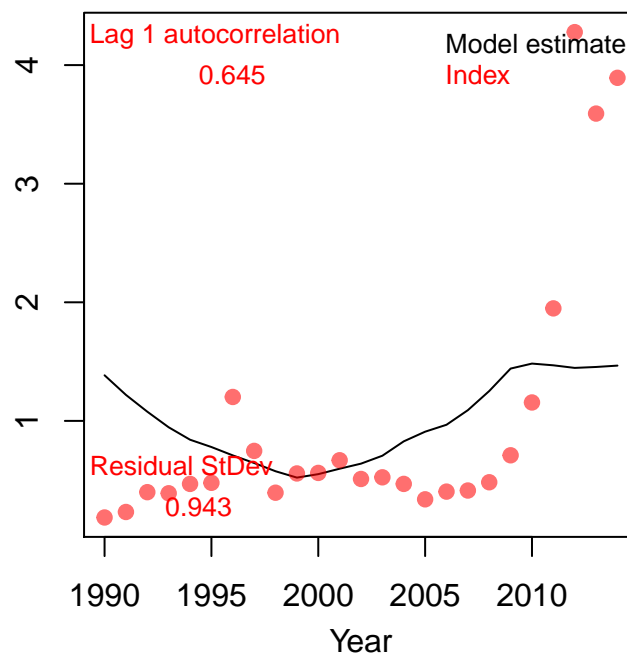
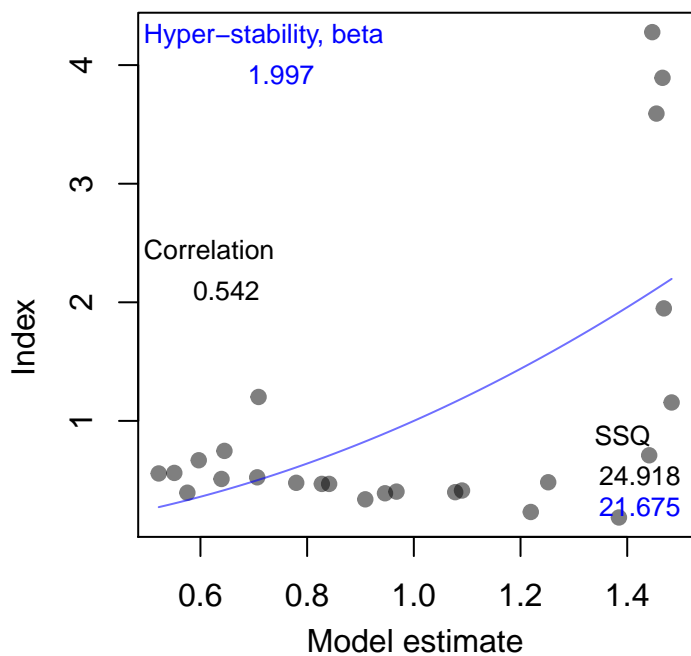




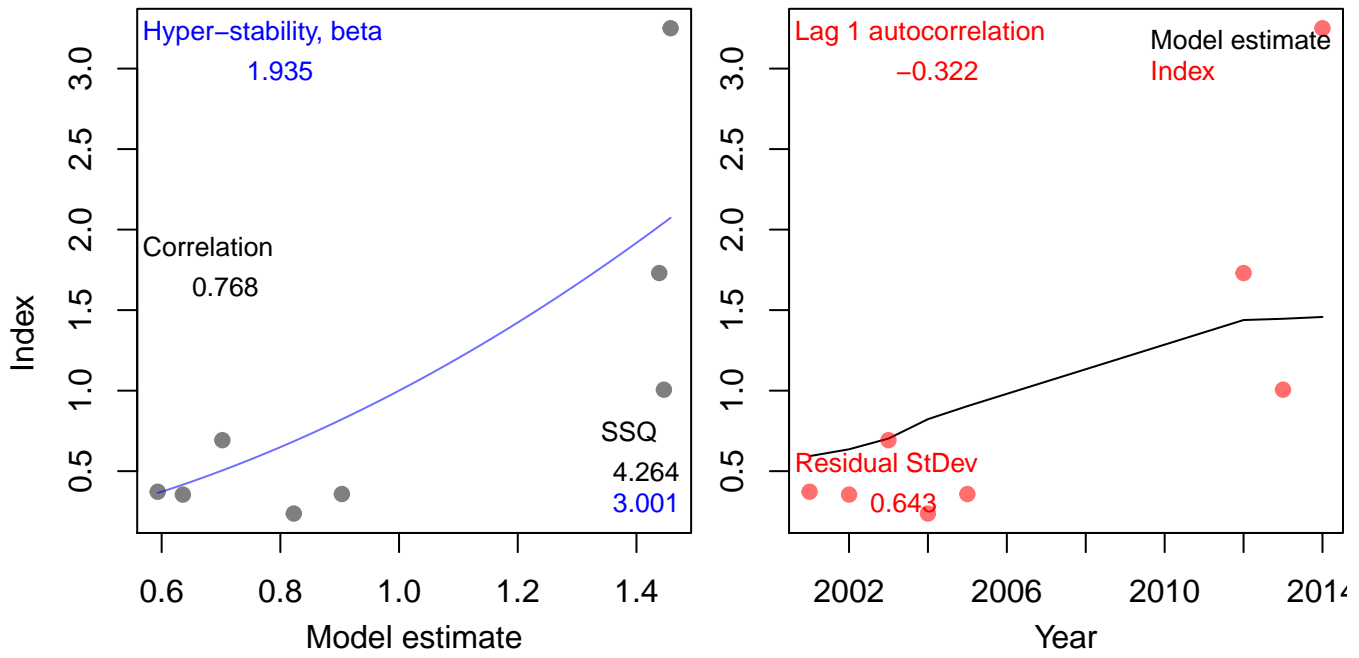
# Index fit and statistical properties for US-CAN



