

## Assessment of Tusk in 5a

Bjarki Þór Elvarsson



**HAFRANNSÓKNASTOFNUN**

# Settings

- Two stock model: immature and mature
  - Age: 1–15 and 6–18
  - Length: 4–110 cm,  $\Delta$ / 2 cm
  - Length based maturation function
  - Natural mortality set to be 0.15 for all years
  - Length based Von Bertalanffy growth
  - Annual recruitment of 1 year olds
- Three fleets: survey, longlines and foreign vessels
- Model time: 1982–2016, quarterly timestep
- A total of 71 parameters estimated



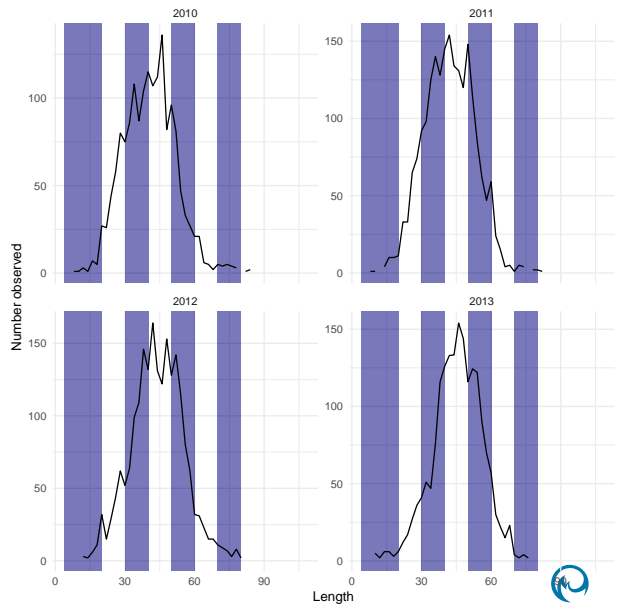
# Observational data

- Survey indices from the Icelandic groundfish survey from 1984:
  - si.20-40
  - si.40-70, split into two sub-groups
  - si.70-110, split into 4 sub-groups
- Survey samples from 1984 (as available):
  - ldist.igfs: proportion at length
  - aldist.igfs: proportion at length and age
  - matp.igfs: proportion mature at length
- Commercial samples from 1982 (as available)
  - ldist.comm: proportion at length
  - aldist.commt: proportion at length and age
- Commercial catches by gear since 1982

