

# Sardine GSA 17-18

Spawning stock biomass

SSB

Fishing mortality

Fbar

Recruitment

Rec

2000

2005

2010

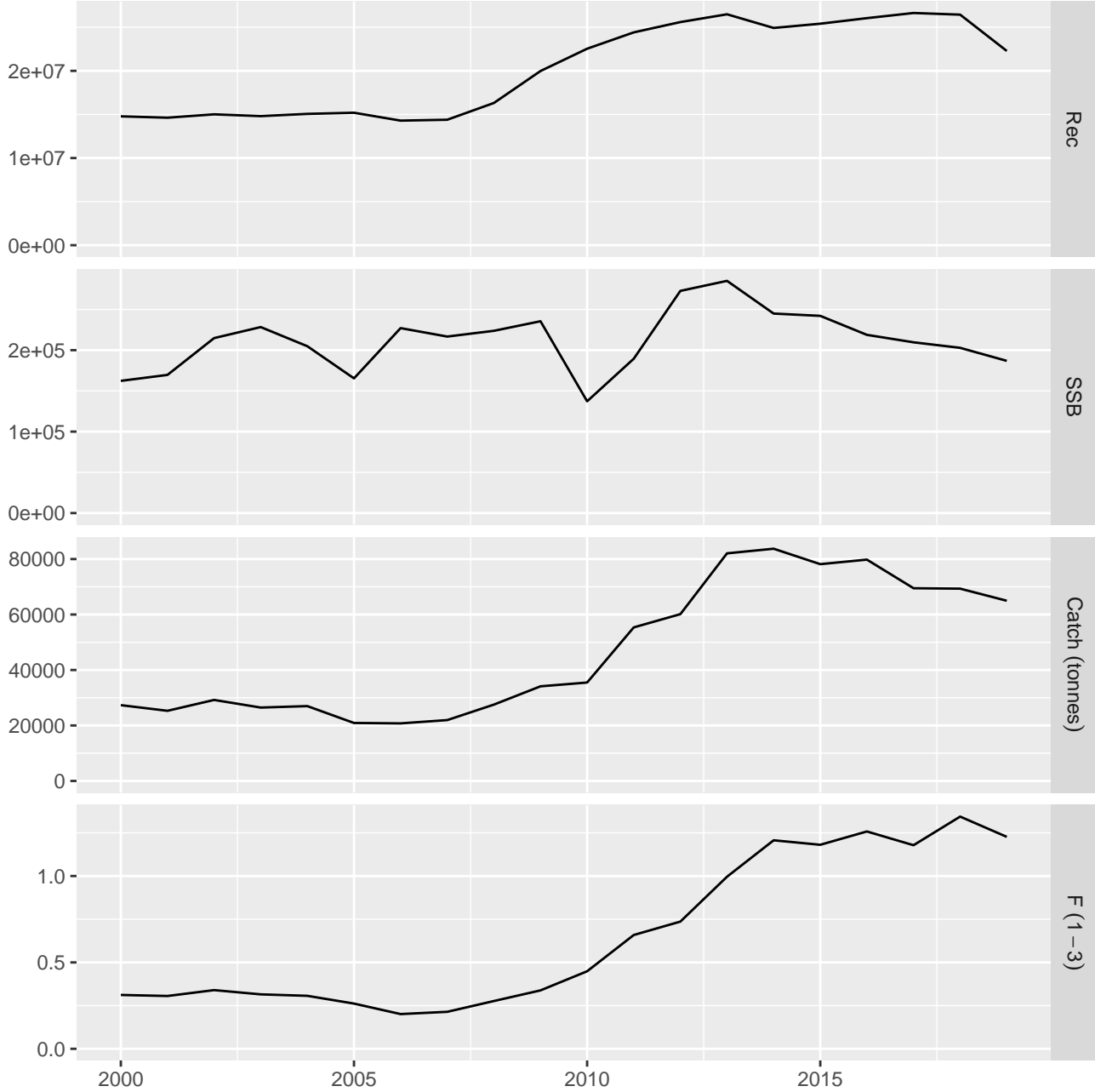
2015

Year

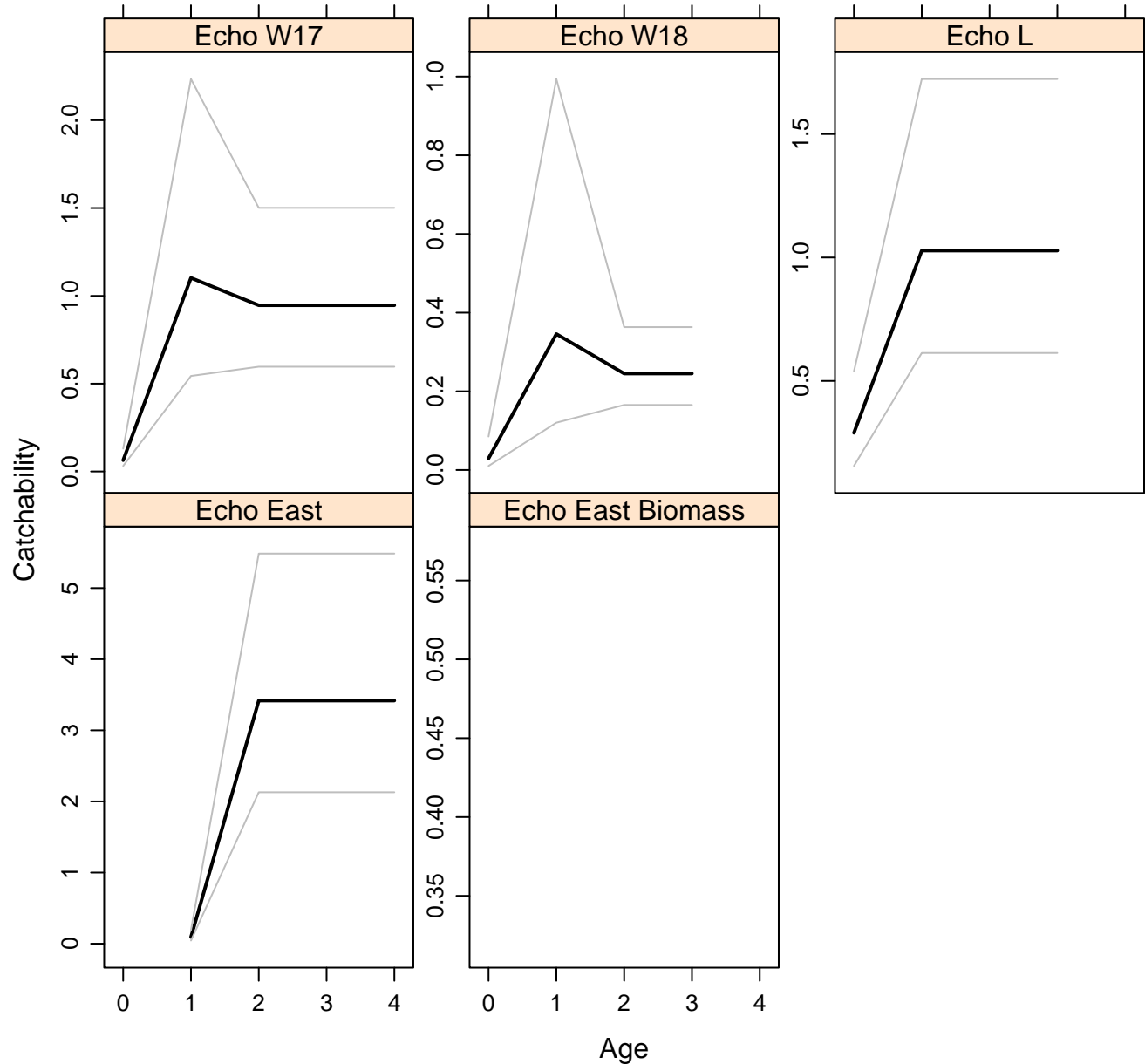
1200000  
1000000  
800000  
600000  
400000  
200000  
0

