Snow crab assessment update

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Problem

- Jittering was done incorrectly.
- CPT unsure if the bimodality and instability in the models was a result of incorrect jittering.
- I fixed the jittering.

Jittering procedure

- Run the model once with no .PIN
- For(x in 1:jitterN)
  - Pass the .PAR file that comes out of the original model to a script
  - Multiply all of the values in the .PAR file by a random number generated from a normal distribution with mean 1 and sd 0.1
  - Save .PAR file as .PIN file
  - Run model with that .PIN file

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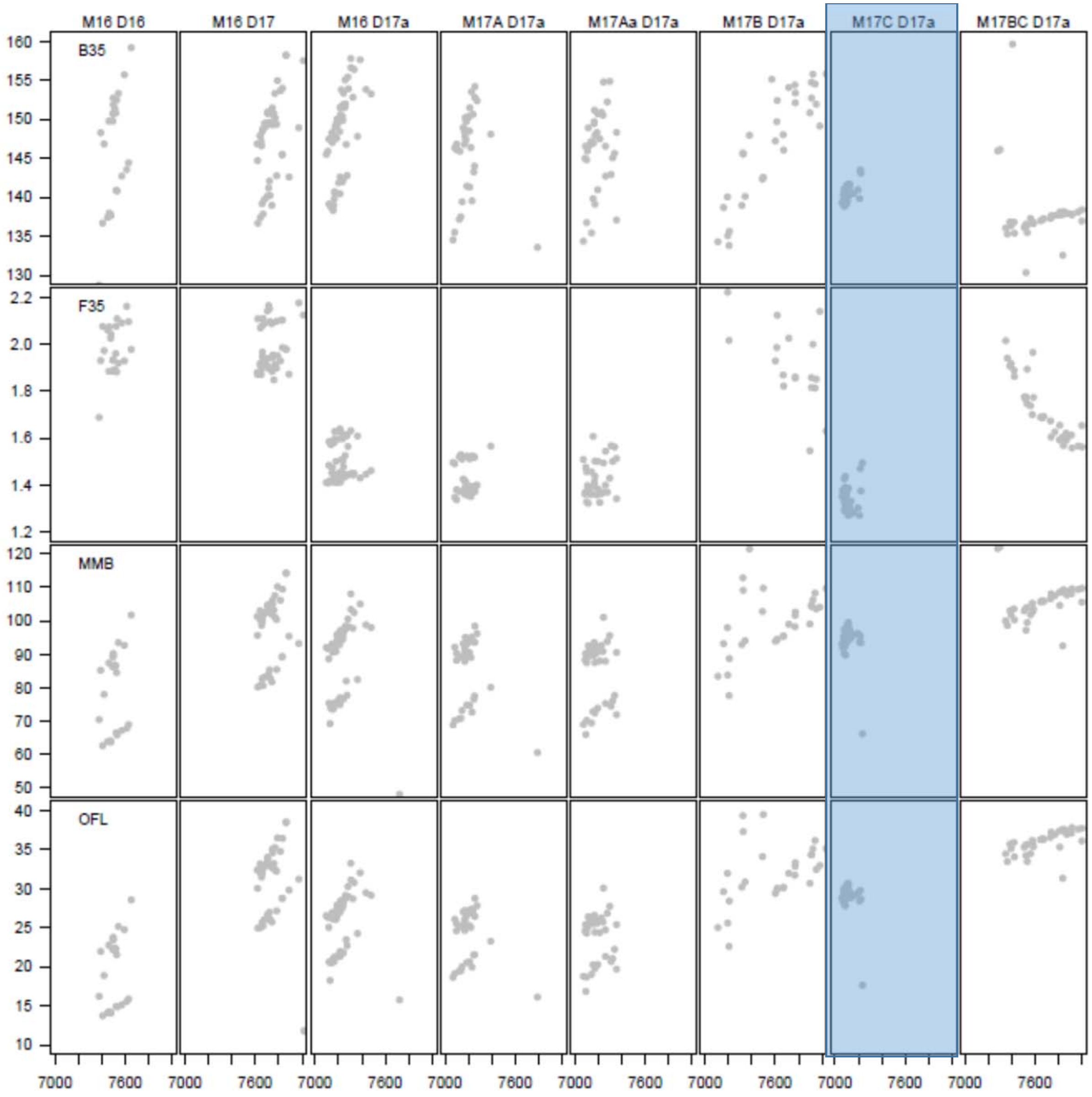
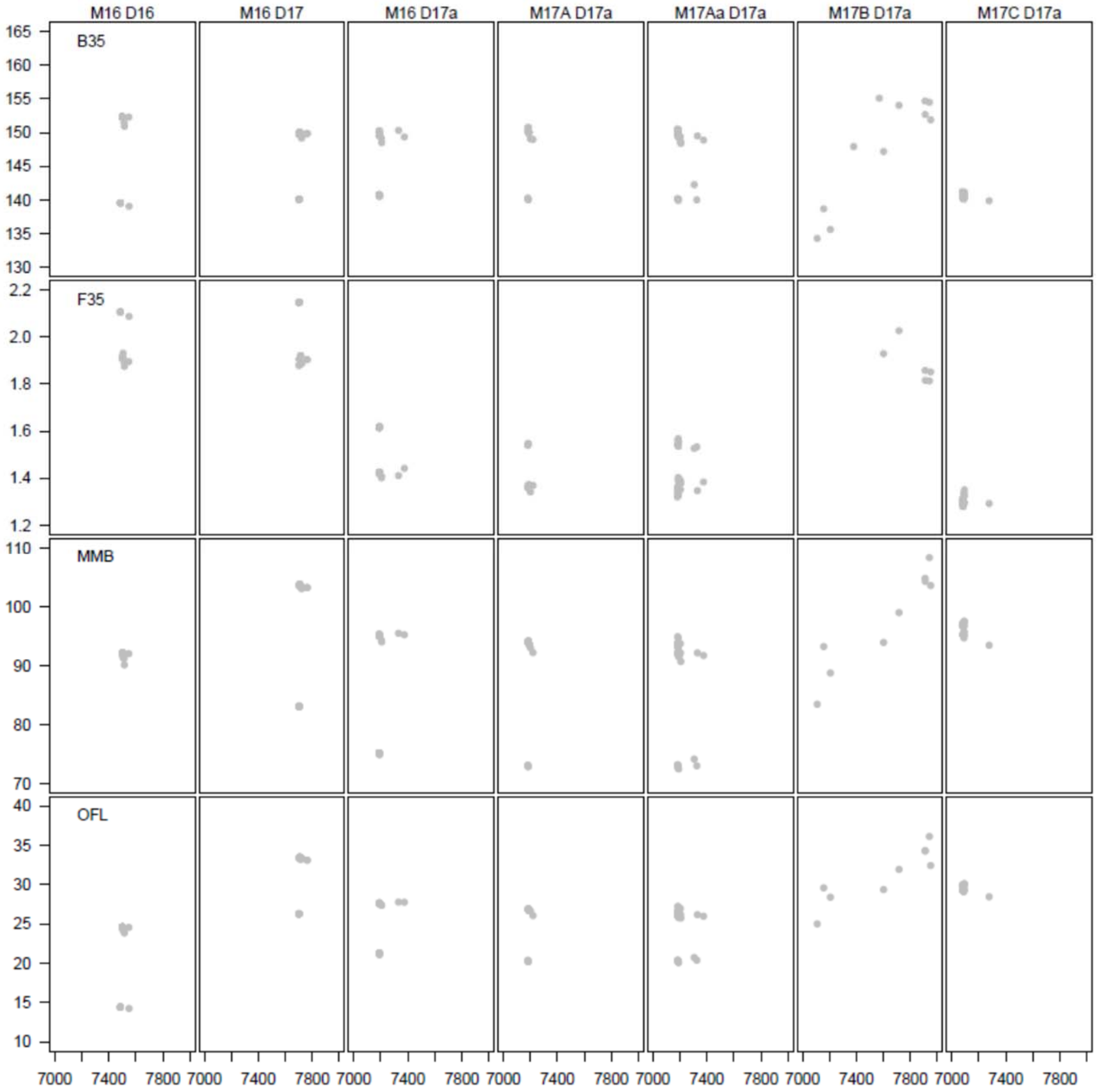
- Jittering showed instability in the models
- Bimodal management quantities
- Just ‘running until you get the lowest likelihood’ didn’t work