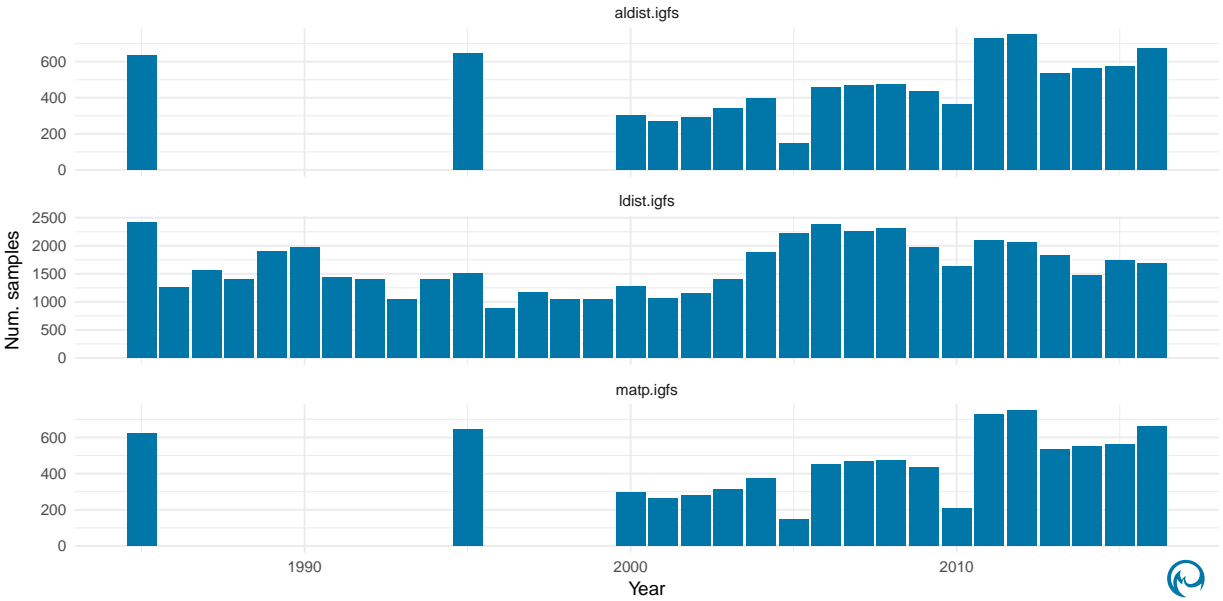


# Survey indices

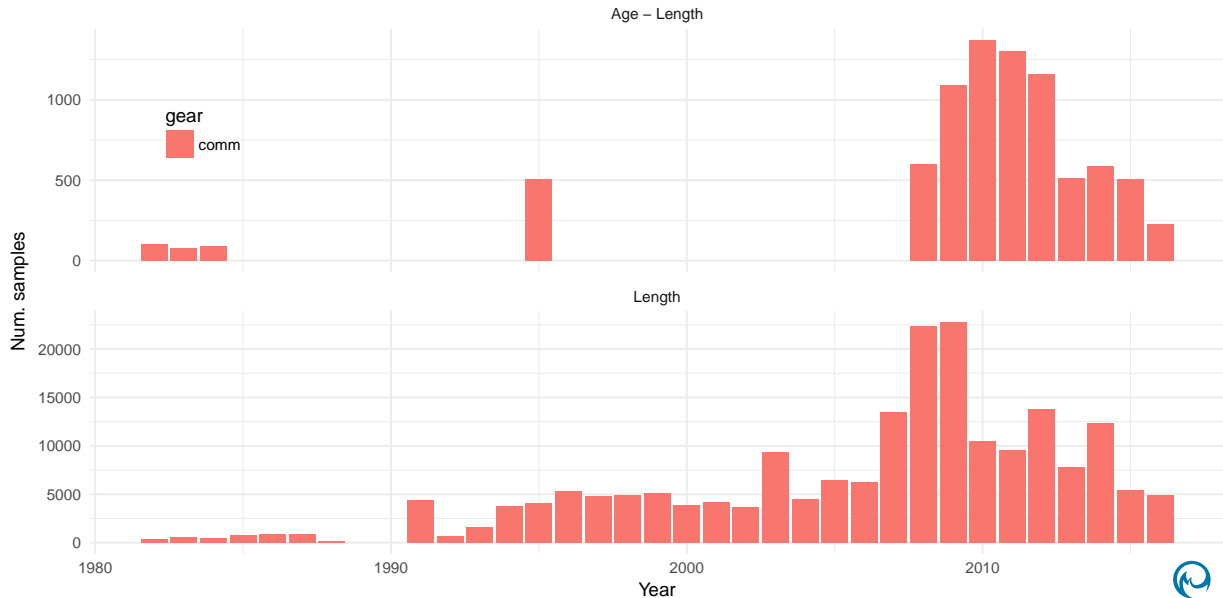
| name      | range    | n          |
|-----------|----------|------------|
| si.10-40  | 4 – 20   | 3268.1250  |
| si.10-40  | 20 – 30  | 9638.2280  |
| si.10-40  | 30 – 40  | 12102.4700 |
| si.40-70  | 40 – 50  | 14082.1150 |
| si.40-70  | 50 – 60  | 9333.5490  |
| si.40-70  | 60 – 70  | 2605.3713  |
| si.70-110 | 70 – 80  | 569.1429   |
| si.70-110 | 80 – 110 | 233.0000   |



# Available samples from the Icelandic groundfish survey



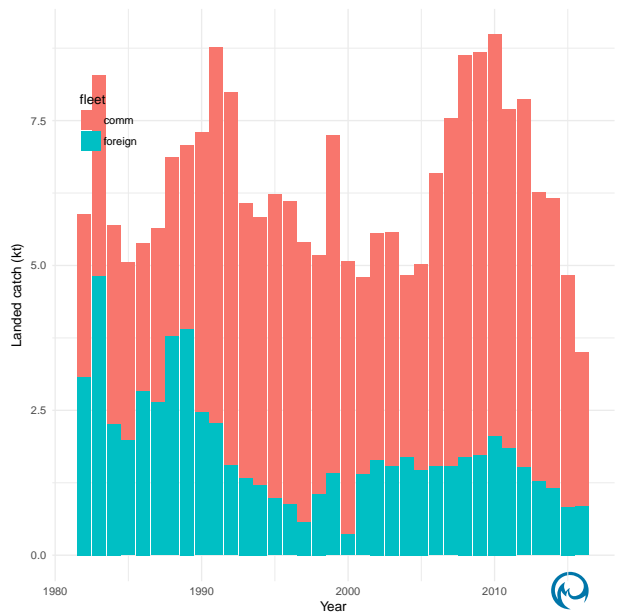
# Available samples from commercial catches