# Index fit and statistical properties for JP\_LL\_NE

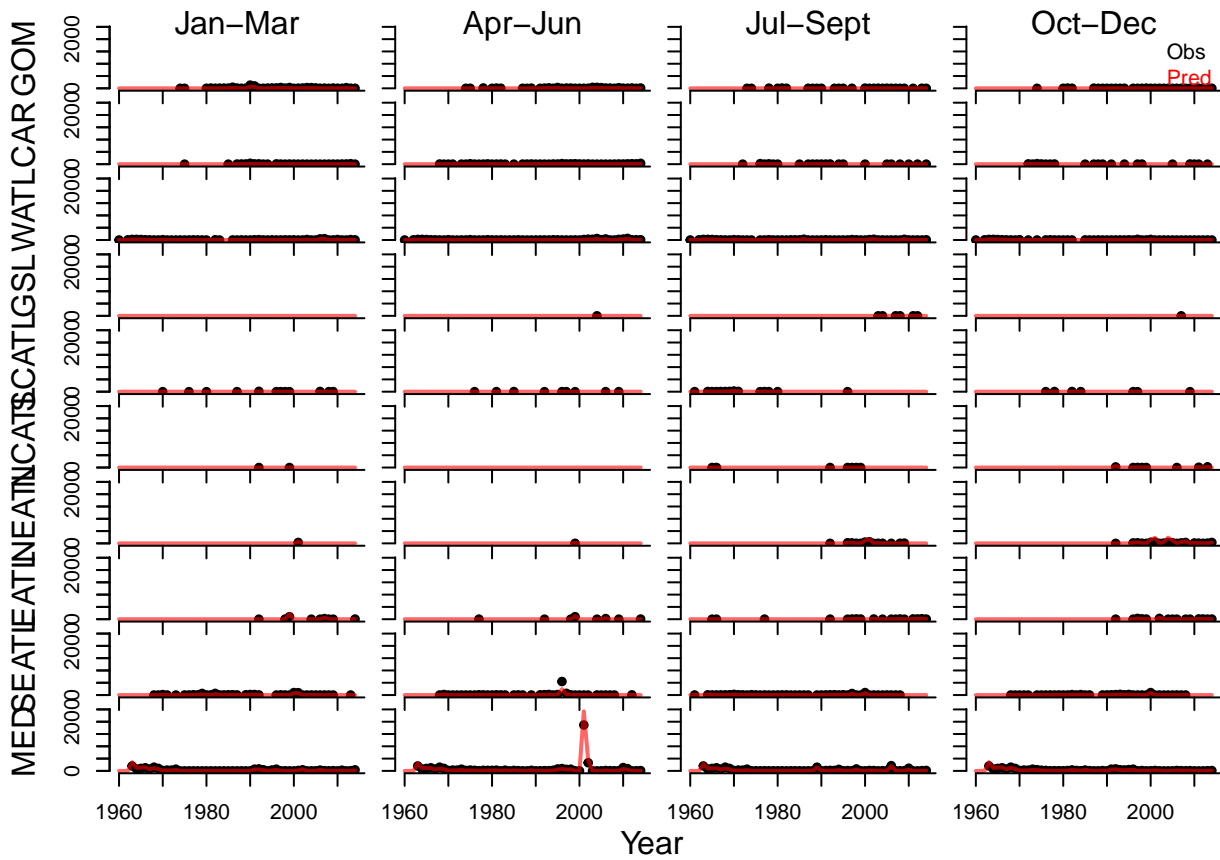


# Index fit and statistical properties for MED\_Larval

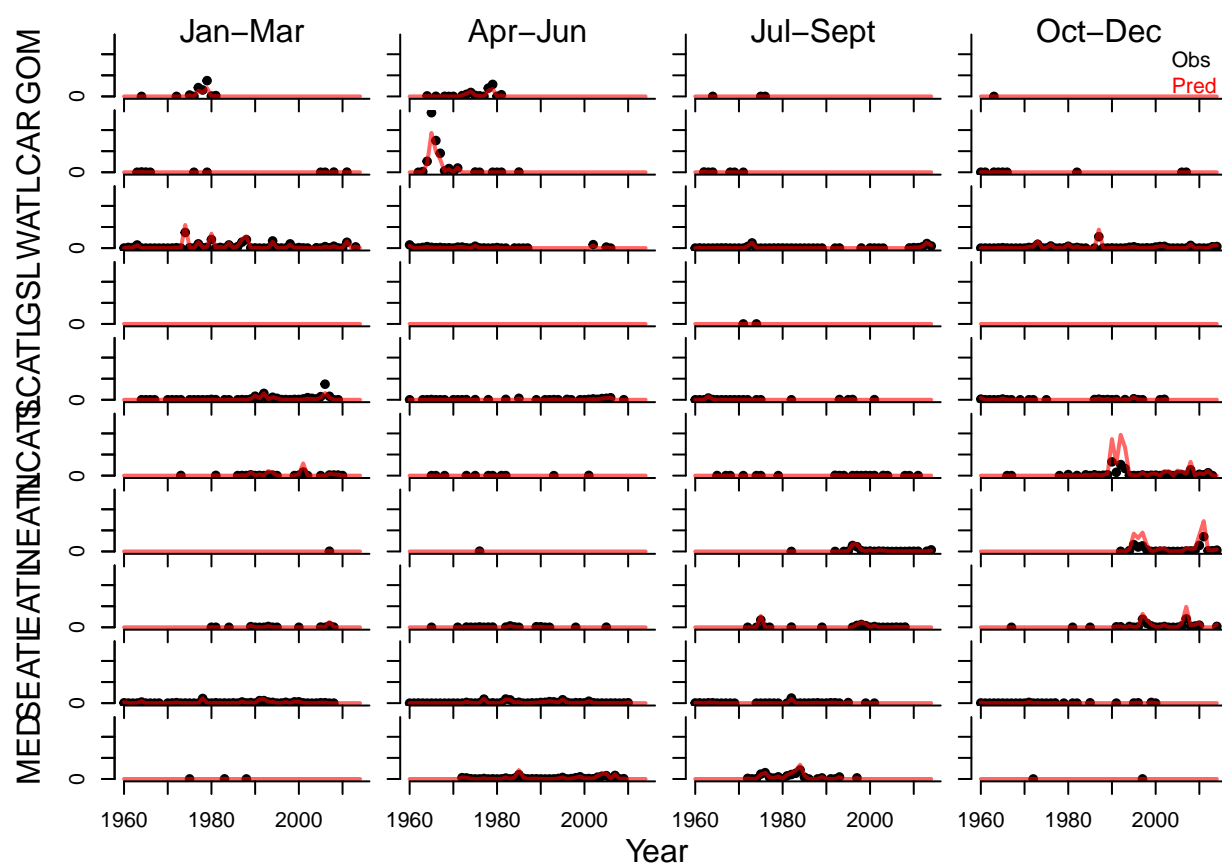


## Fit to observed catches

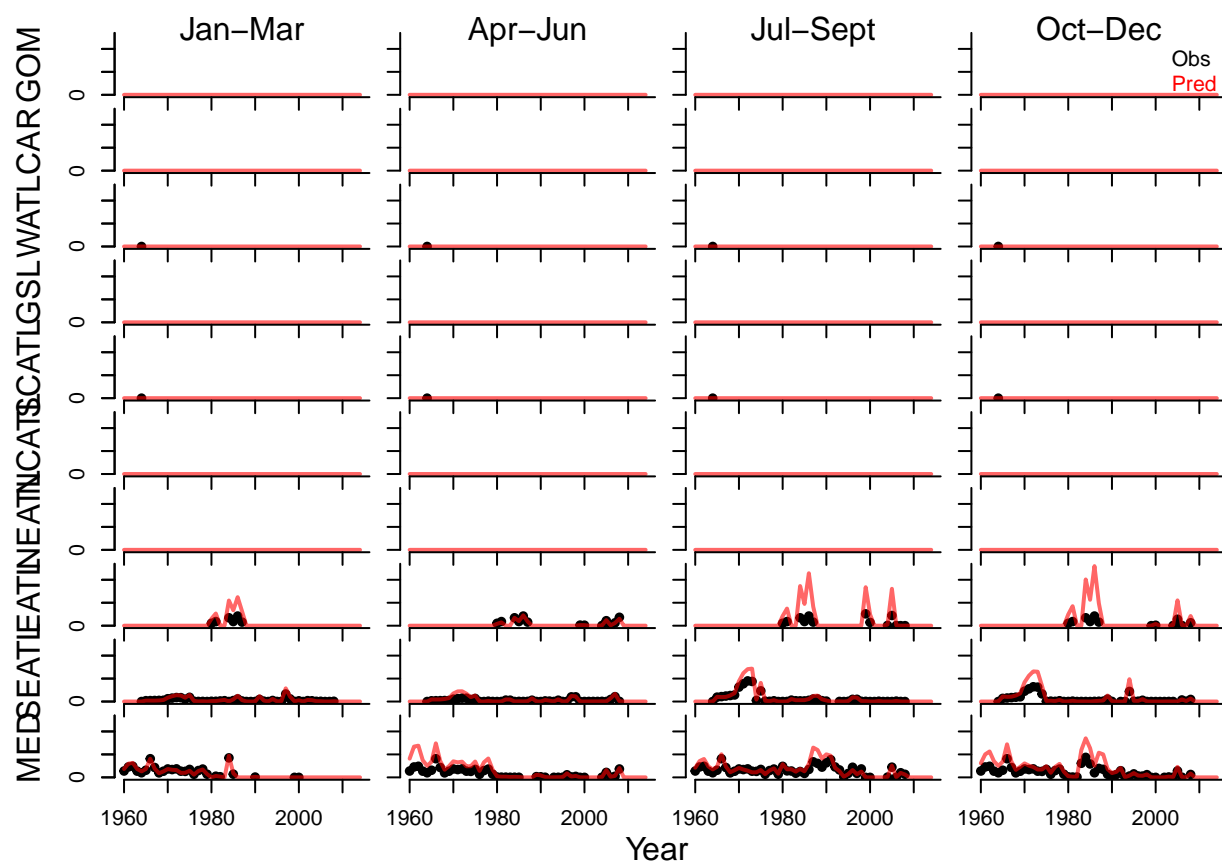
### Observed catches (tonnes) for LLOTH



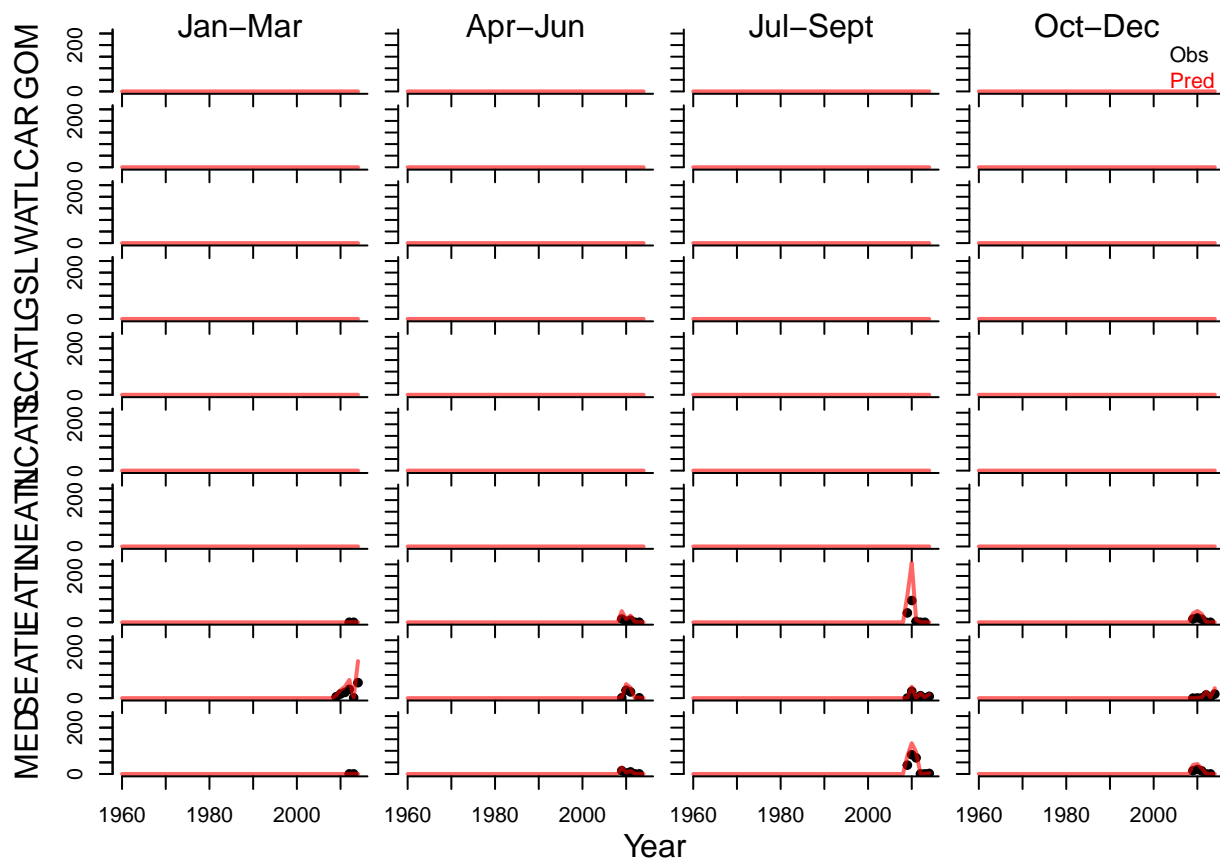