2.0  
1.5  
1.0  
0.5  
0.0

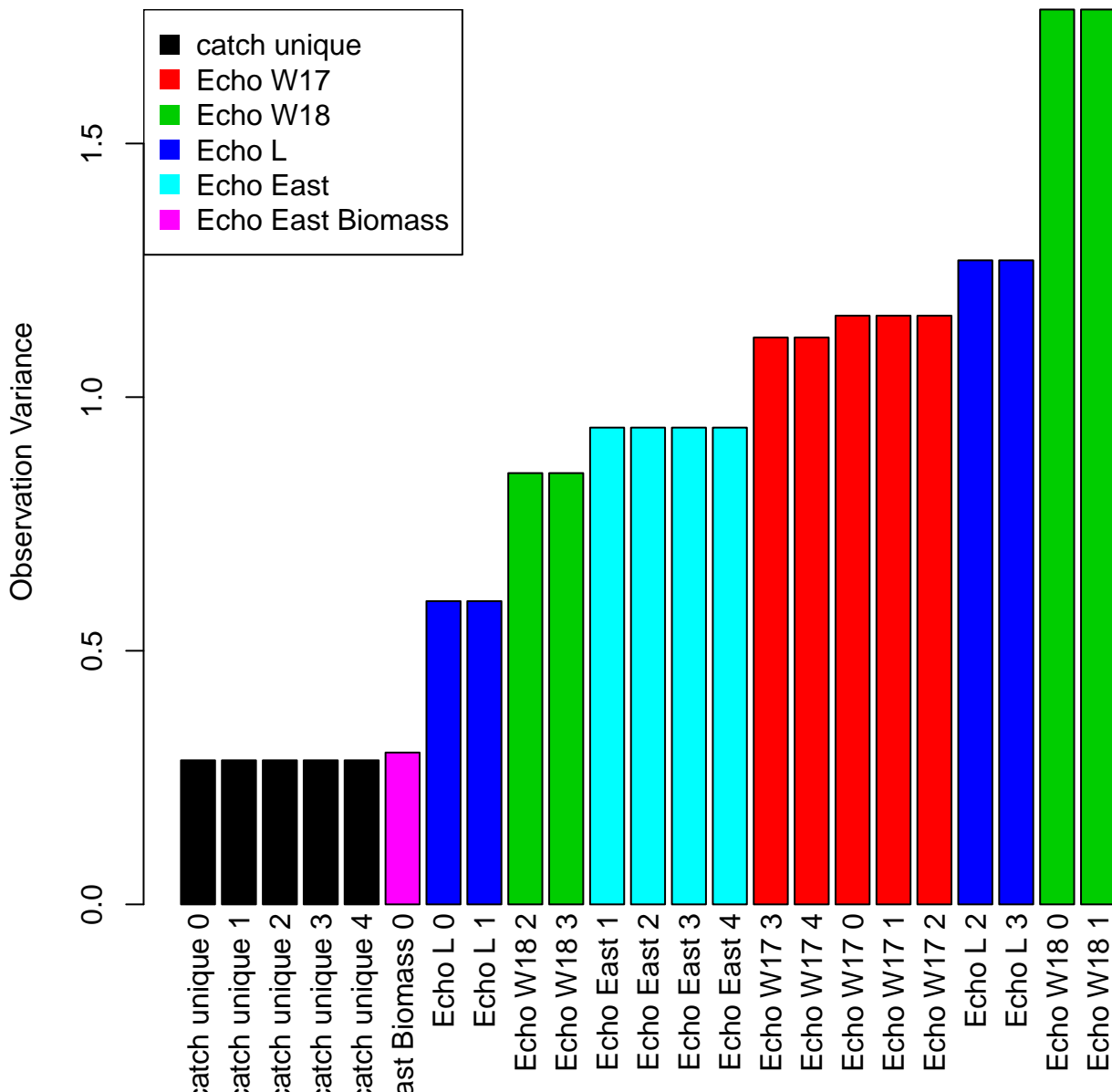
5e+07  
4e+07  
3e+07  
2e+07  
1e+07  
0e+00