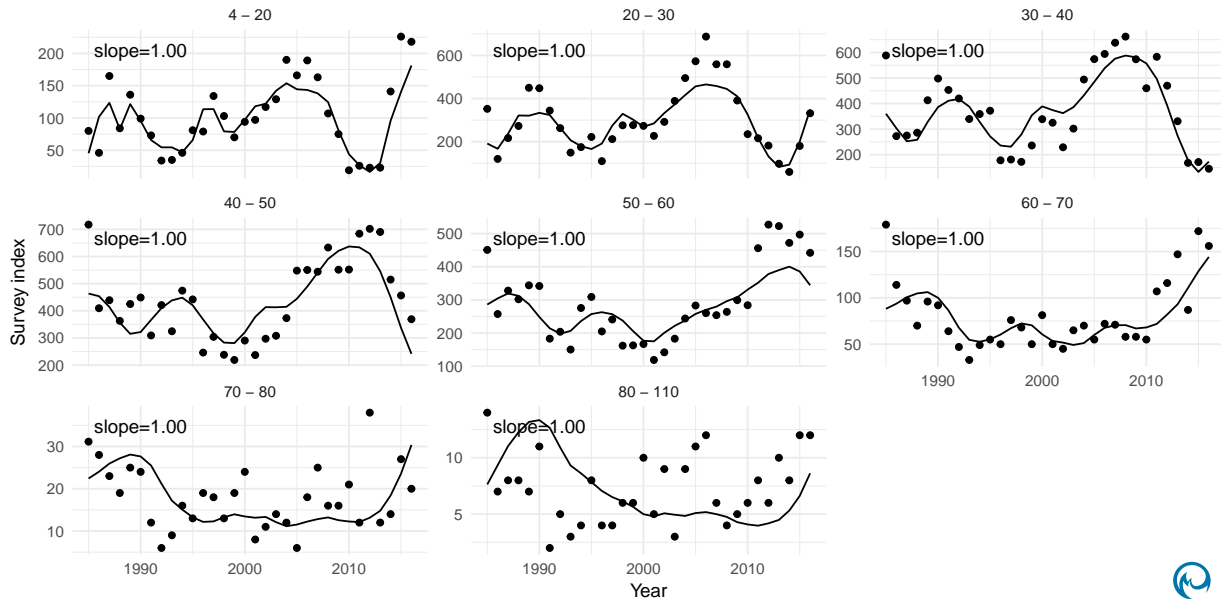
# Landings data

## Sources of landings data:

- Landings of Icelandic vessels:
  - Pre 1993: landings by port from Fiskifélagið
  - Post 1993: Directorate of fisheries, catches reported by vessel
- Landings of foreign vessels:
  - Pre 2014: Statlant
  - Post 2014: Directorate of fisheries, catches reported by vessel