## Observed catches (tonnes) for LLJPN



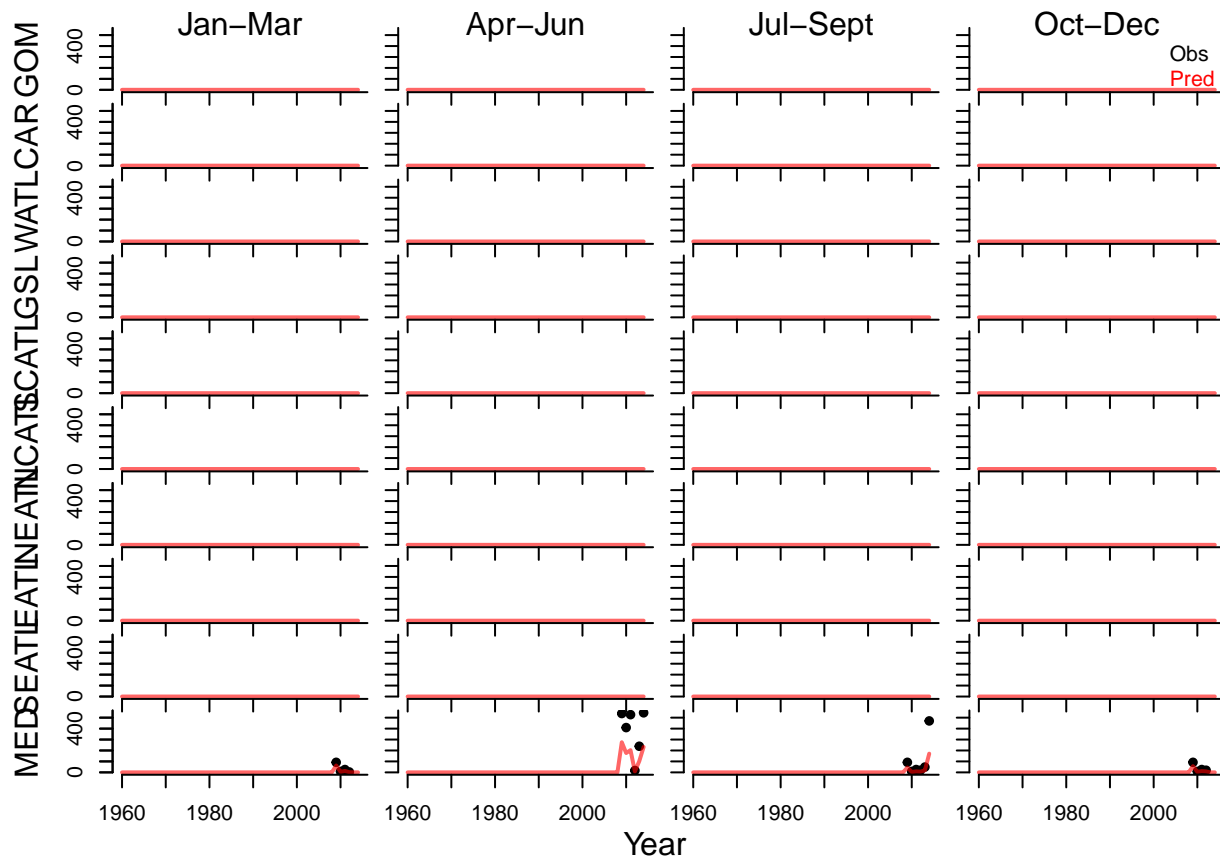
## Observed catches (tonnes) for BBold



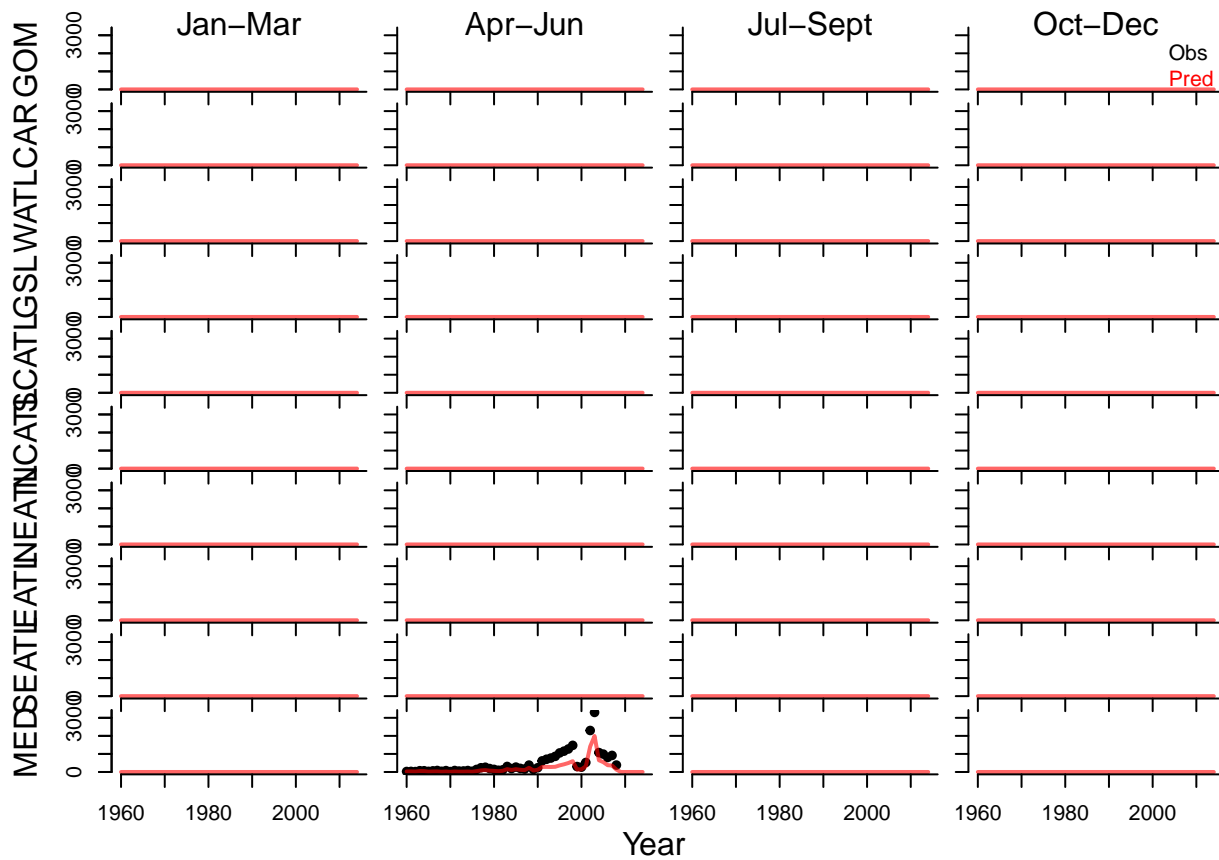
Observed catches (tonnes) for BBnew



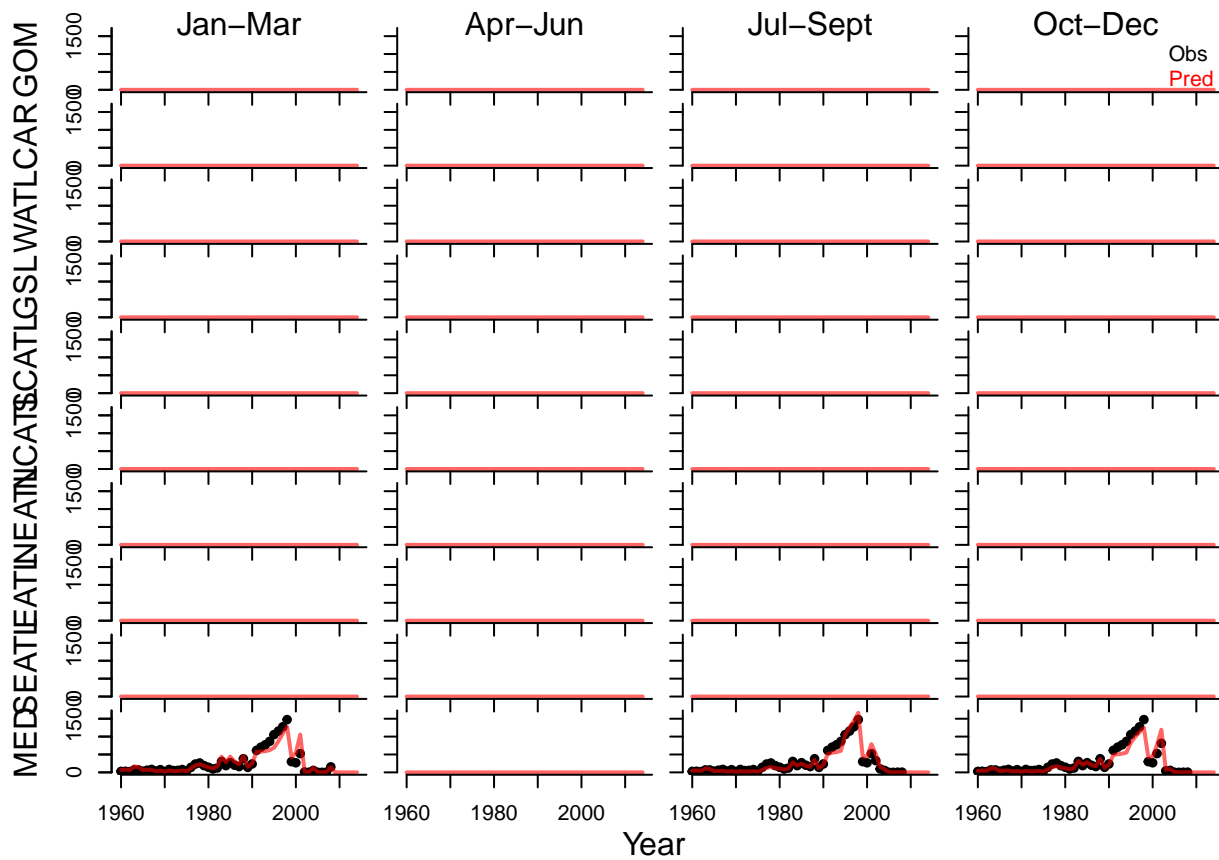
Observed catches (tonnes) for PSMedRec



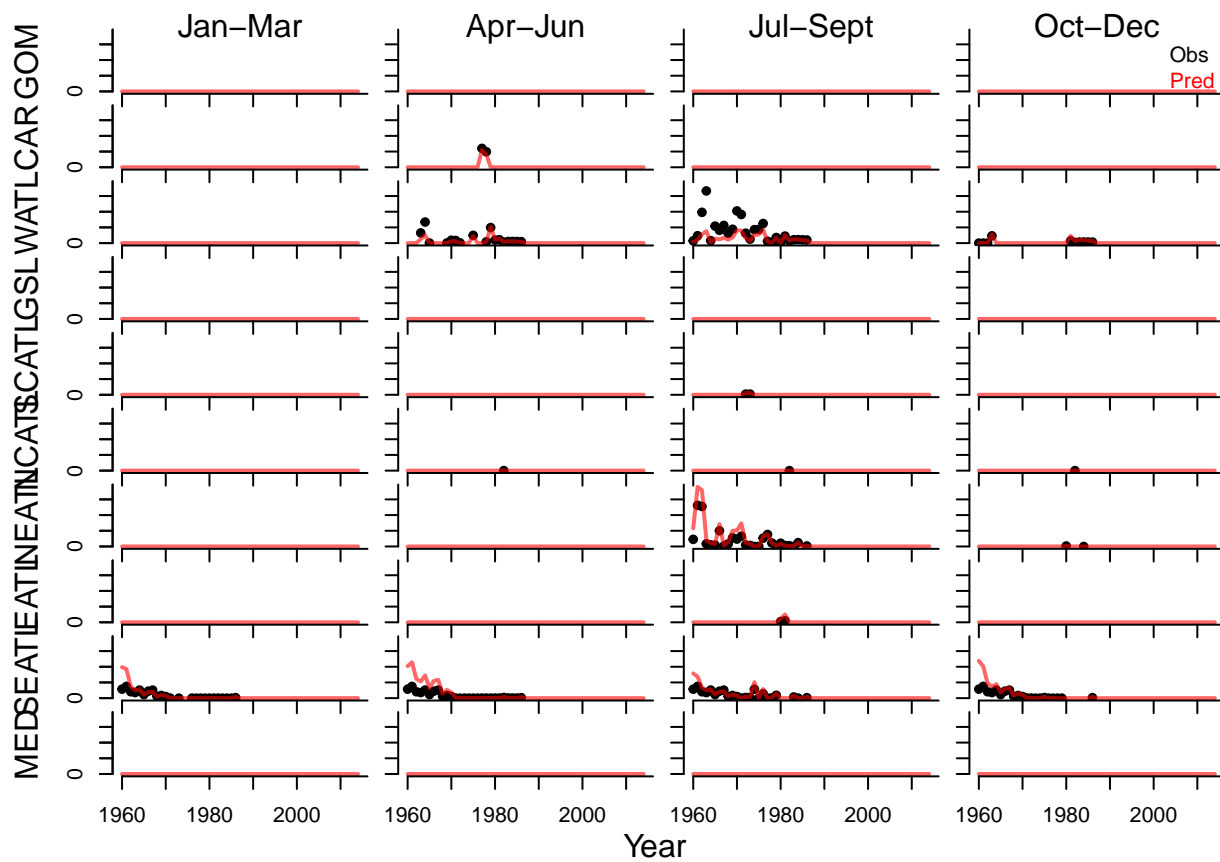
Observed catches (tonnes) for PSMedLOld



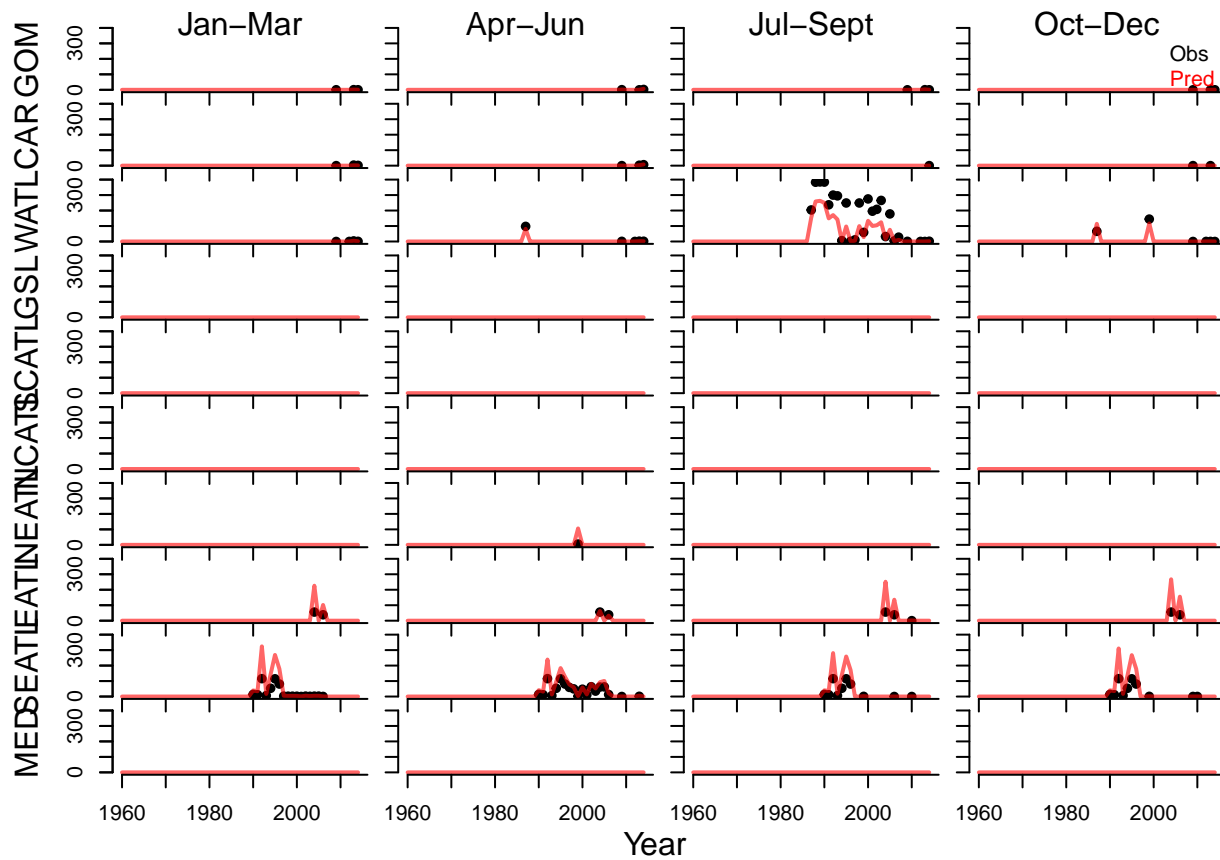