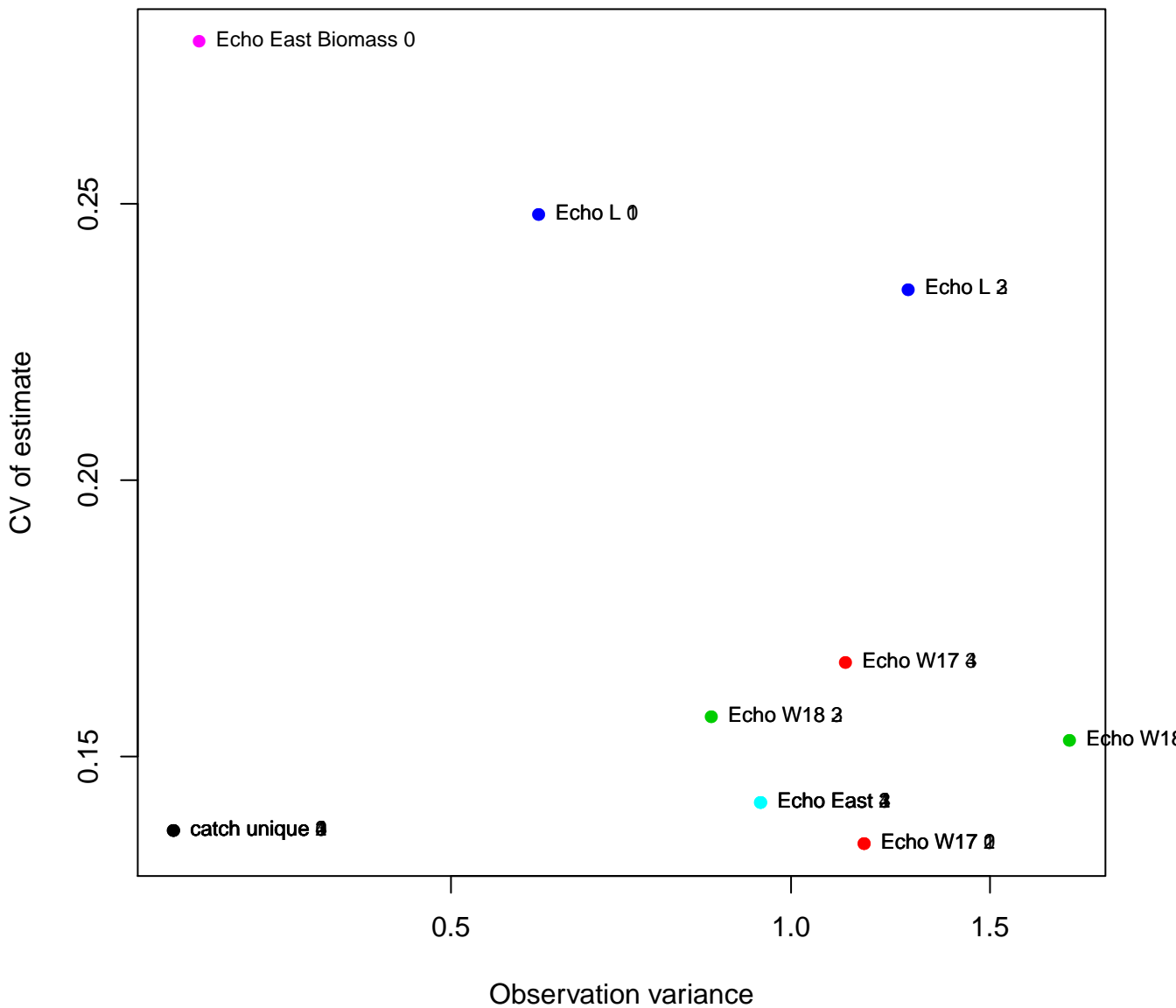
# Survey catchability parameters



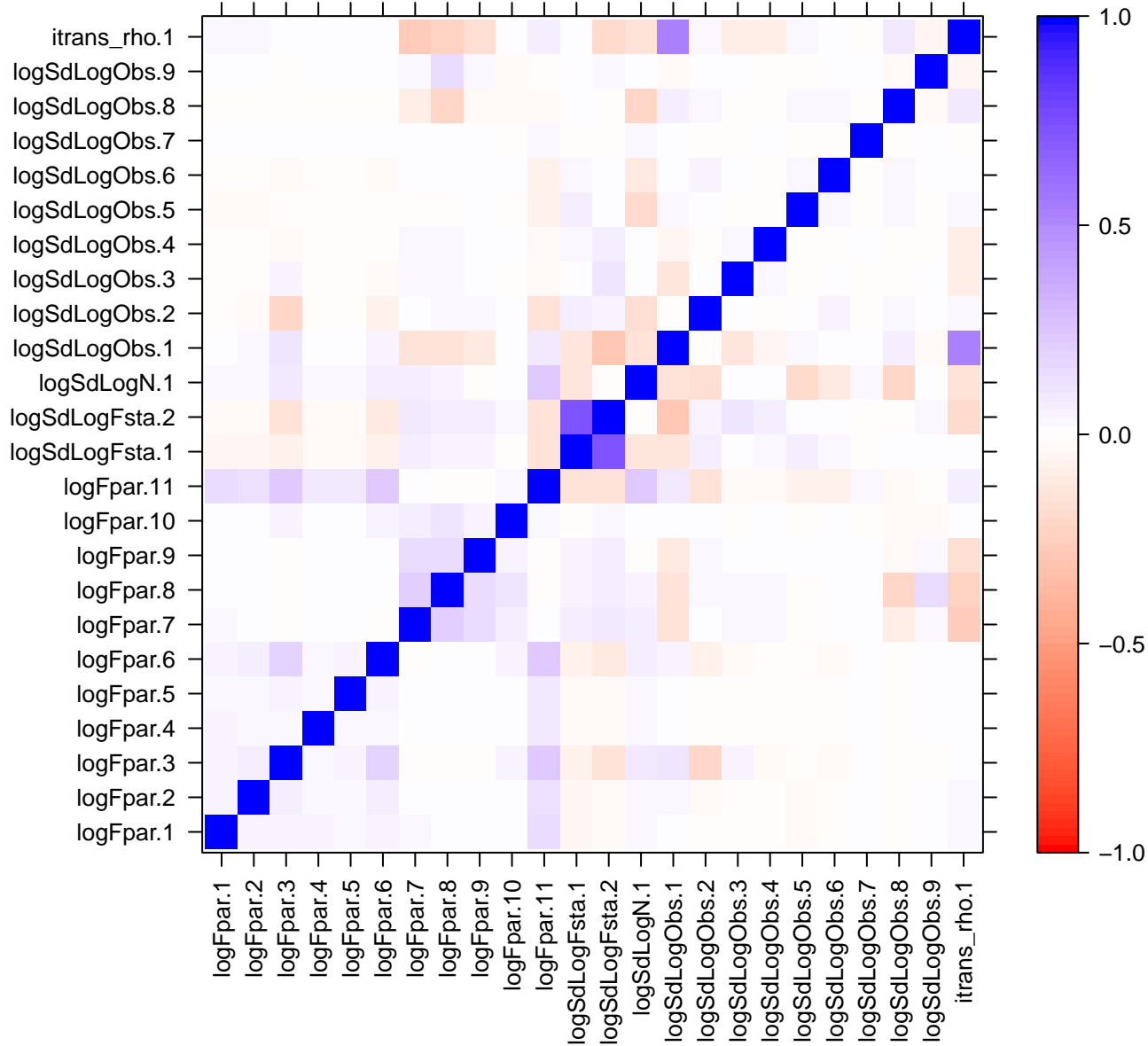
Observation variances by data source



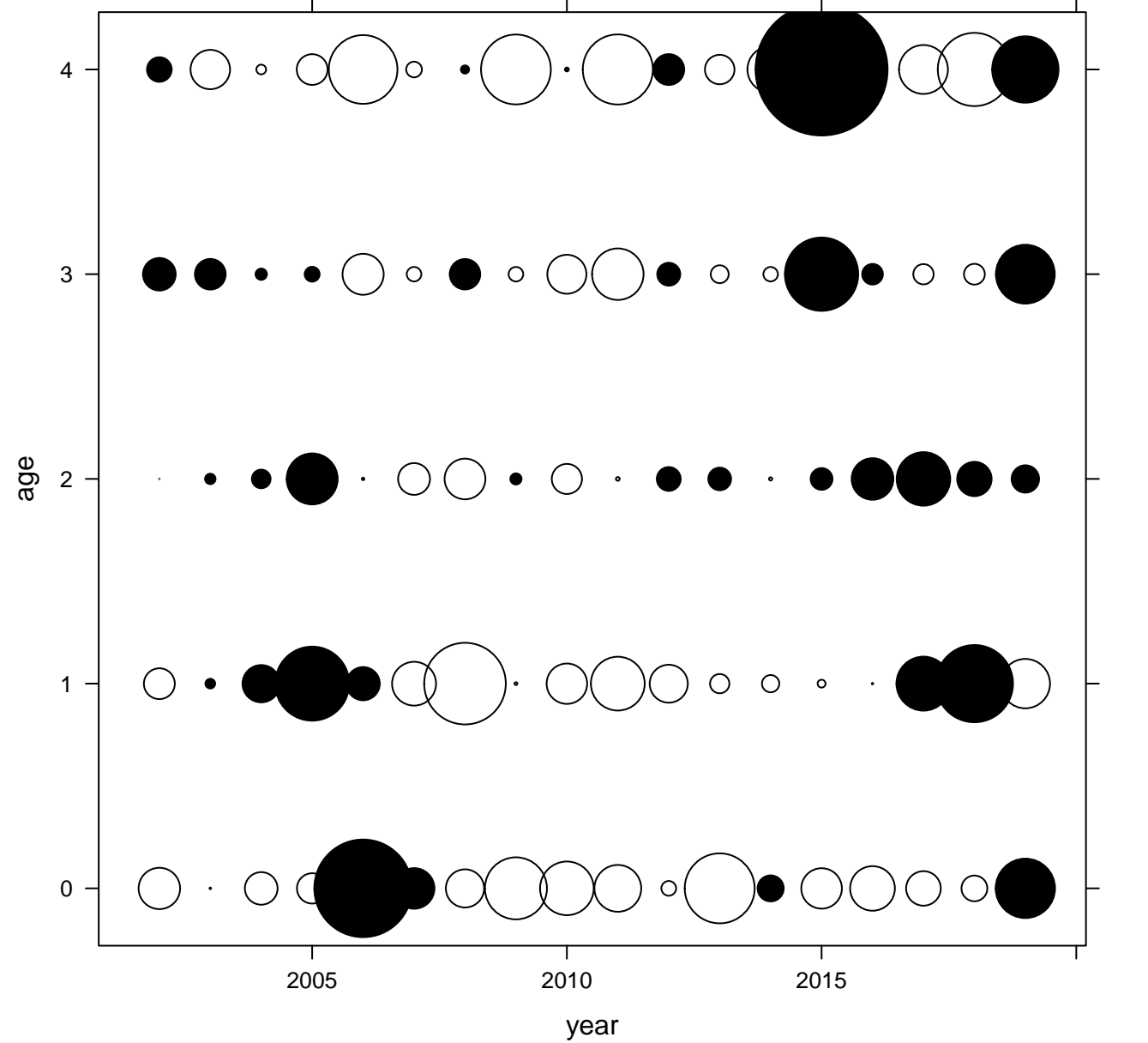