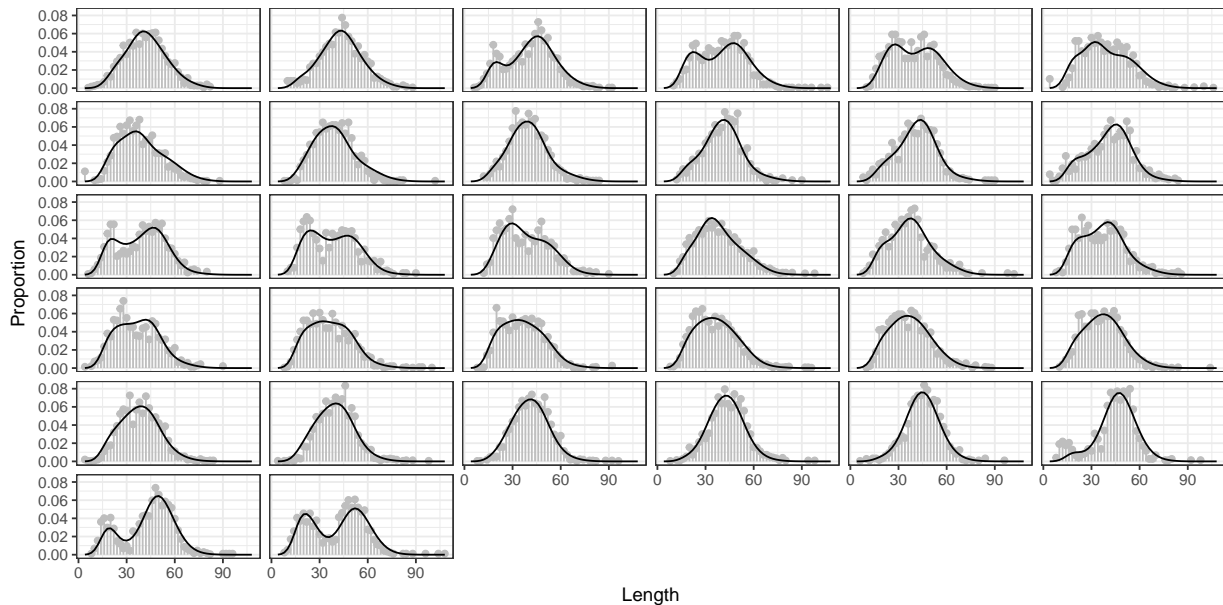


# Fit to data – Indices

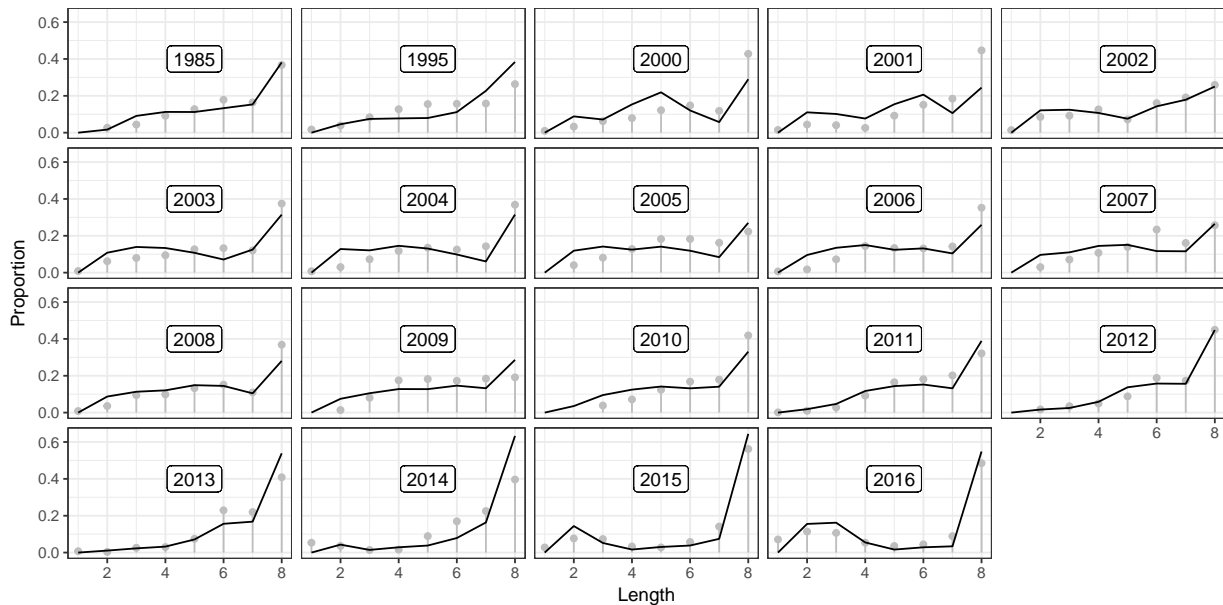




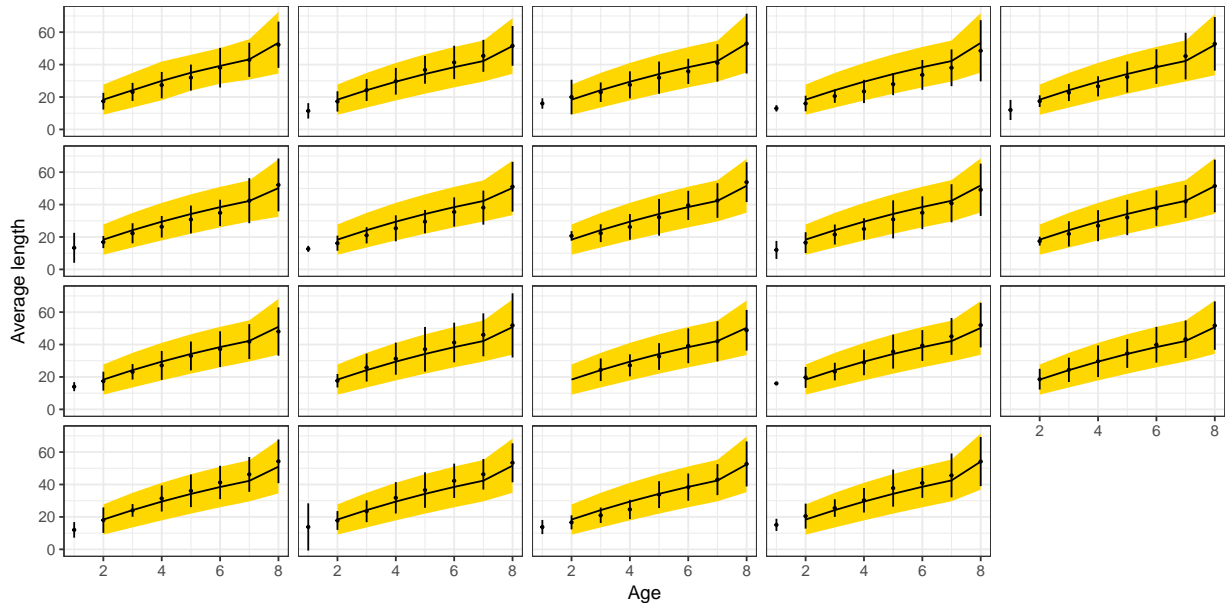