Observed catches (tonnes) for PSMedSOld



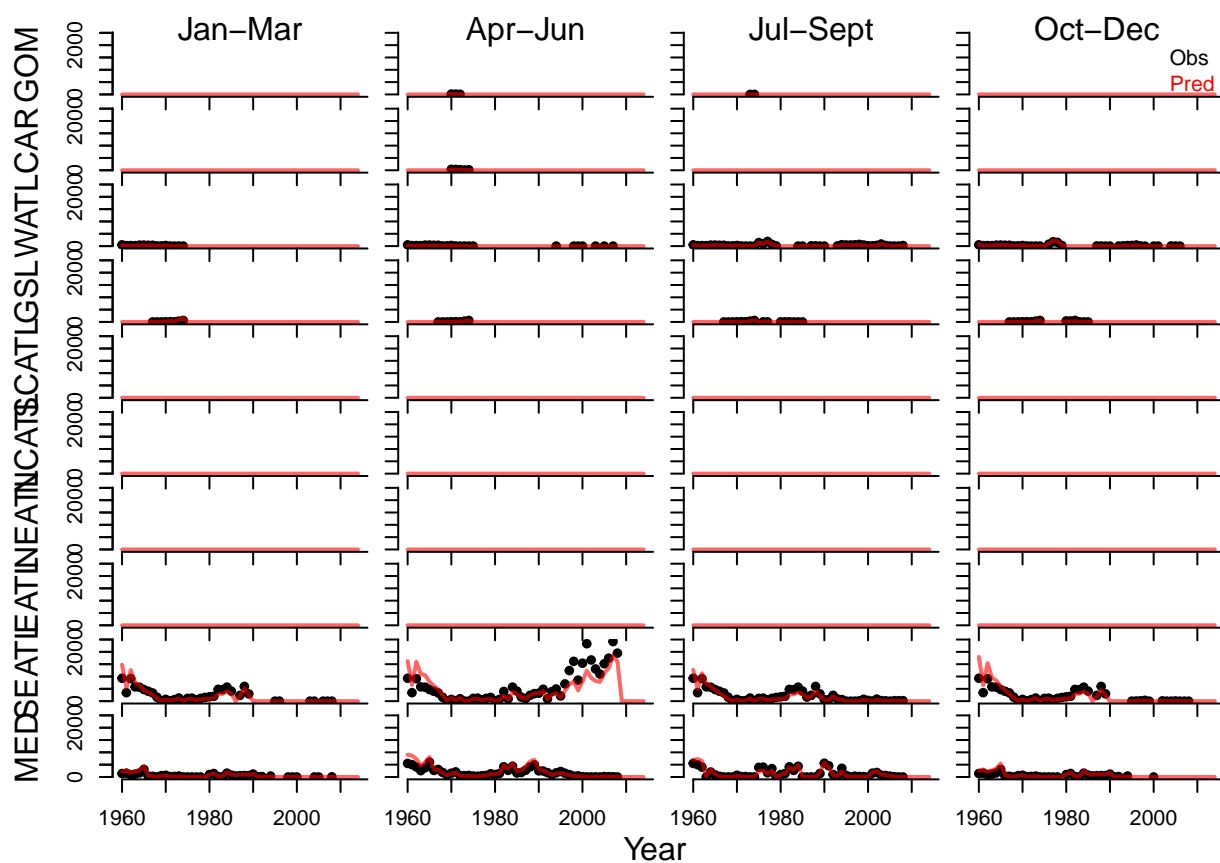
Observed catches (tonnes) for PSWestOld



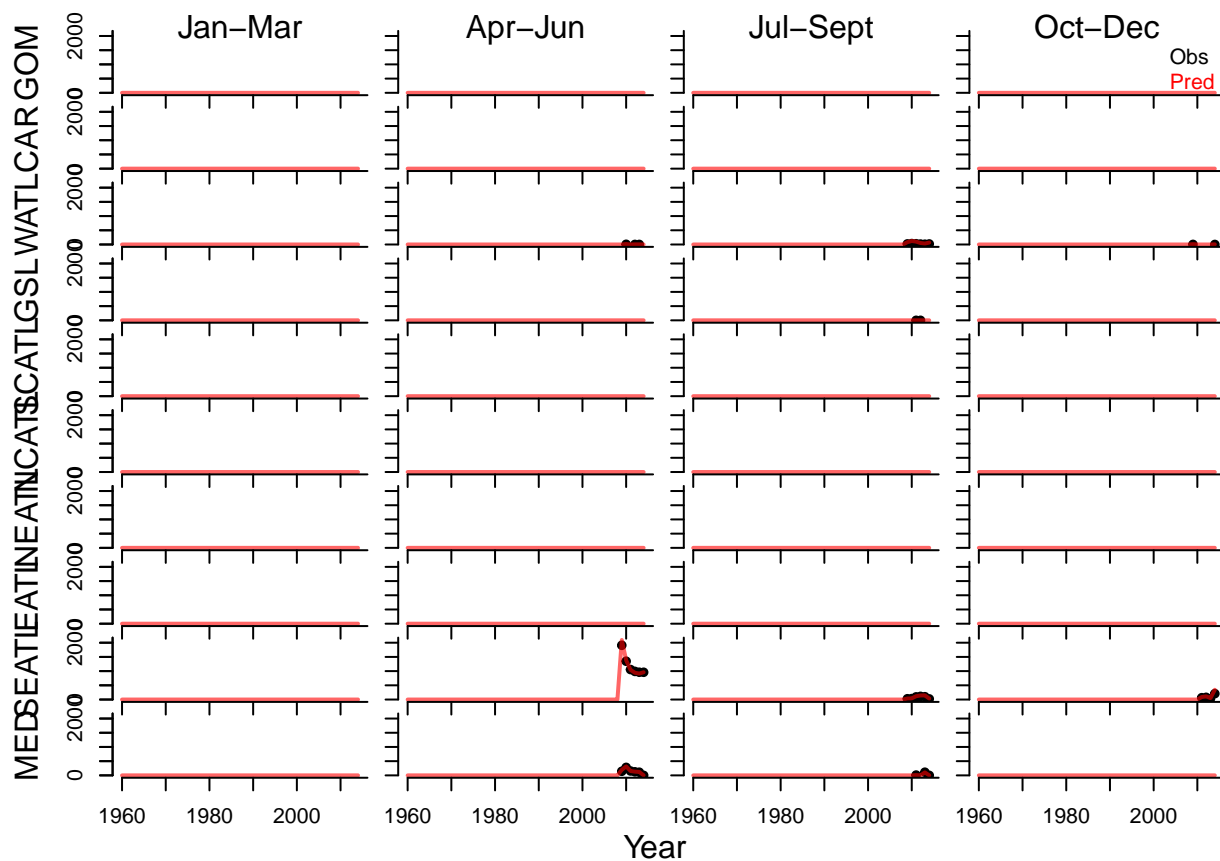
Observed catches (tonnes) for PSWestnew



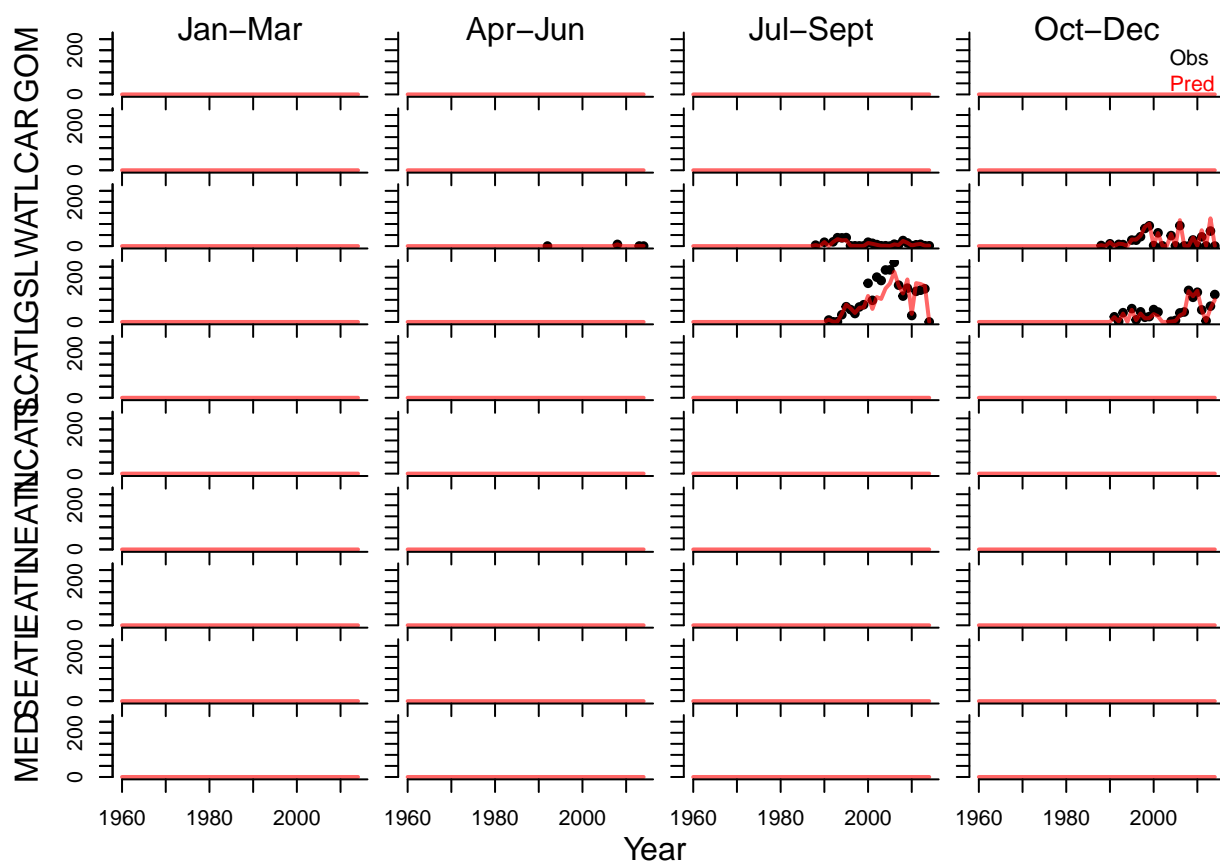
Observed catches (tonnes) for TPold



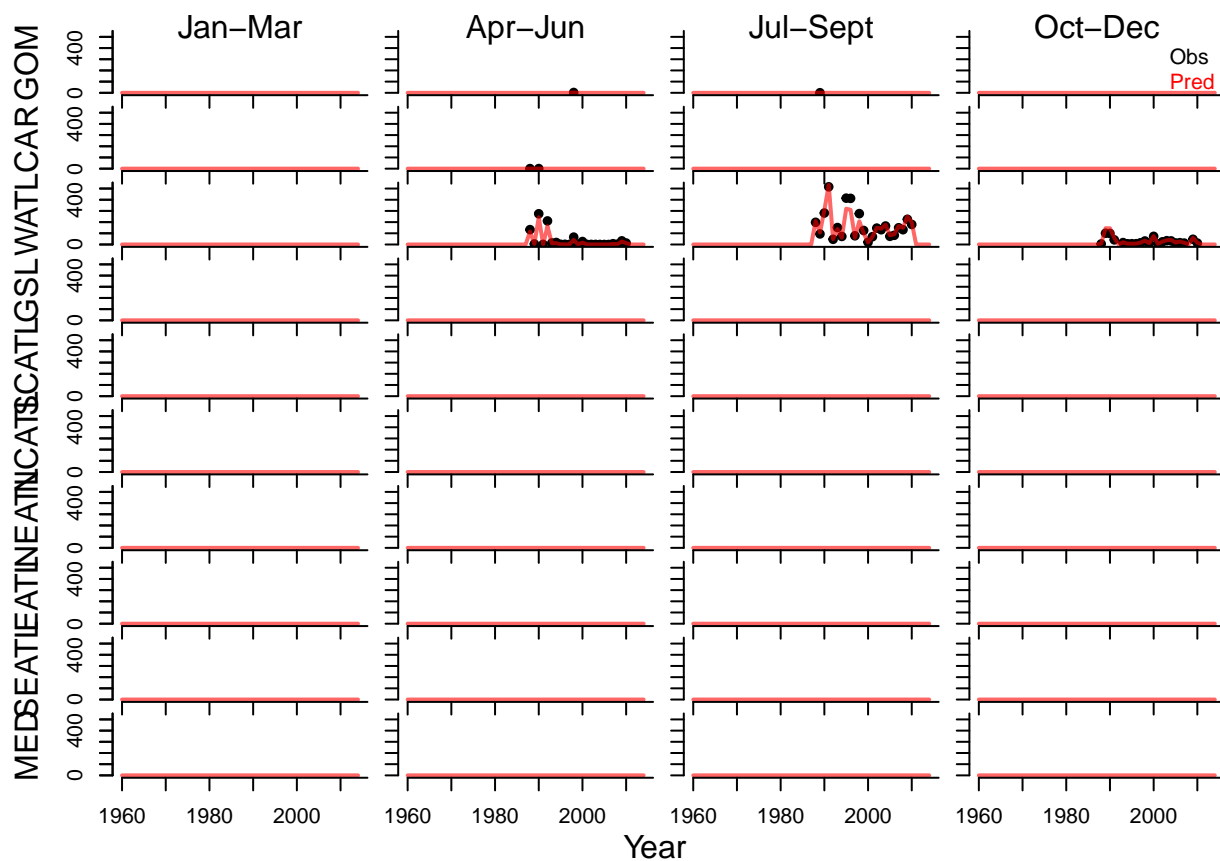
Observed catches (tonnes) for TPnew



