Same data different story:

guidelines for data weighting in a multispecies statistical catch-at-age stock assessment framework

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Why perform stock assessments

- Goal of stock assessment models:
  "... understand, and inform decision-makers of, the consequences of possible fishing activities." (Hollowed *et al.*, 2000)

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Assessment Method for Alaska (AMAK; J. Ianelli)

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Kinzey and Punt, 2009 → Van Kirk *et al.*, 2010, 2012, 2015

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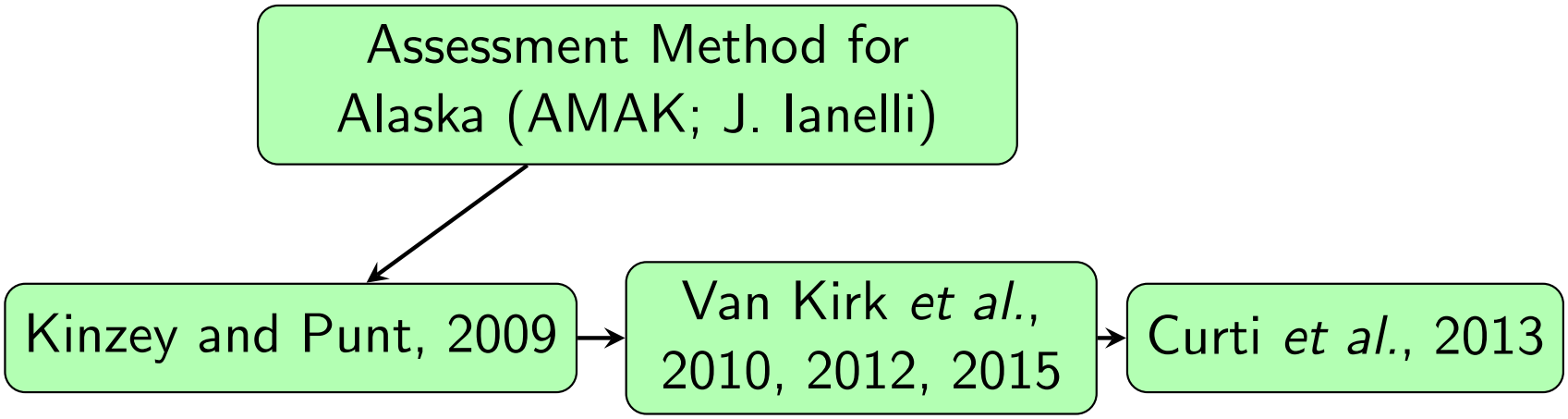

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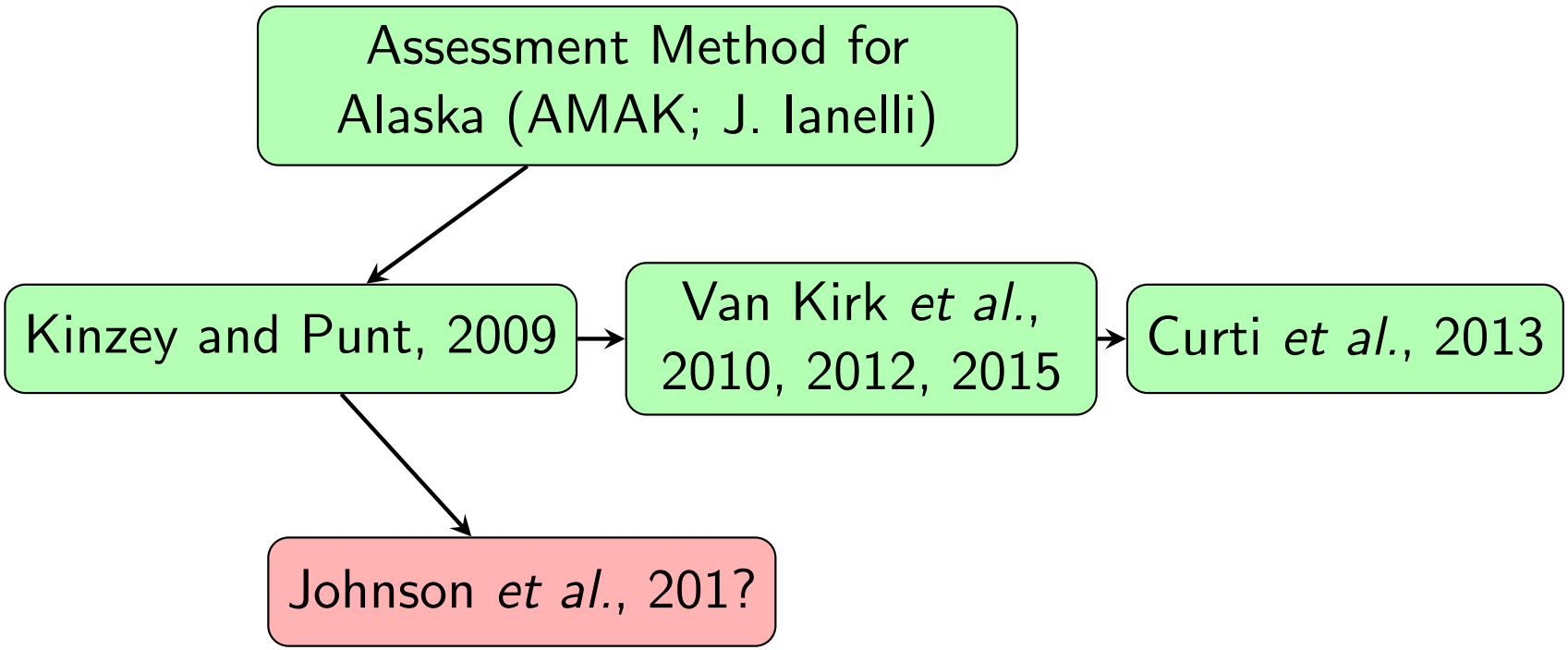