## Fit to data – survey length distributions



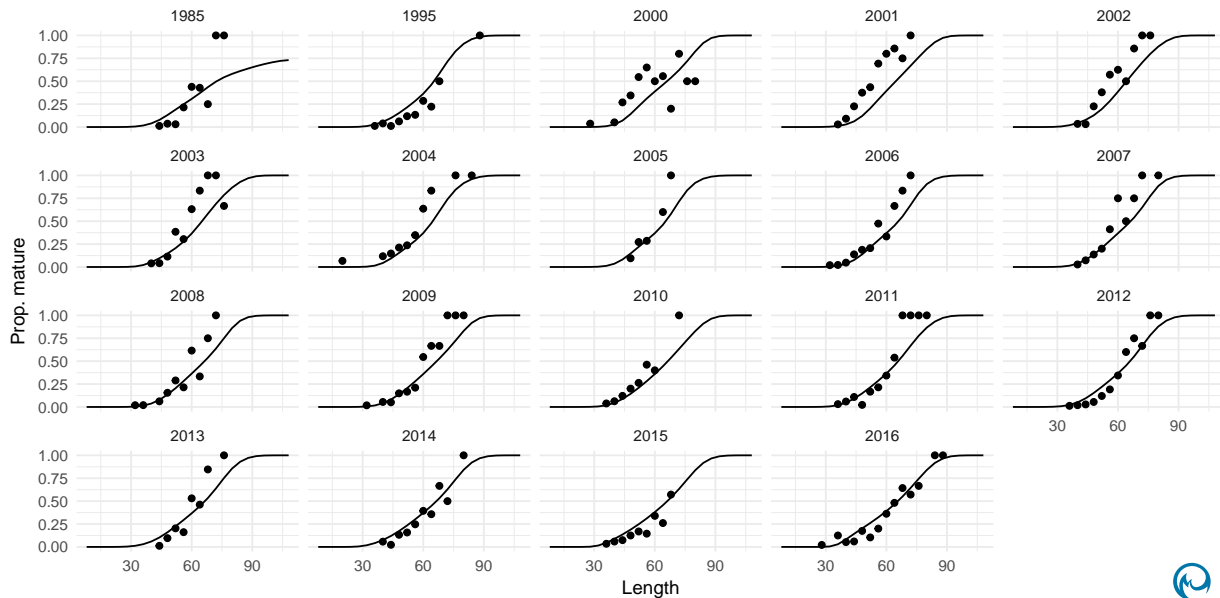
## Fit to data – survey age distributions