Observed catches (tonnes) for RRCan

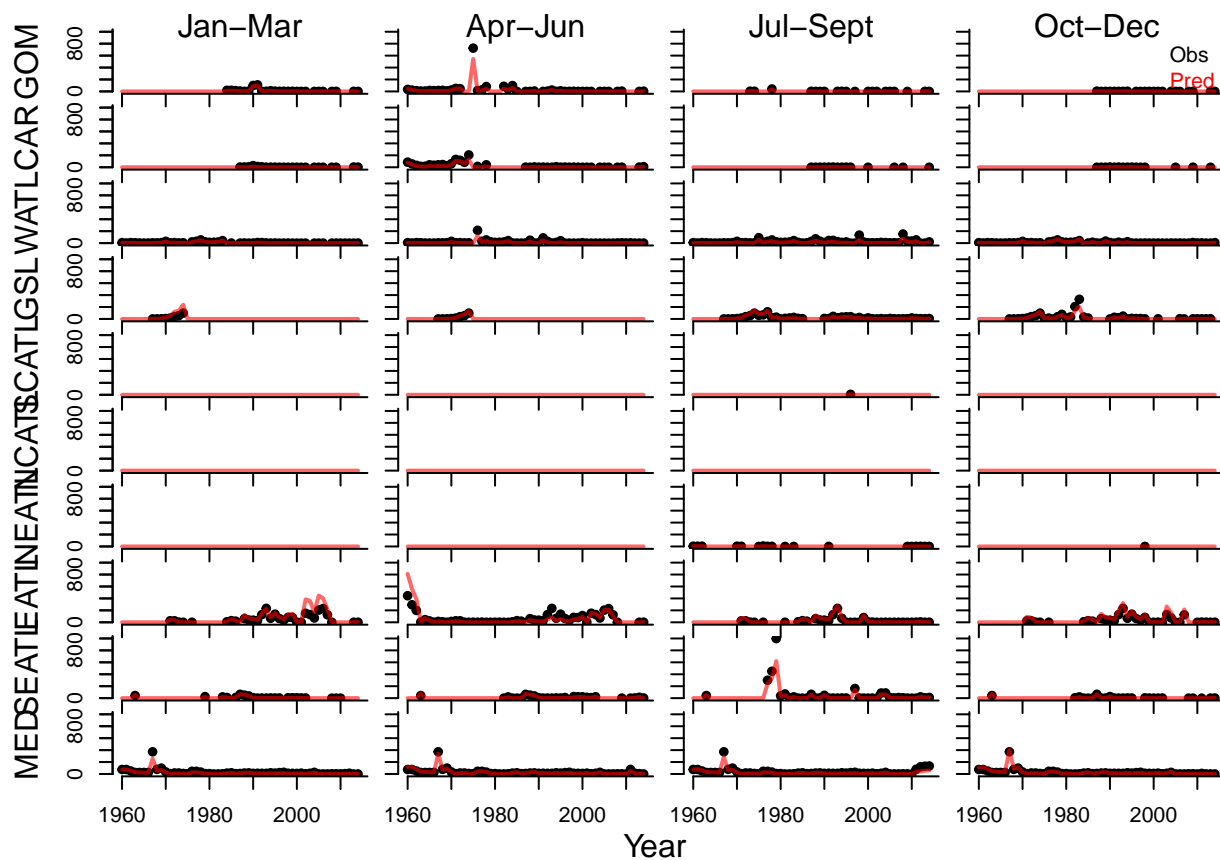


Observed catches (tonnes) for RRUSA



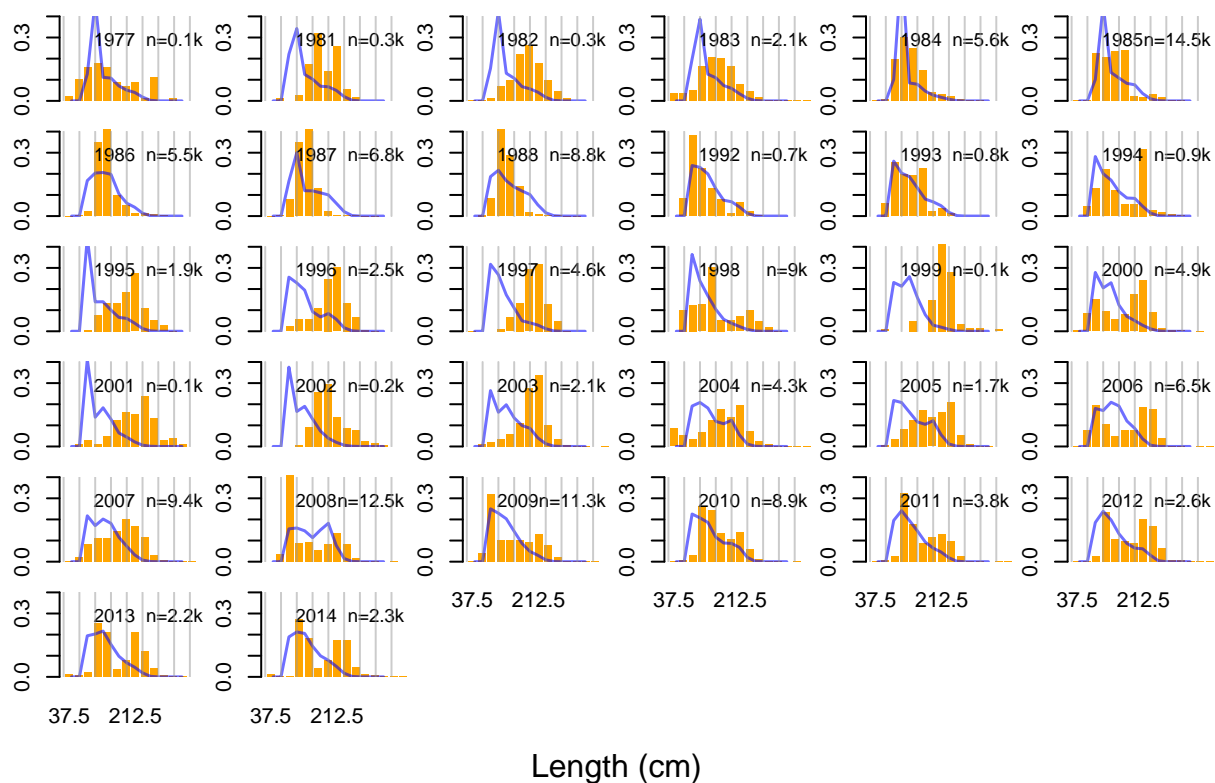


## Observed catches (tonnes) for ALL OTH



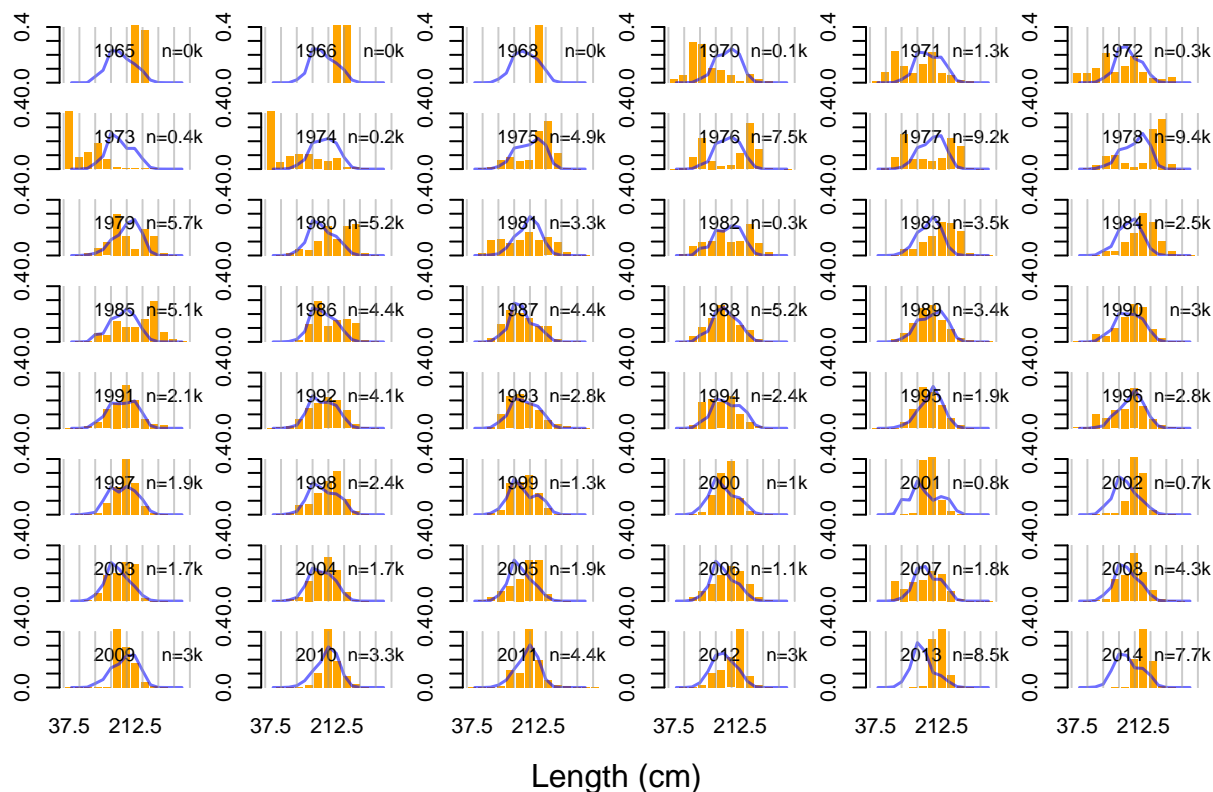
### Length composition fit for LLOTH

Predicted (line) versus observed (point) catch at length for the LLOTH fleet (n=137k)