Jittering procedure

- Run the model once with no .PIN
- For(x in 1:jitterN)
    - Pass the .PAR file that comes out of the original model to a script
    - Multiply ONLY VALUES OF PARAMETERS in the .PAR file THAT ARE ESTIMATED by a random number generated from a normal distribution with mean 1 and sd 0.1
    - Save .PAR file as .PIN file
    - Run model with that .PIN file


M16 D16
M16 D17
M16 D17a
M17A D17a
M17Aa D17a
M17B D17a
M17C D17a
B35
F35
MMB
OFL
165
160
155
150
145
140
135
130
2.2
2.0
1.8
1.6
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1.2
110
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90
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10
7000
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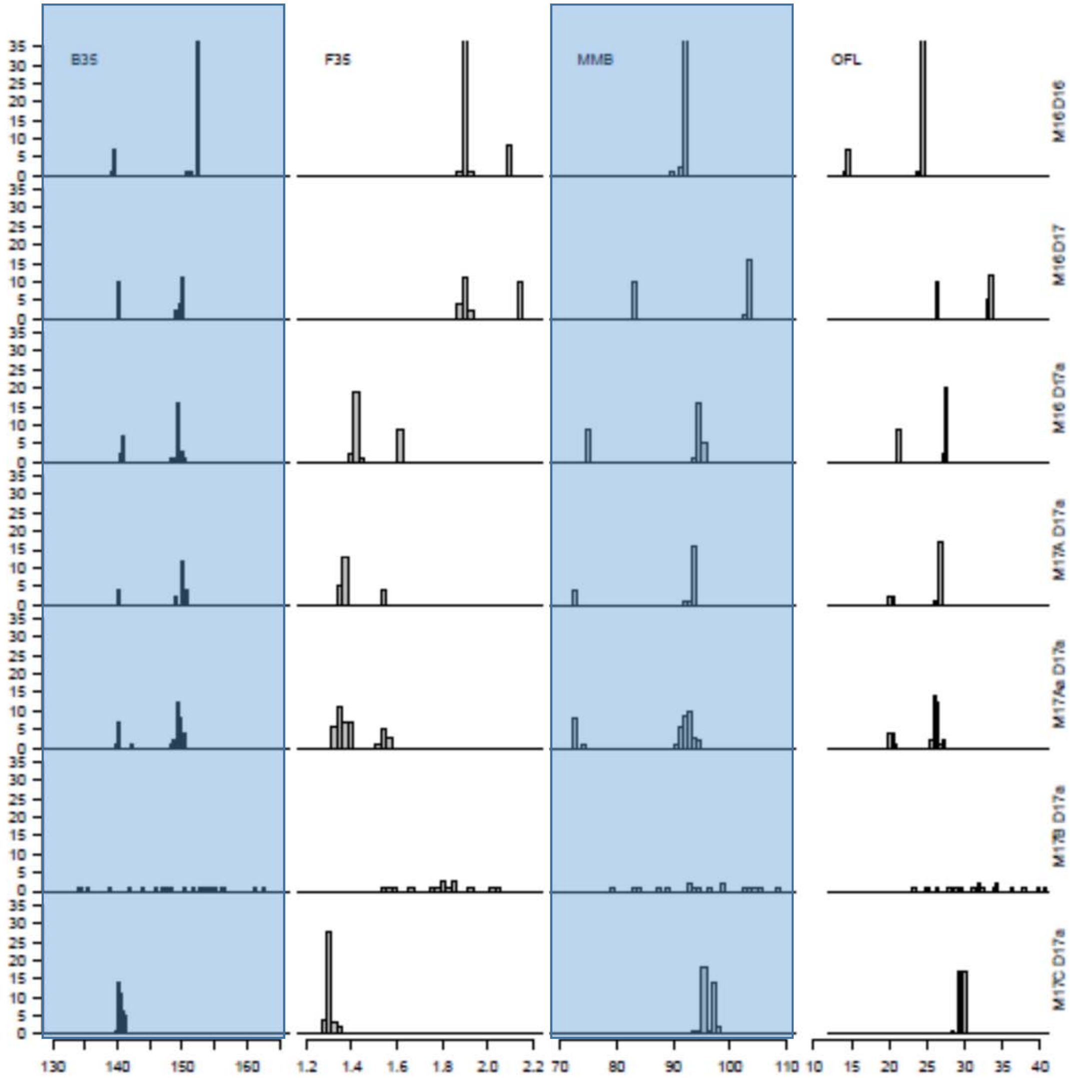

B35
F35
MMB
OFL
M16D16
M16D17
M16 D17a
M17A D17a
M17Aa D17a
M17B D17a
M17C D17a
0
5
10
15
20
25
30
35
130
140
150
160
1.2
1.4
1.6
1.8
2.0
2.2
70
80
90
100
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40

What changed?

- Bimodality persisted.
- Instability in models decreased, but still present.
- All of the other ‘qualitative’ relationships between the models maintained.
- Bimodality appears to be related to the interaction between female growth and M.
- Instability is likely a product of estimating parameters for many confounded processes without data that informs each of those processes directly.

- M16.D17 (new data)
- M16.D17a (remove survey era 1)
- M17A.D17a (split survey era in 1987)
- M17Aa.D17a (estimate logit BSFRF selectivity)
- M17B.D17a (Remove length bins <37.5mm)
  - Unrealistic survey selectivity estimates and probability of maturing
- M17C.D17a (Estimate mature female M)
  - Fits female biomass the best
  - Female q in survey era 3 goes to 1
  - Correct relationship for M for mature males and females, but immature M decreases

What do we do now?

Immediate needs

- Discussion yesterday was M17Aa vs. M17C
- These were Andre's thoughts (paraphrased):

[a] Table 8 is improved.

[b] M17C.D17a fits several of the data sources better than M17Aa.D17a, but it is worrying that the index fits are worse for M17C.D17a (e.g. 2010 BSFRF)

[c] The M17Aa.D17a convergence problem has not been solved (Fig. 18).

[d] It is hard to trade-off the bimodal issue for M17A.D17a and the unexpected Q for M17C.D17a. On balance I would take M17C.D17a as the fit is much better (some priors in there too) and the jitter analysis is somewhat better.

What do we do now?

For the SAFE document

- Remove all Bayesian analysis?
- Leave it, but indicate the MLEs were used for the OFL?