Case study

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  - walleye pollock (*Theragra chalcogramma*)

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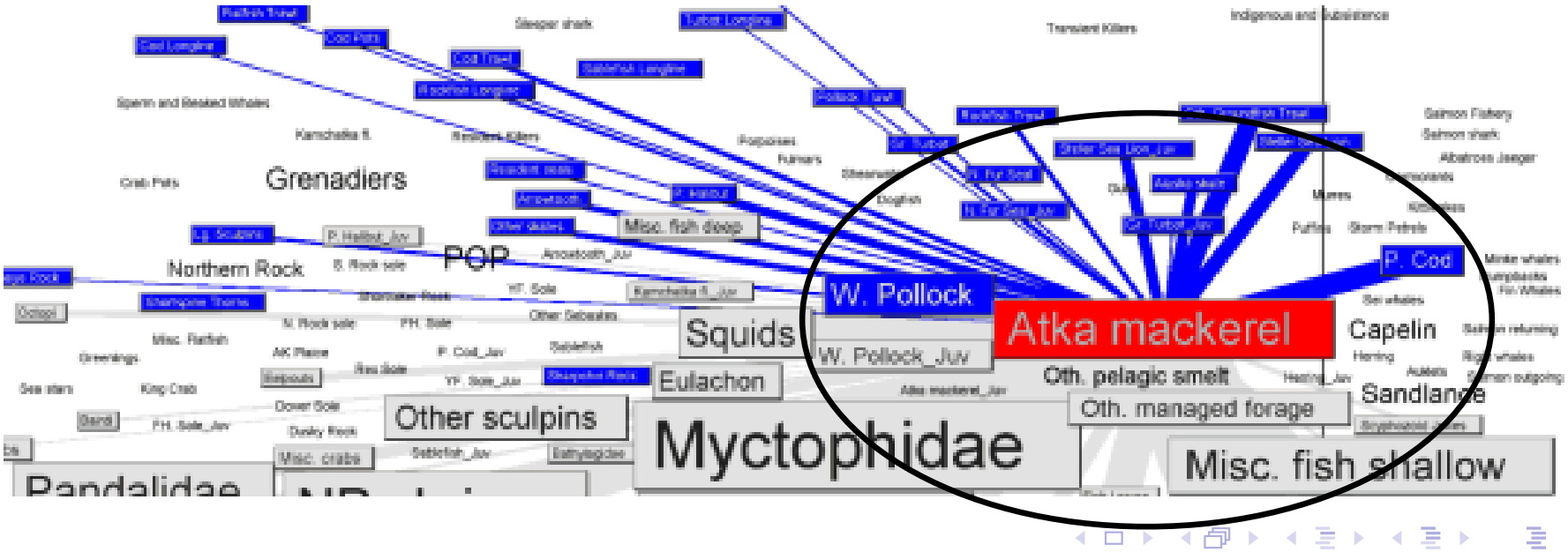
  - Pacific cod (*Gadus macrocephalus*)
- foodweb (blue = predator)