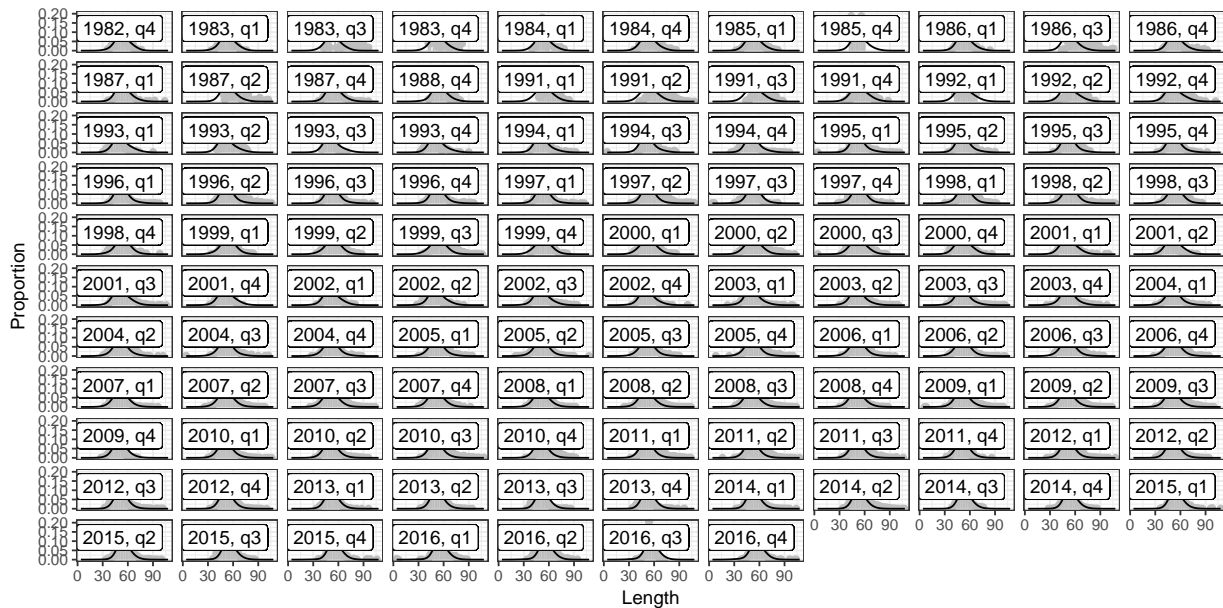
# Fit to data – survey growth data



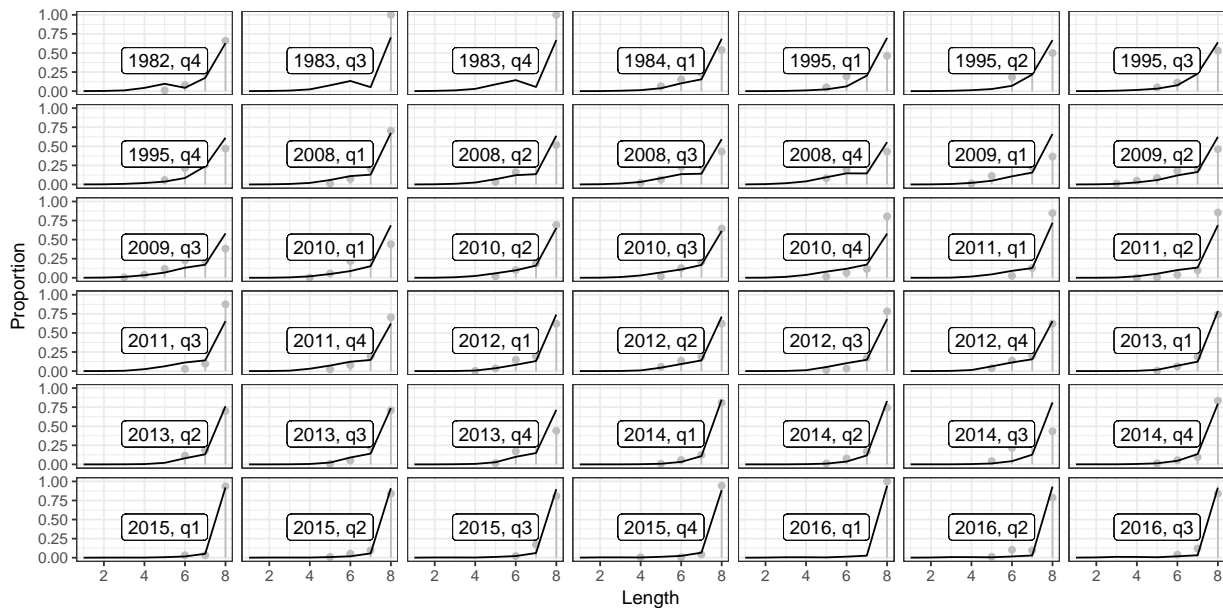