## Observation variance vs uncertainty



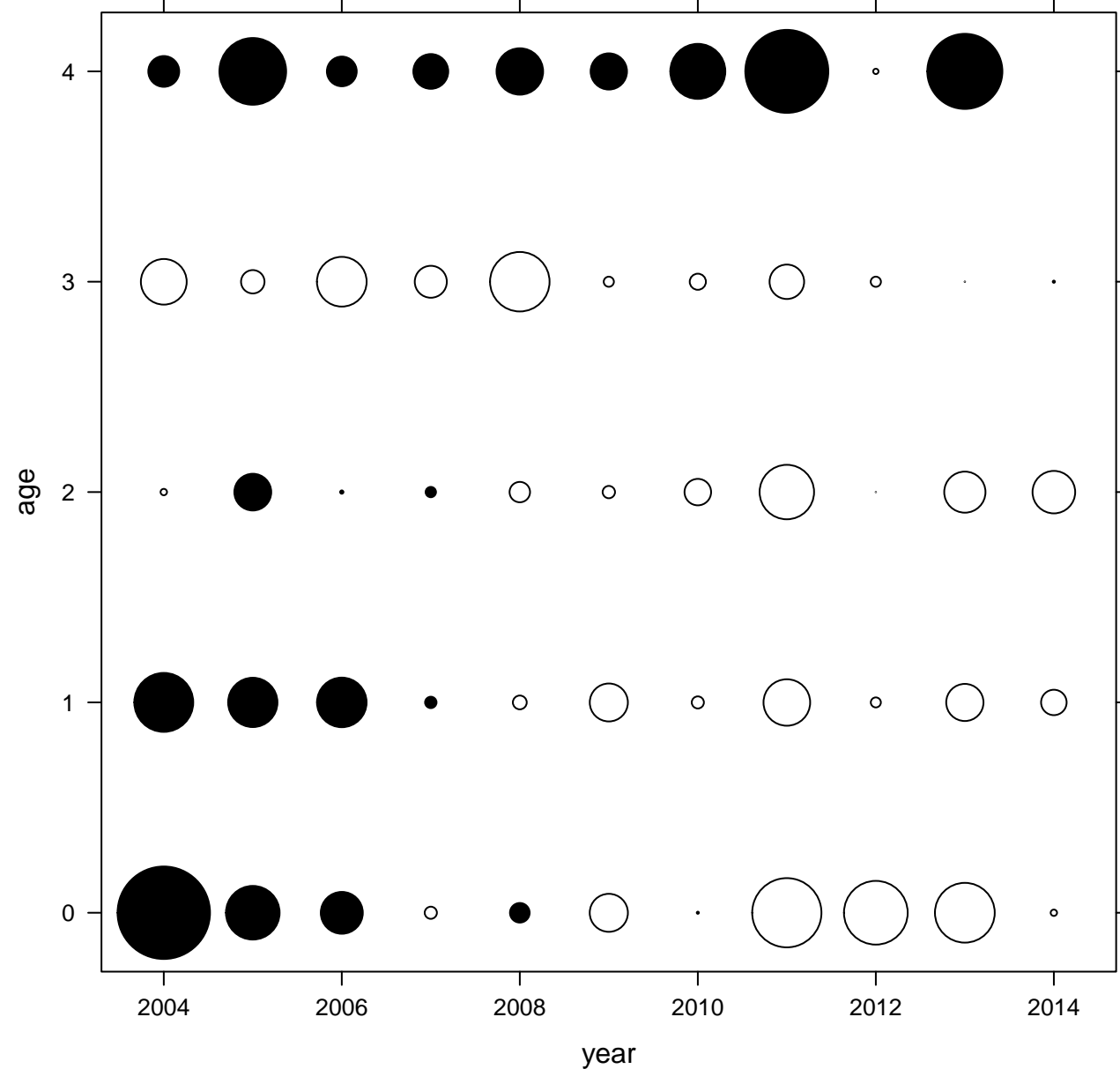
# Sardine GSA 17-18



Residuals by year Catch

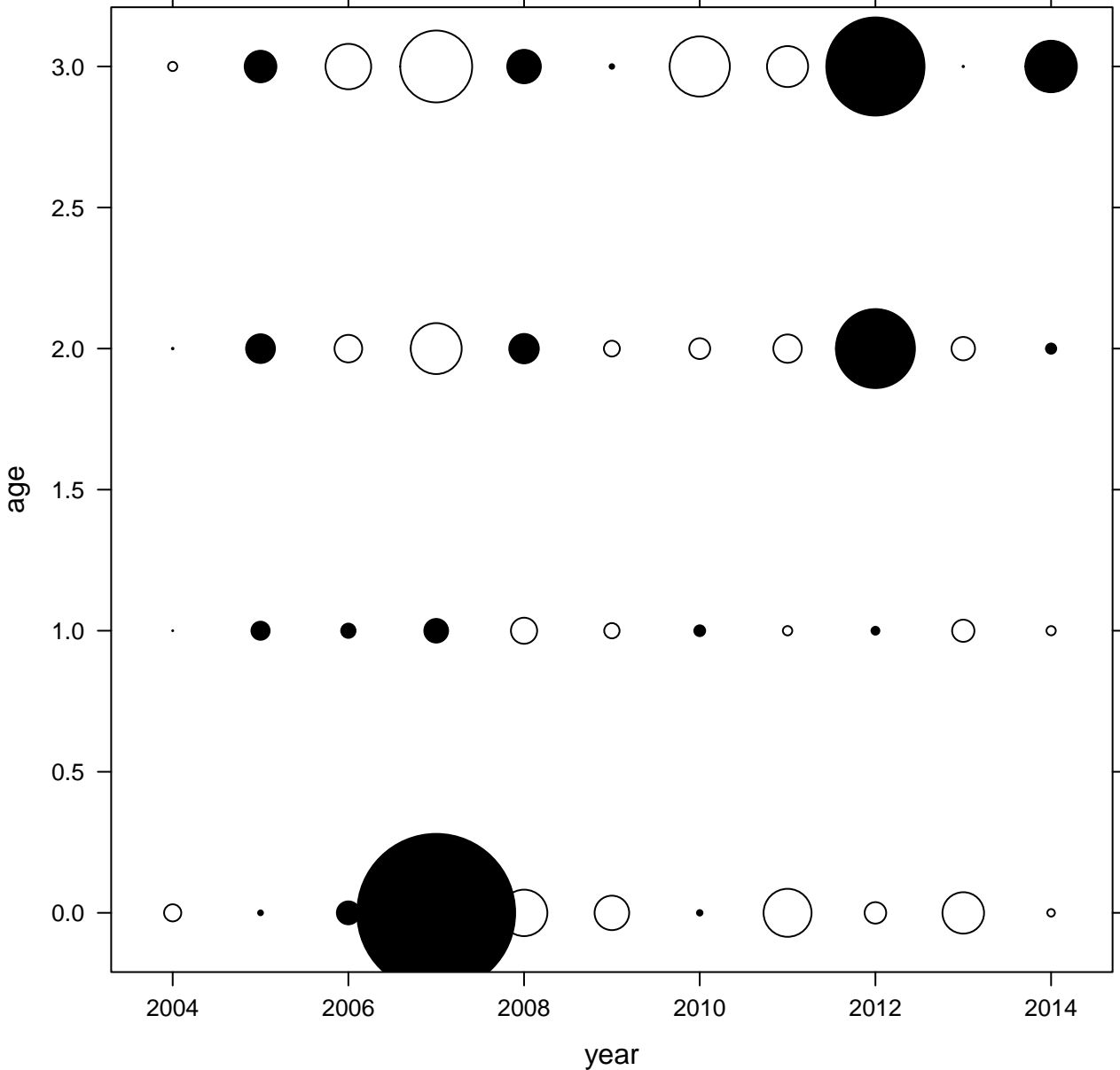


Residuals by year Echo W17