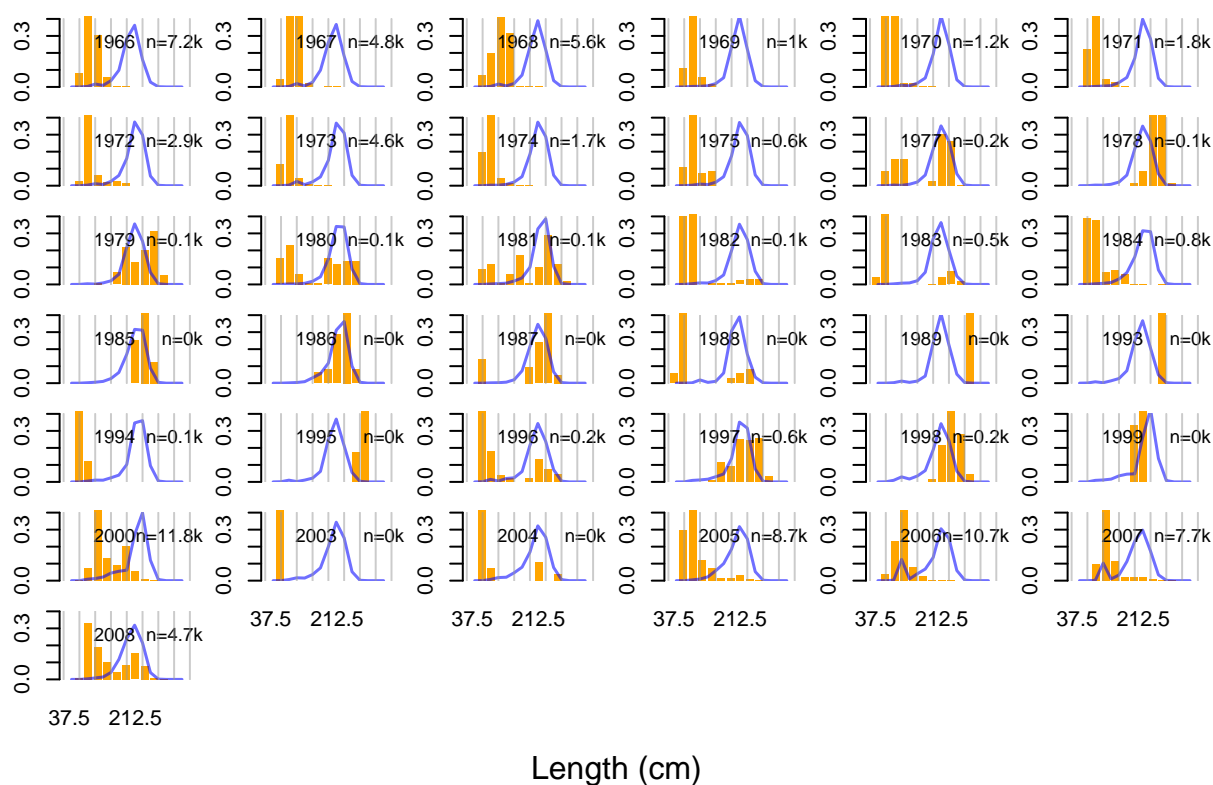
## Length composition fit for LLJPN

Predicted (line) versus observed (point) catch at length for the LLJPN fleet (n=146k)



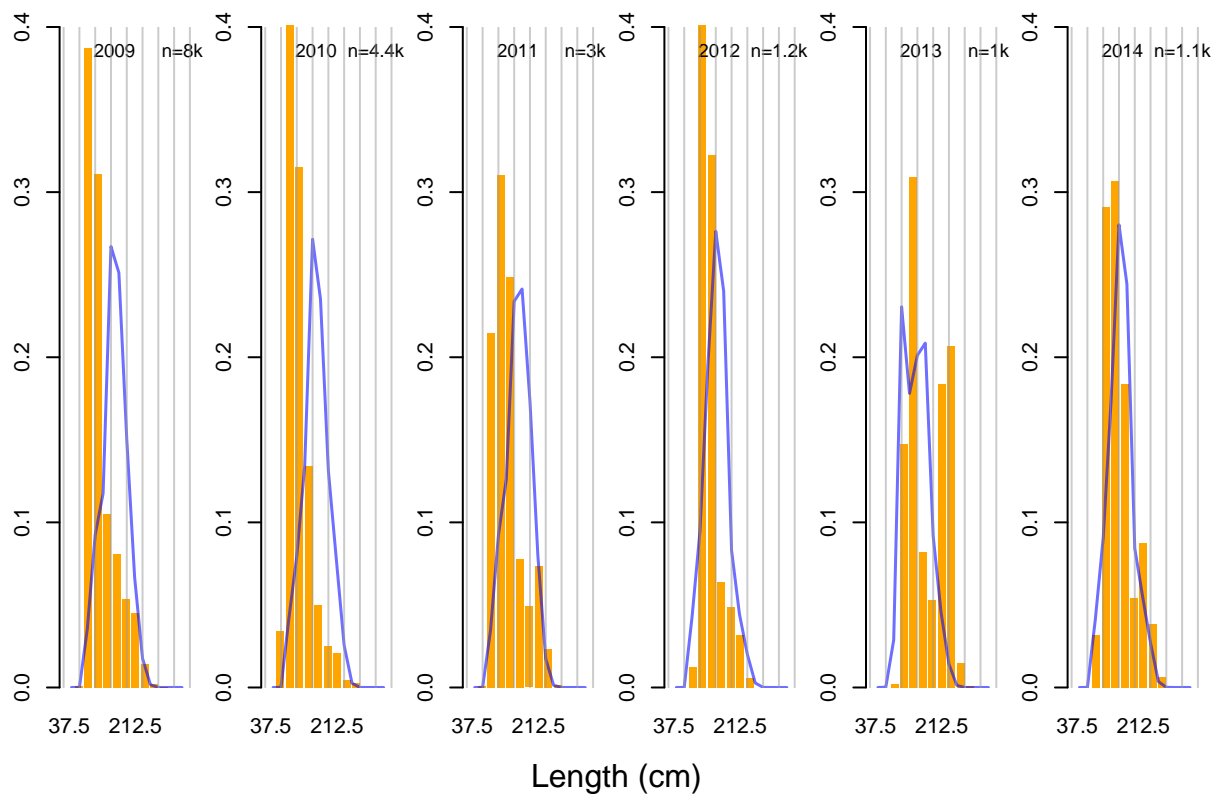
## Length composition fit for BBold

Predicted (line) versus observed (point) catch at length for the BBold fleet (n=78k)



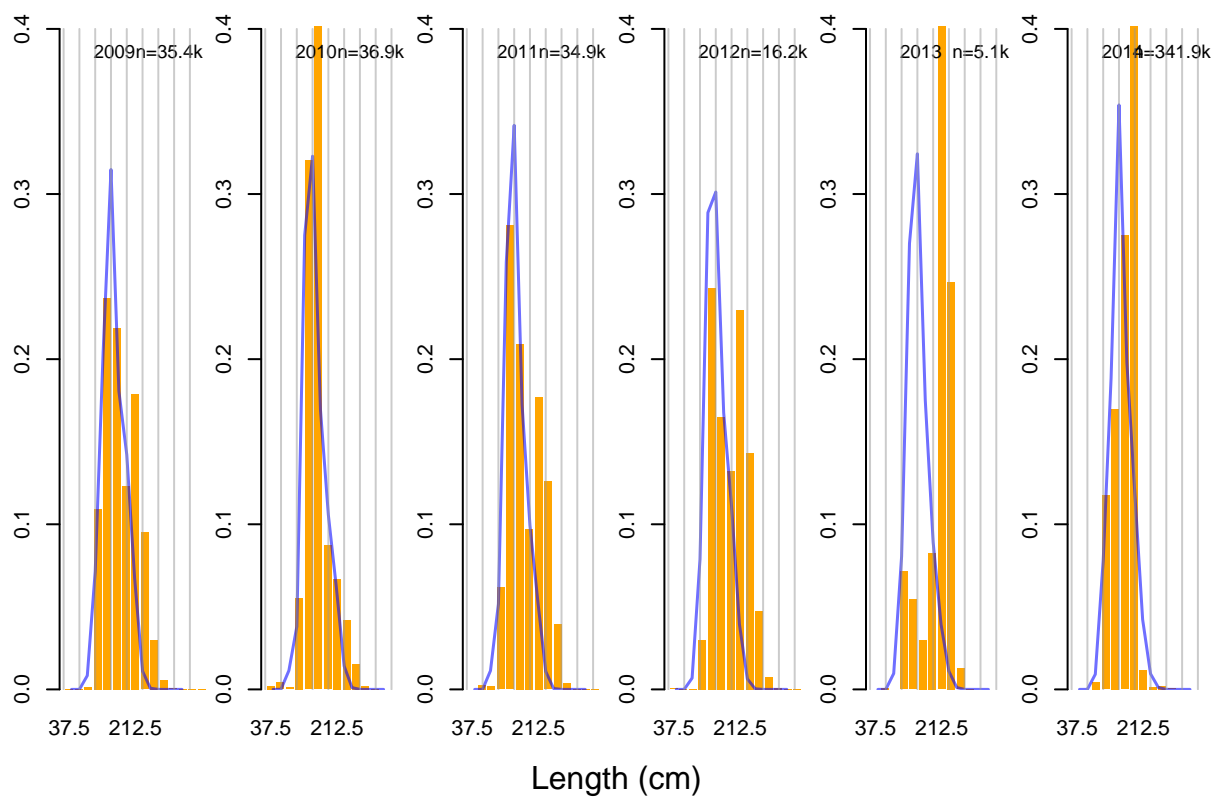
## Length composition fit for BBnew

Predicted (line) versus observed (point) catch at length for the BBnew fleet (n=18k)