# Fit to data – survey maturity



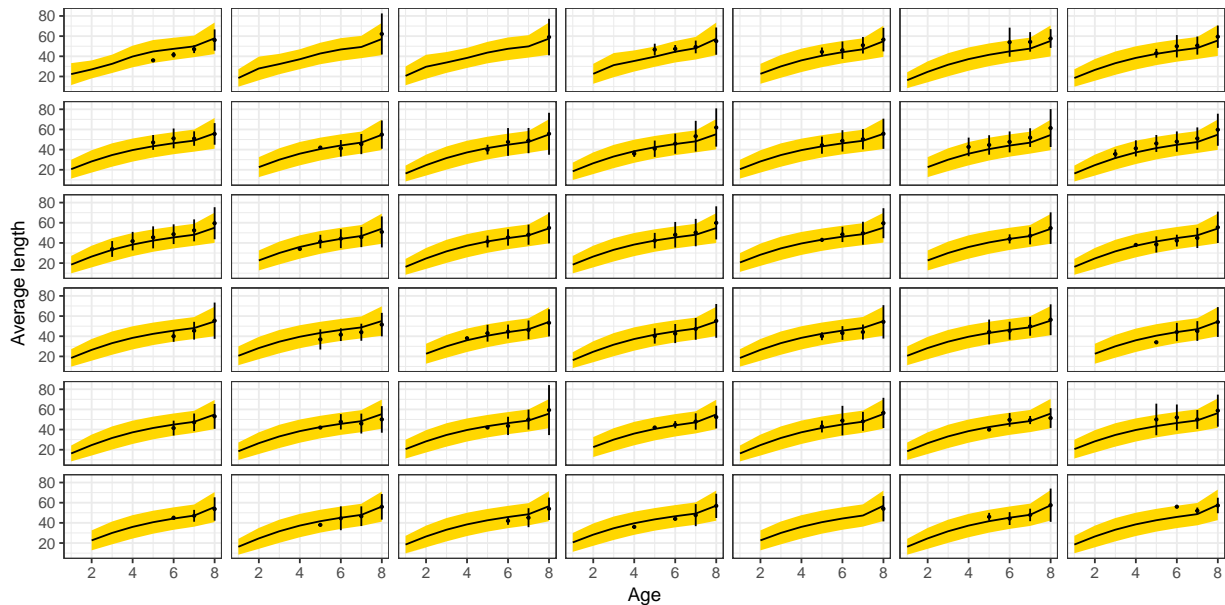
# Fit to data – comm length distributions