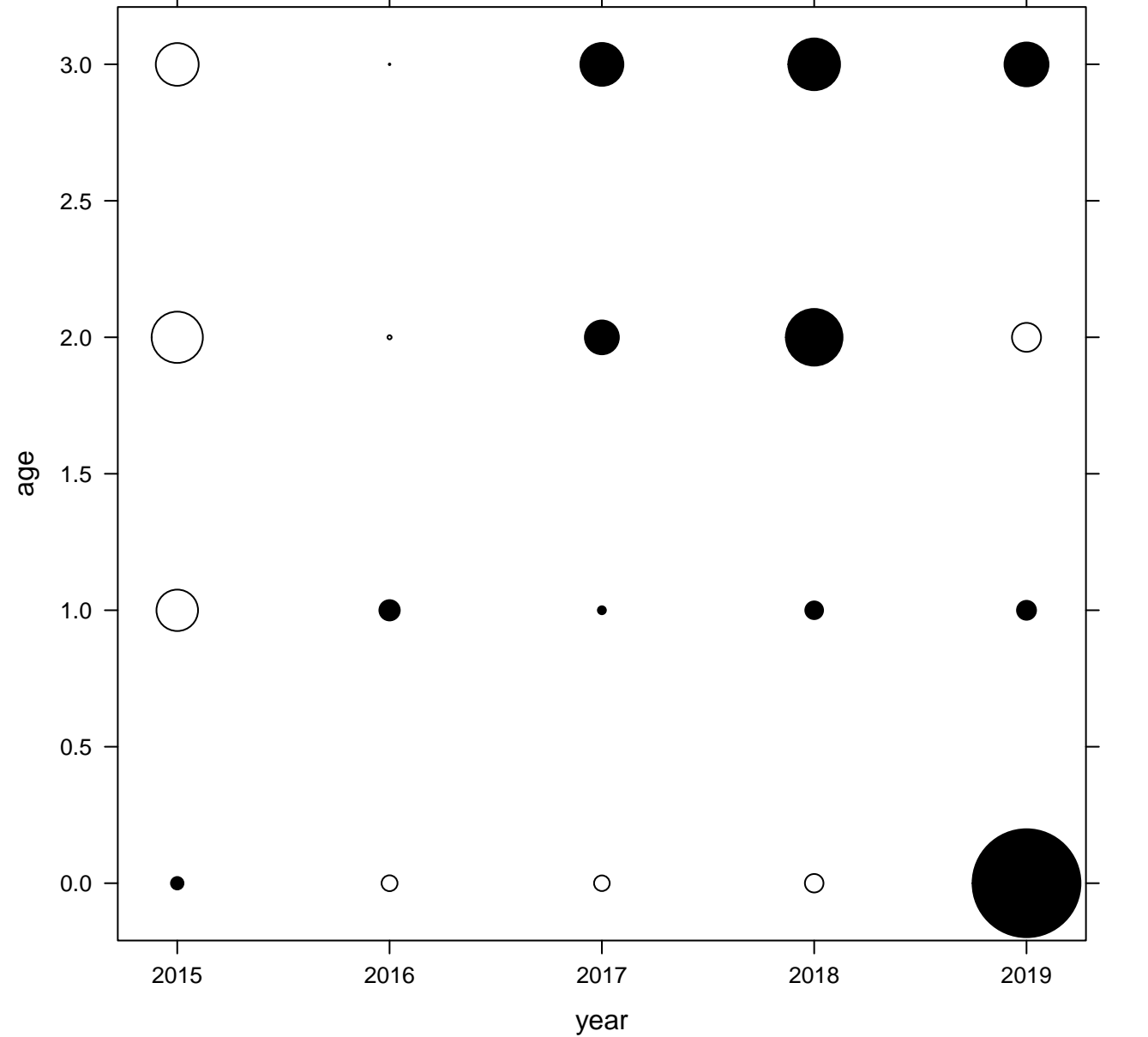




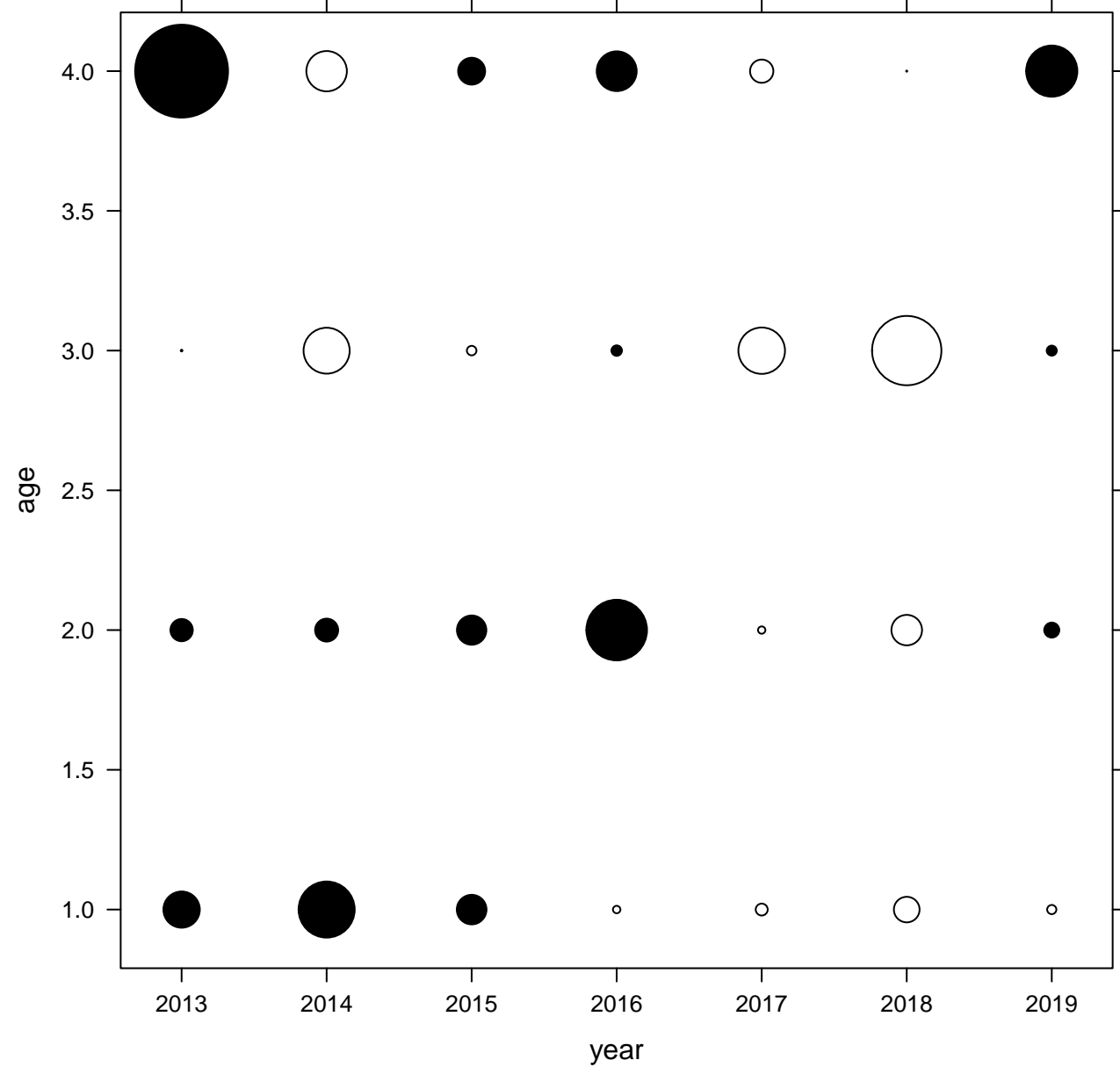
**Residuals by year Echo W18**



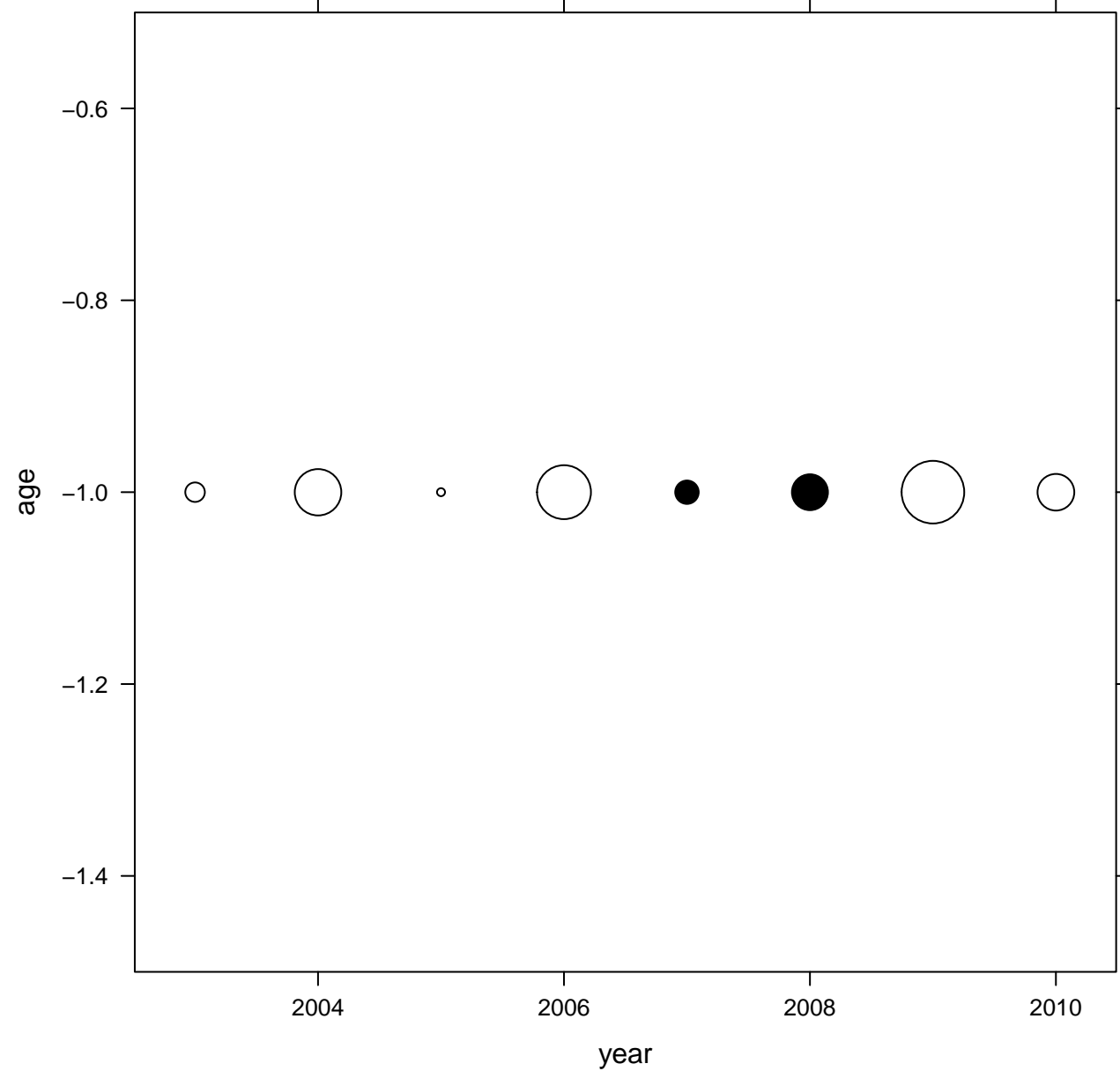
Residuals by year Echo L