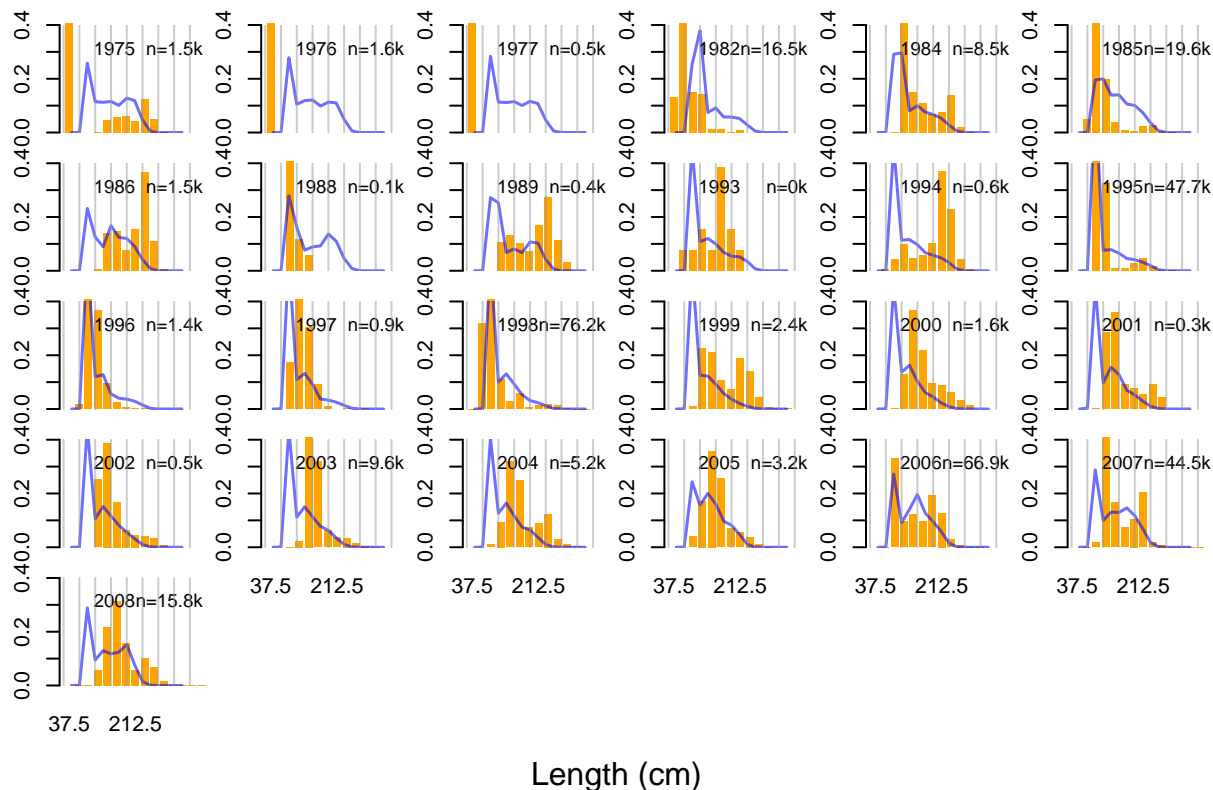
## Length composition fit for PSMedRec

Predicted (line) versus observed (point) catch at length for the PSMedRec fleet (n=470k)



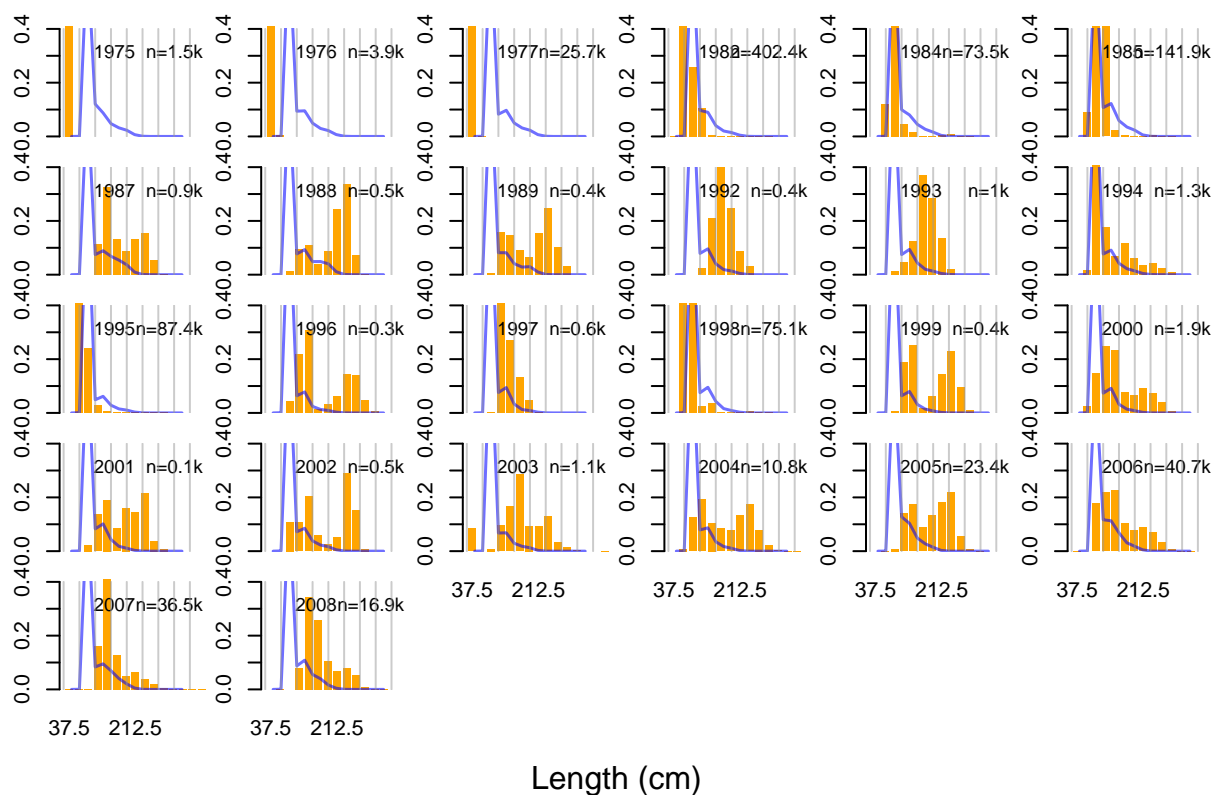
## Length composition fit for PSMedLOld

Predicted (line) versus observed (point) catch at length for the PSMedLOld fleet (n=327k)



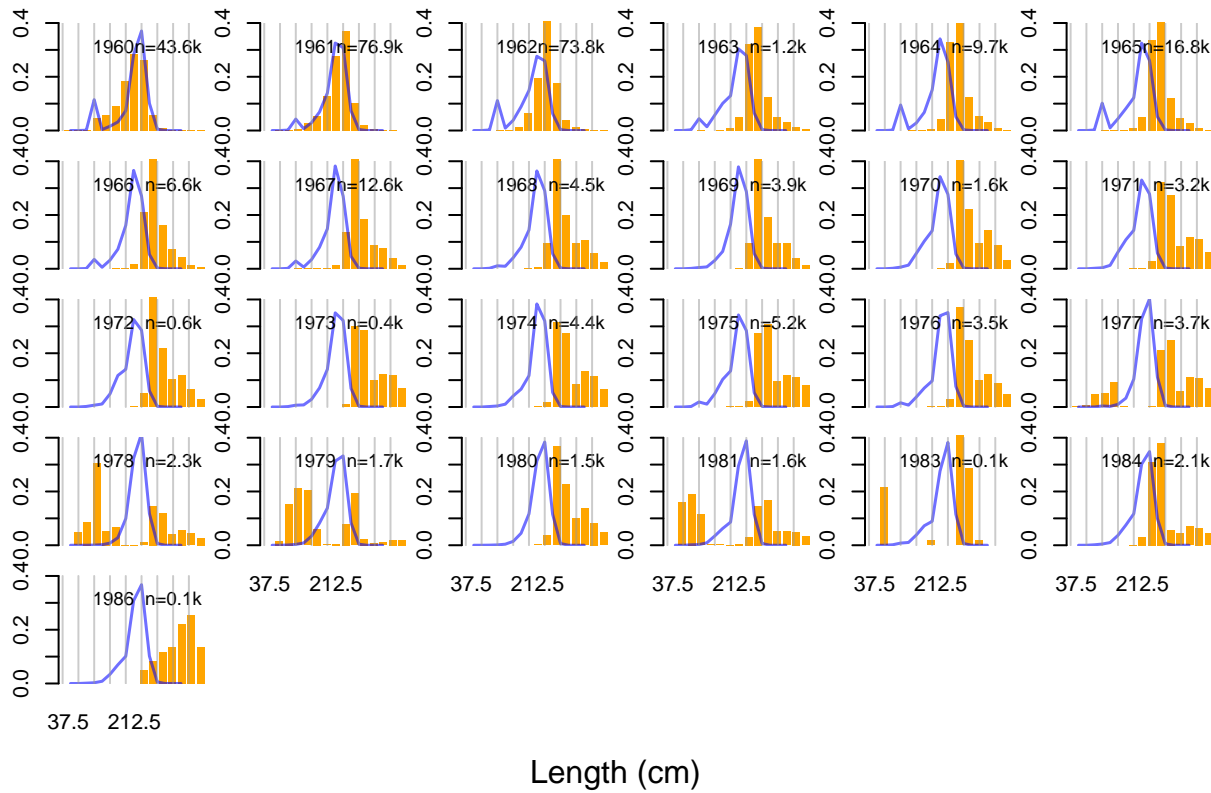
## Length composition fit for PSMedSOLD

Predicted (line) versus observed (point) catch at length for the PSMedSOLD fleet (n=949k)



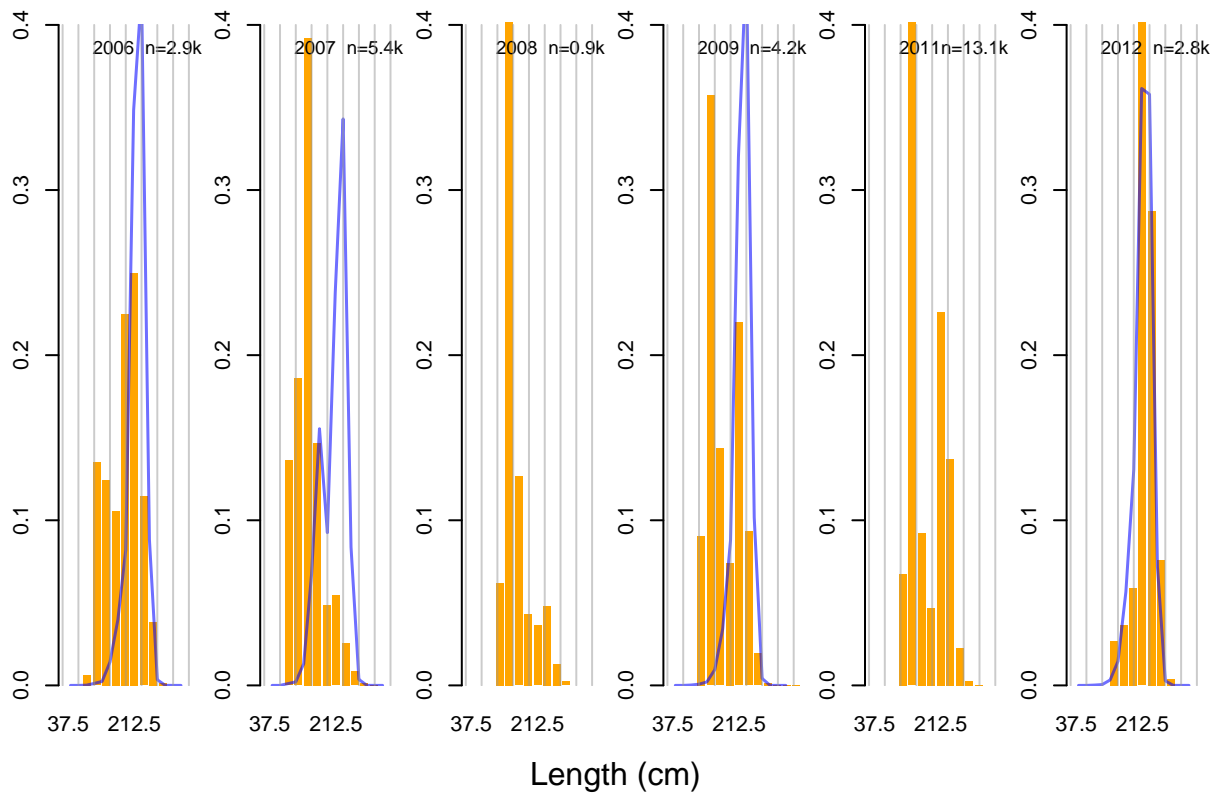
## Length composition fit for PSWestOld

Predicted (line) versus observed (point) catch at length for the PSWestOld fleet (n=281k)