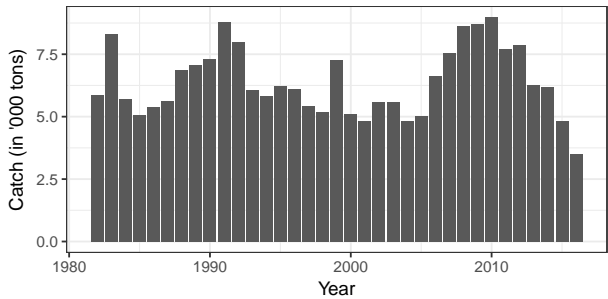
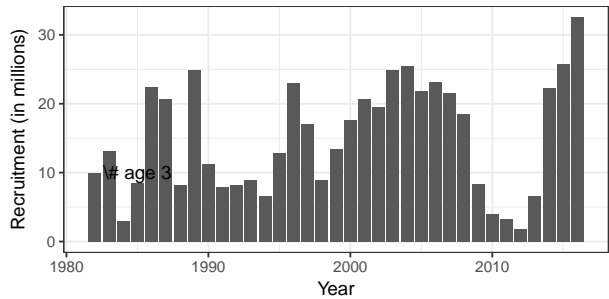
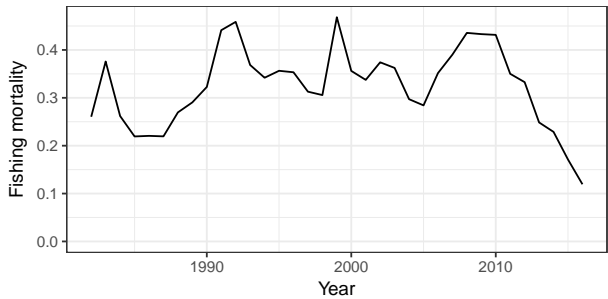
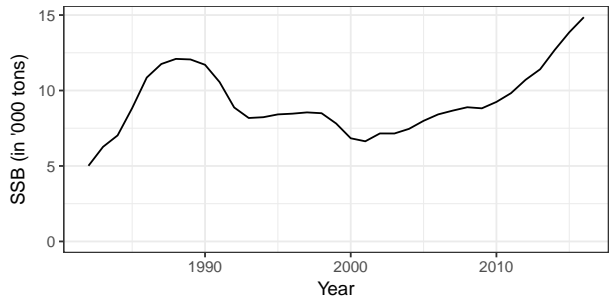
## Fit to data – comm age distributions



# Fit to data – comm growth data

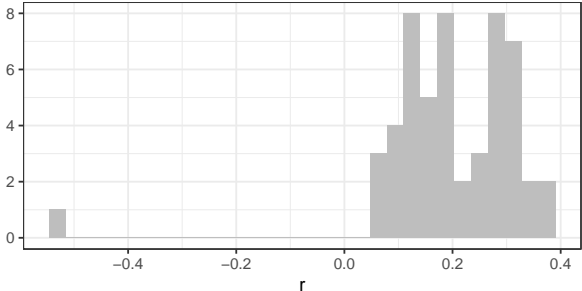
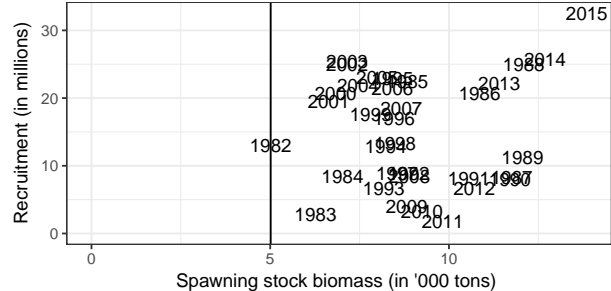
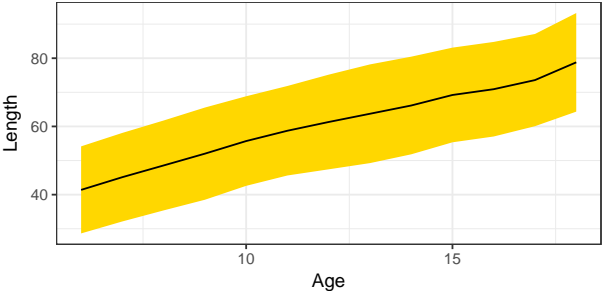
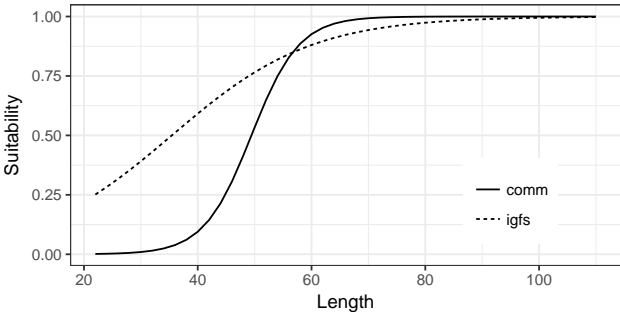


# Assessment results





# Other derived quantities



# Forward projections