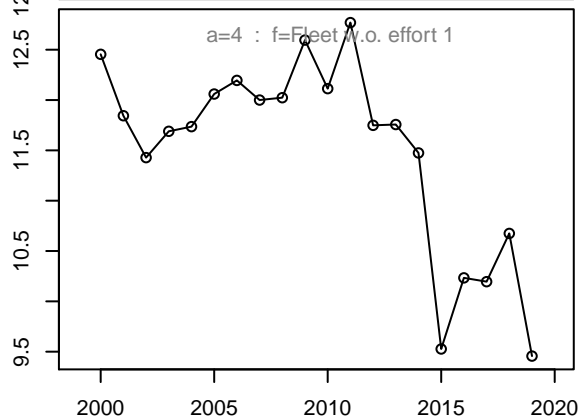
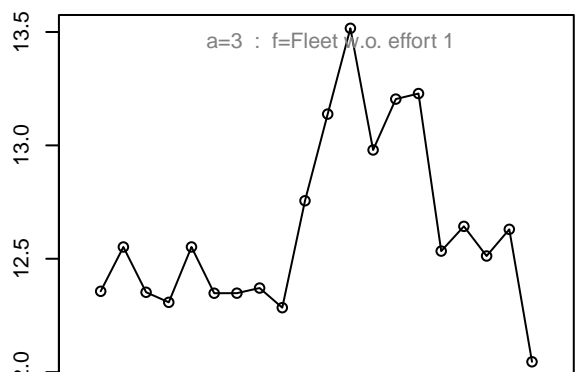
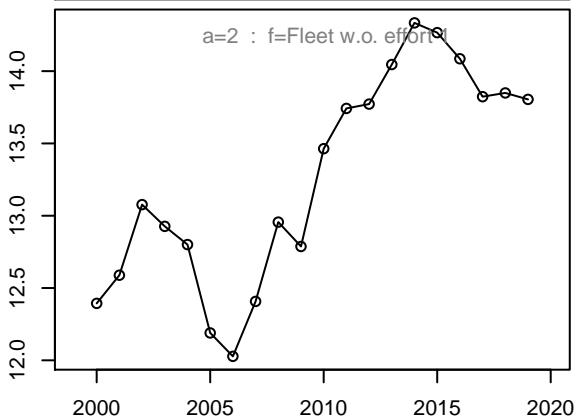
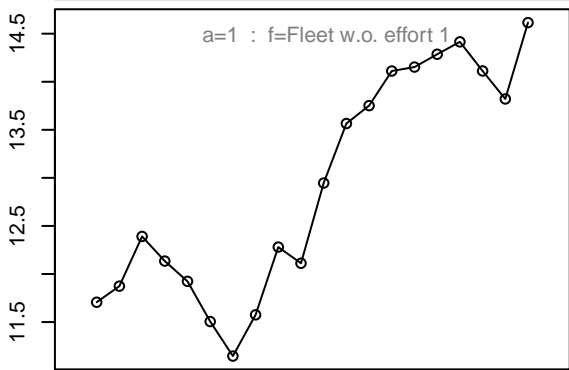
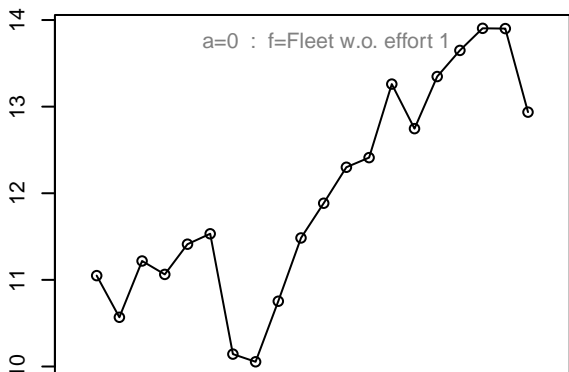