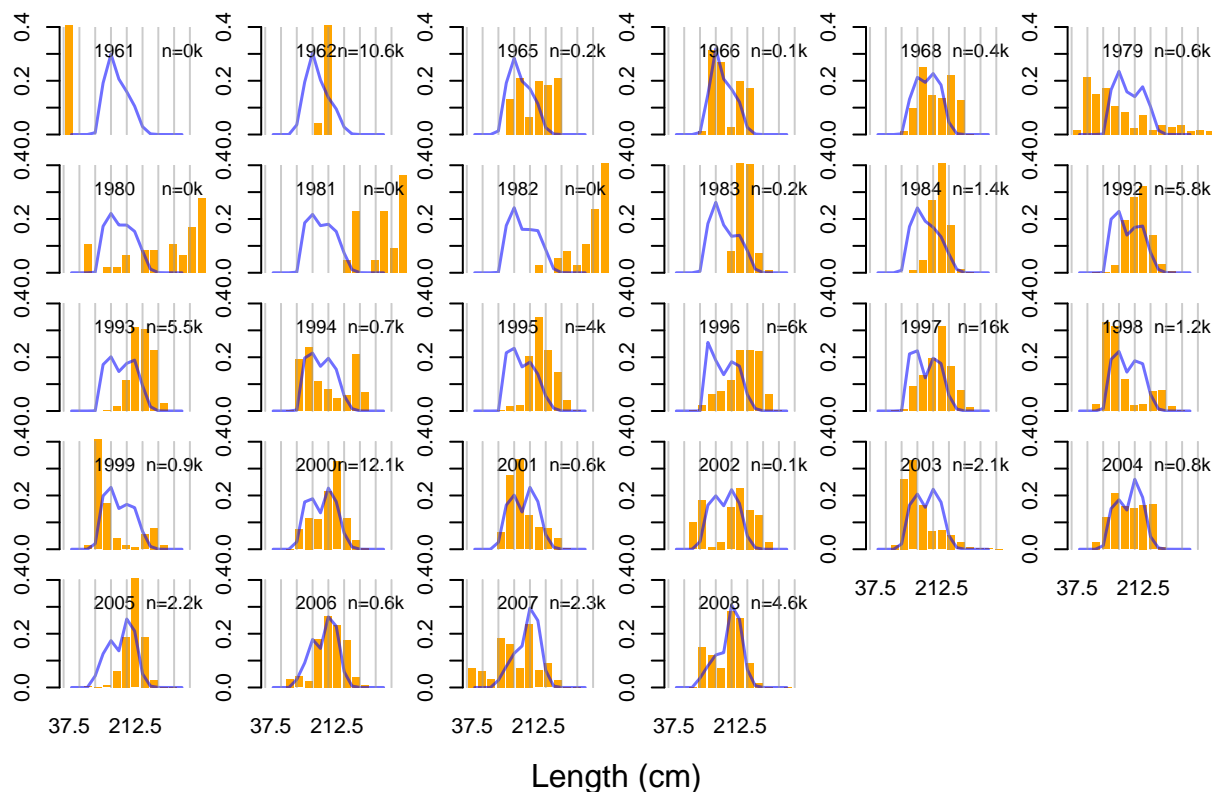
## Length composition fit for PSWestnew

Predicted (line) versus observed (point) catch at length for the PSWestnew fleet (n=29k)



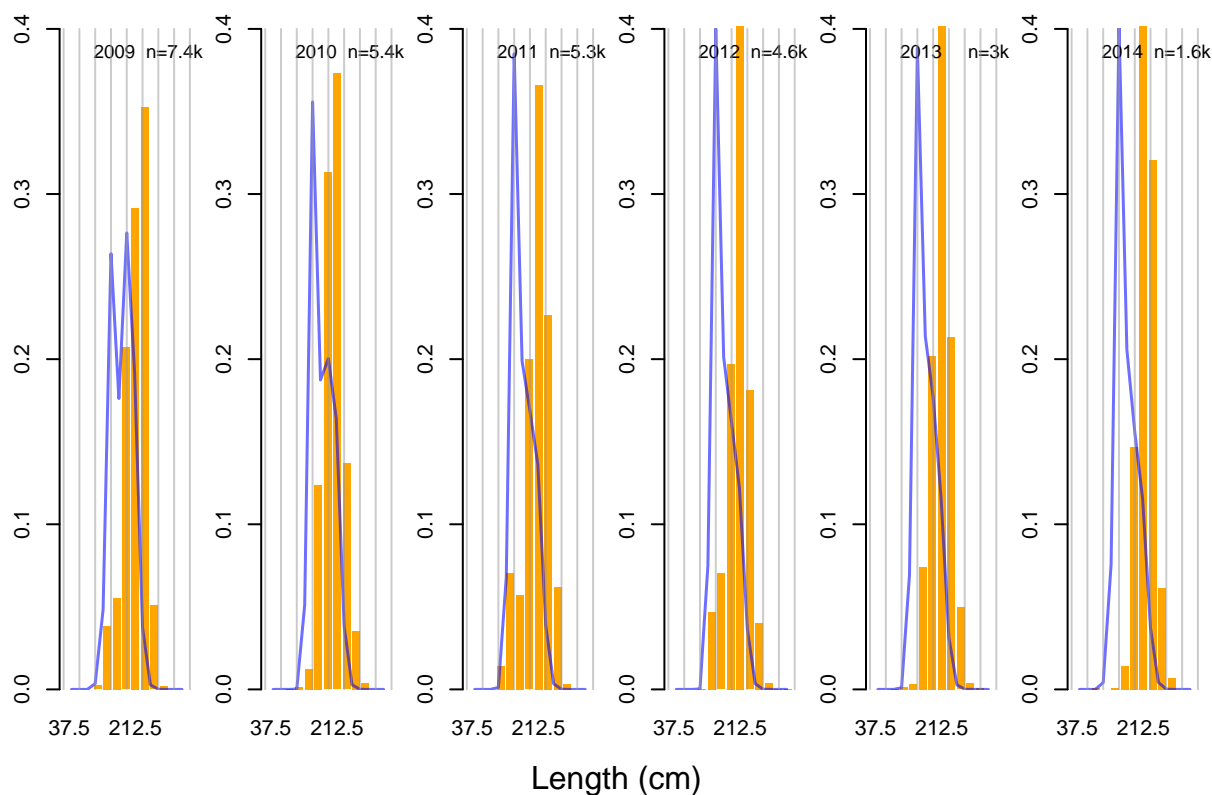
## Length composition fit for TPOld

Predicted (line) versus observed (point) catch at length for the TPOld fleet (n=79k)



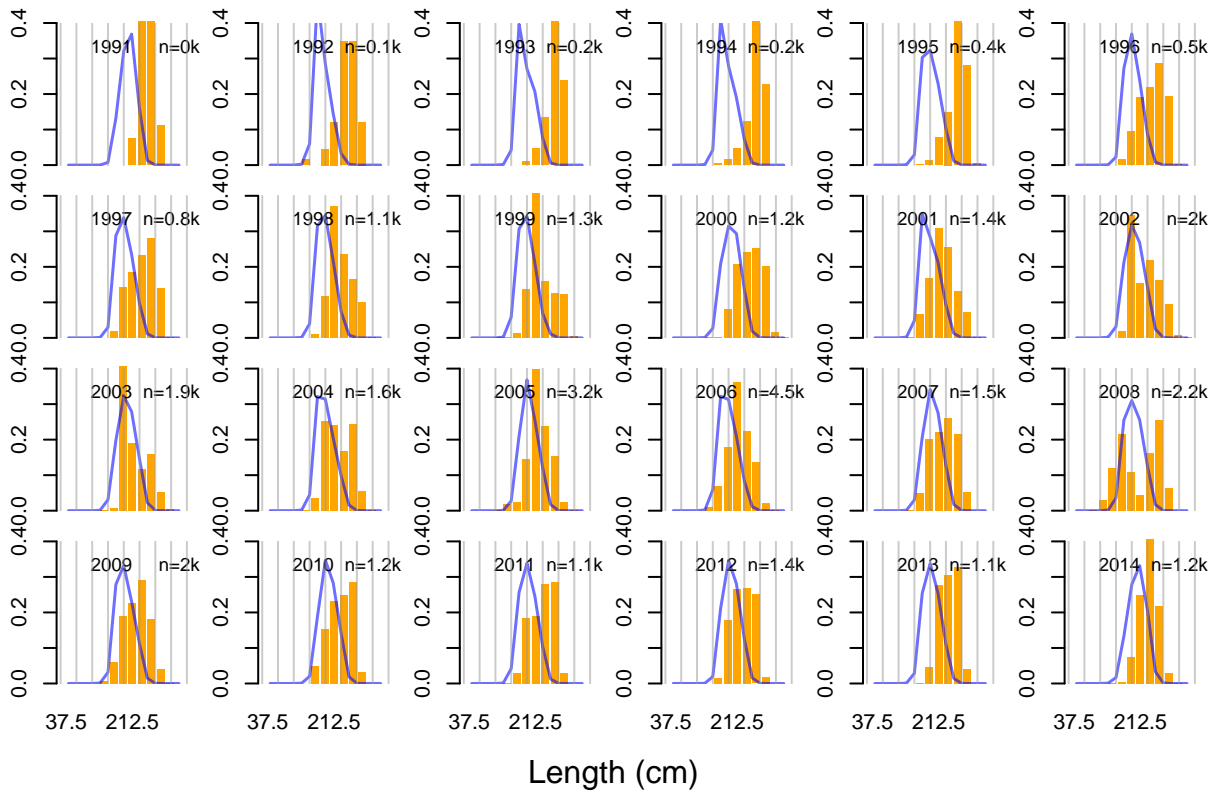
## Length composition fit for TPnew

Predicted (line) versus observed (point) catch at length for the TPnew fleet (n=27k)



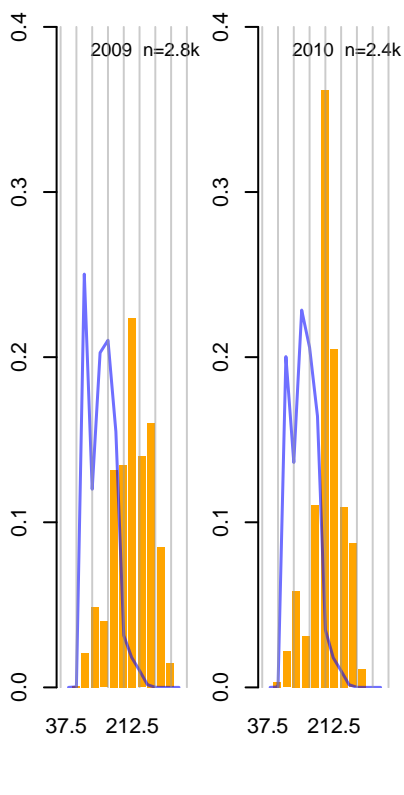
## Length composition fit for RRCan

Predicted (line) versus observed (point) catch at length for the RRCan fleet (n=32k)



## Length composition fit for RRUSA

Predicted (line) versus observed (point) catch at length for the RRUSA fleet (n=5k)



## Length composition fit for ALL OTH

Predicted (line) versus observed (point) catch at length for the ALL OTH fleet (n=170k)