**Residuals by year Echo East**

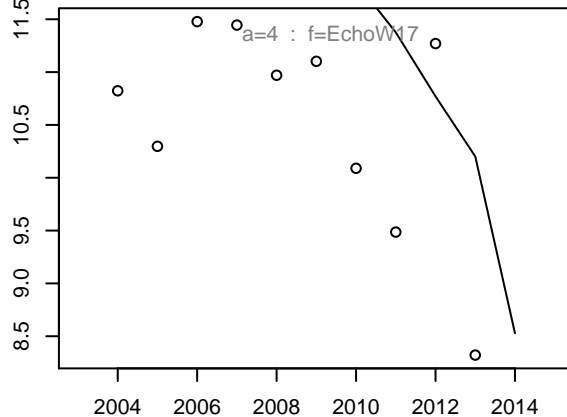
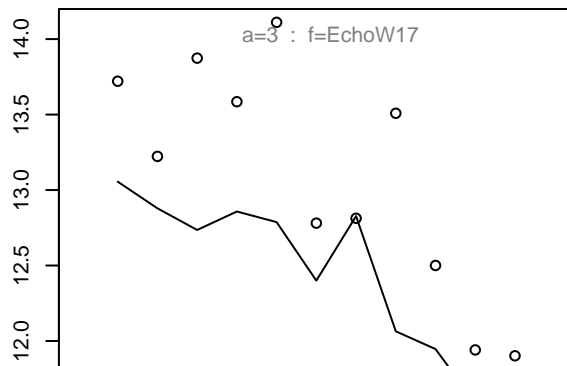
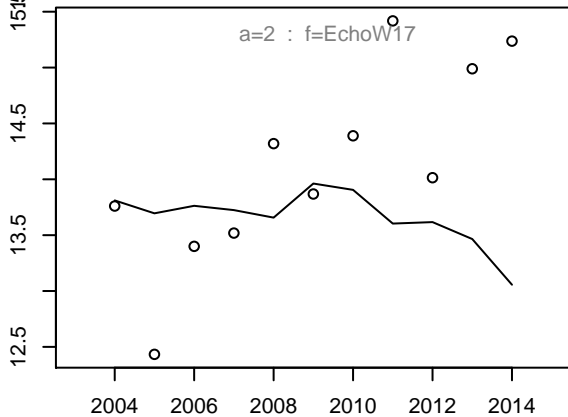
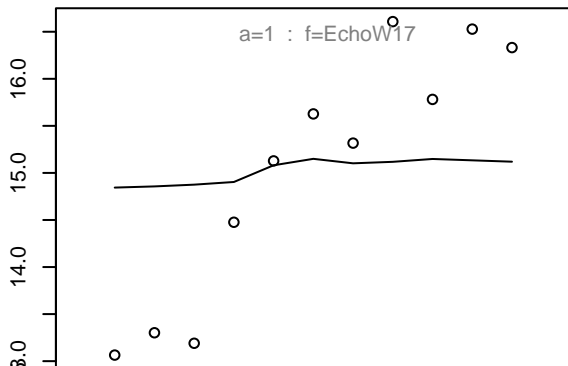
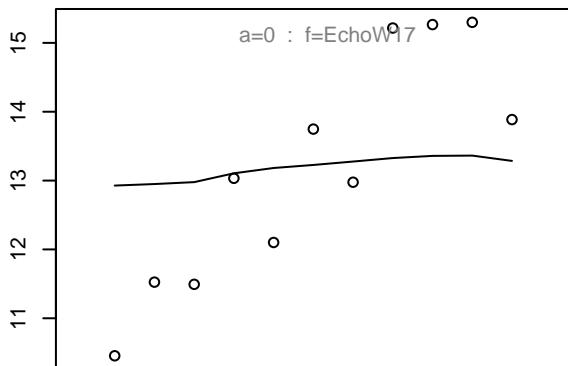


**Residuals by year Echo East Biomass**

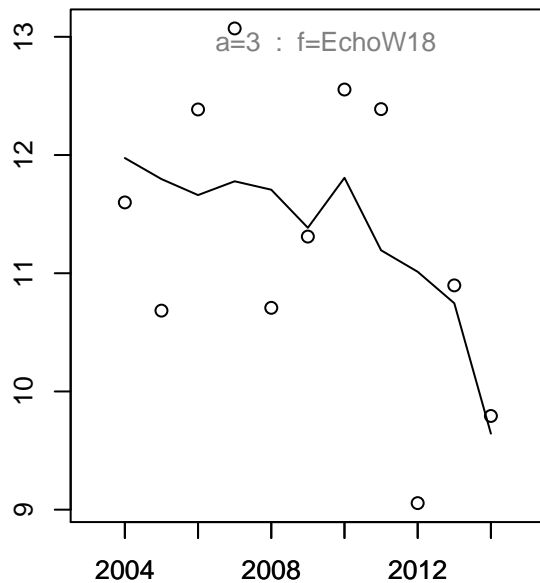
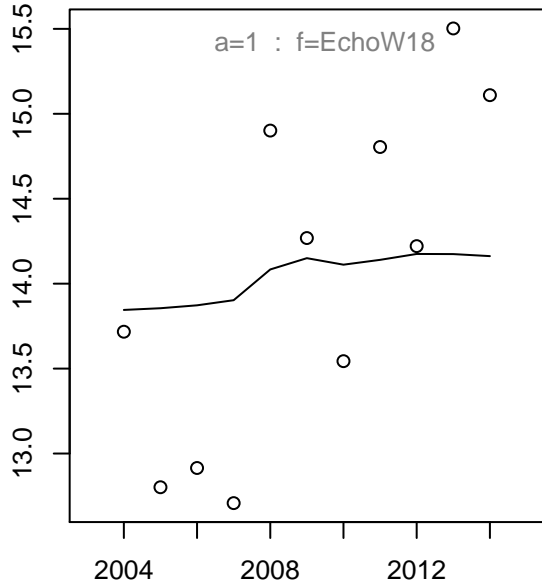
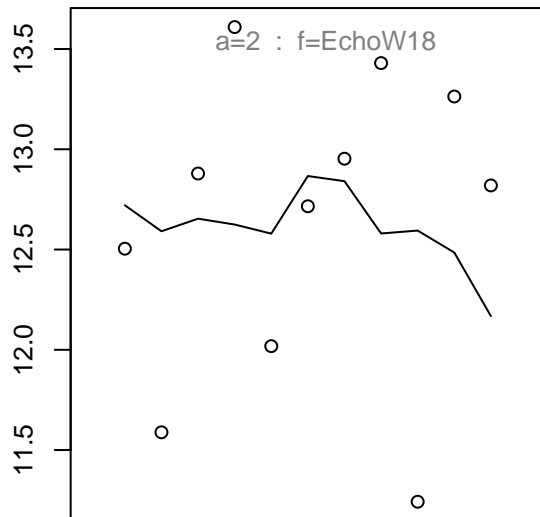
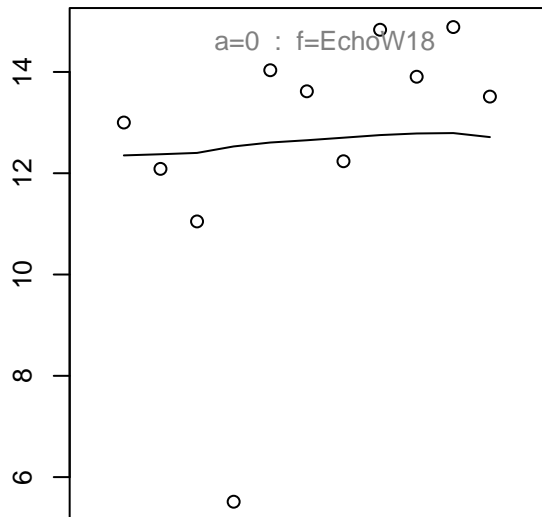




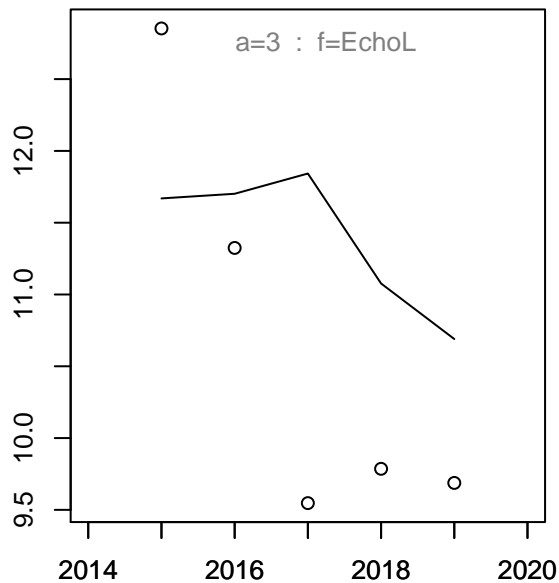
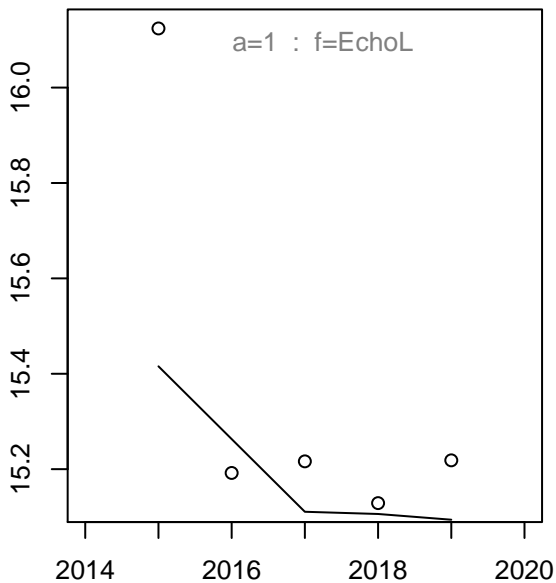
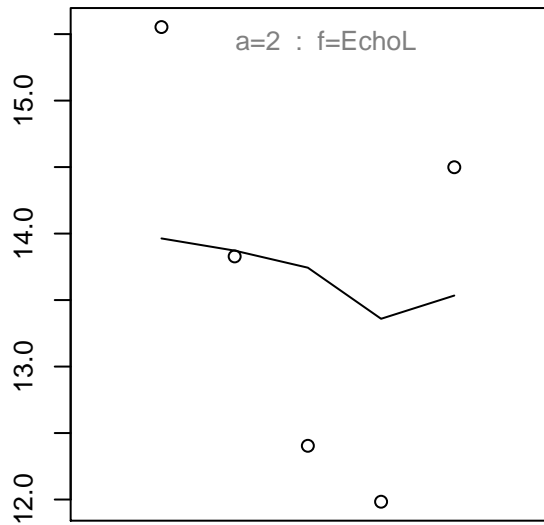
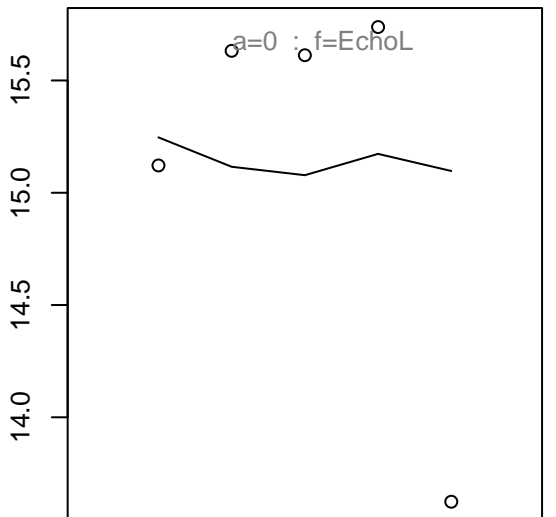
Year



Year

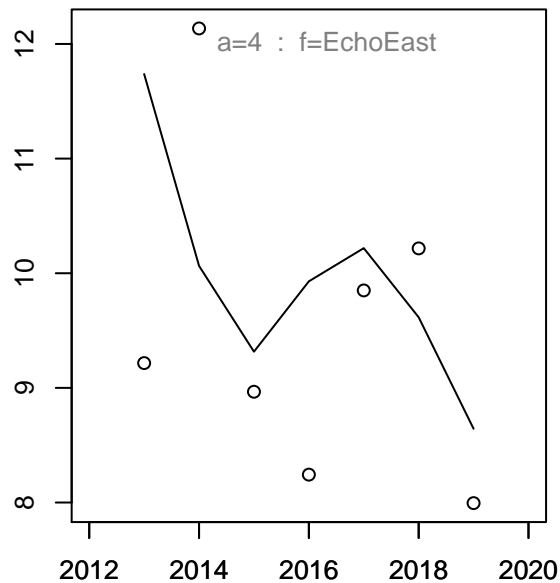
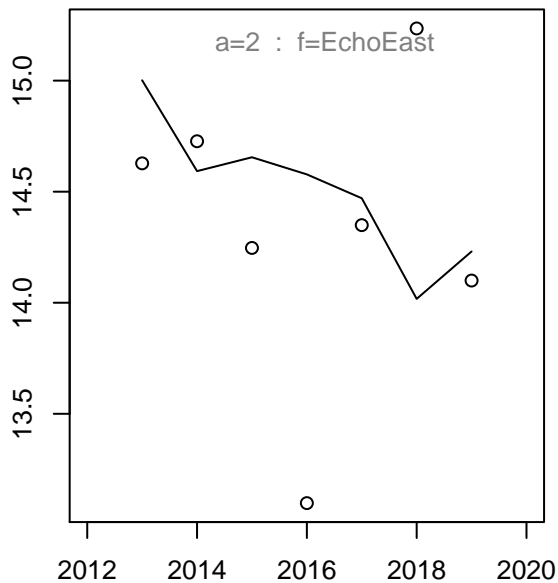
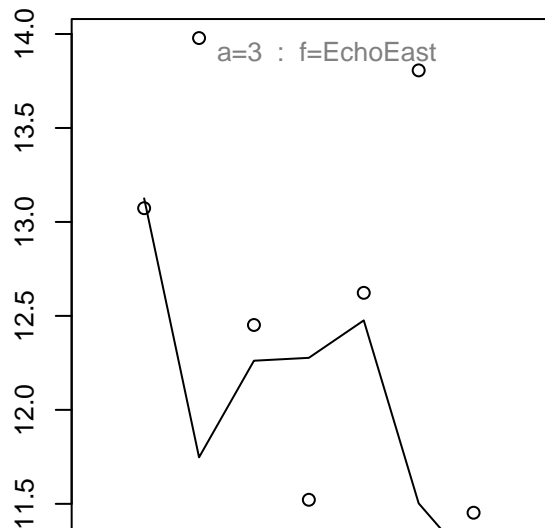
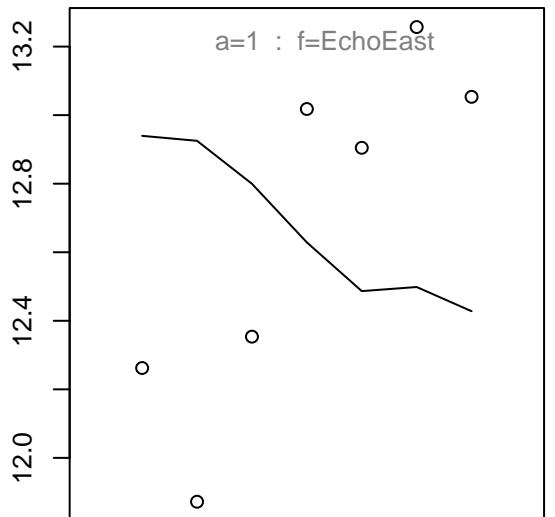


Year



Year





Year