Fixed inputs

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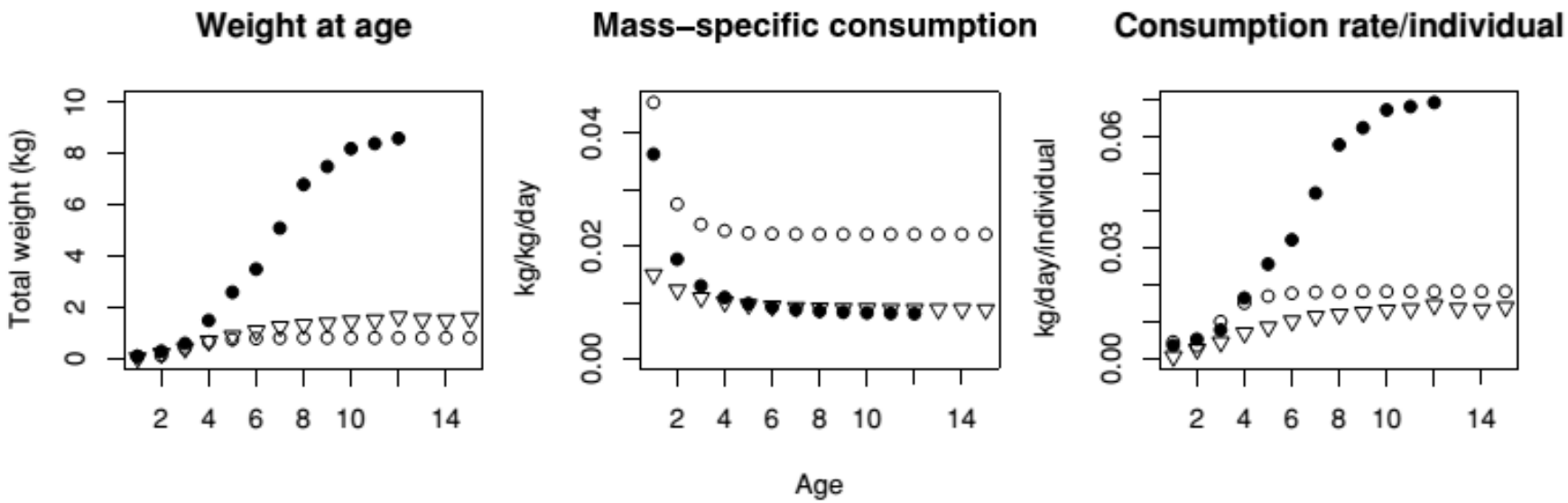
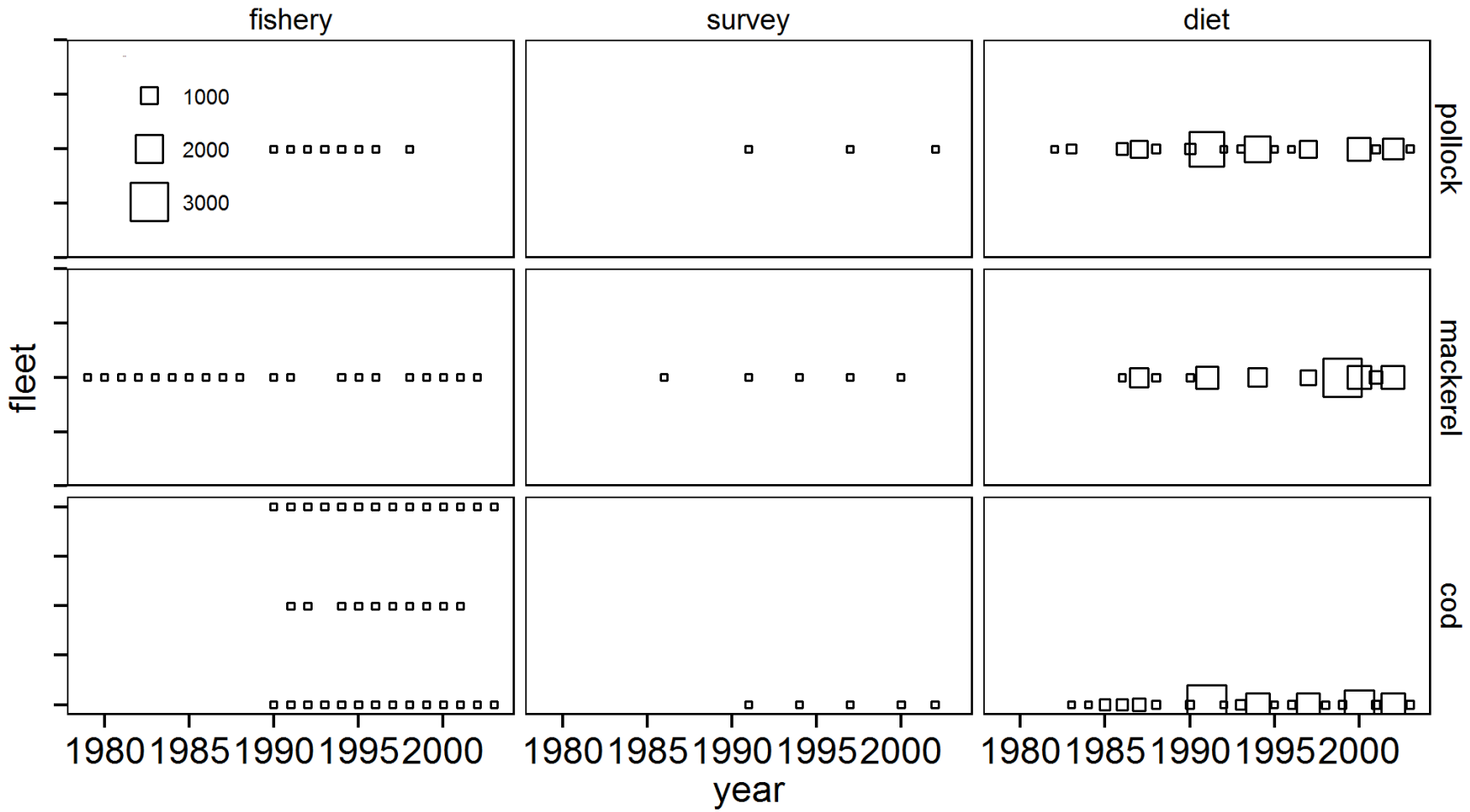
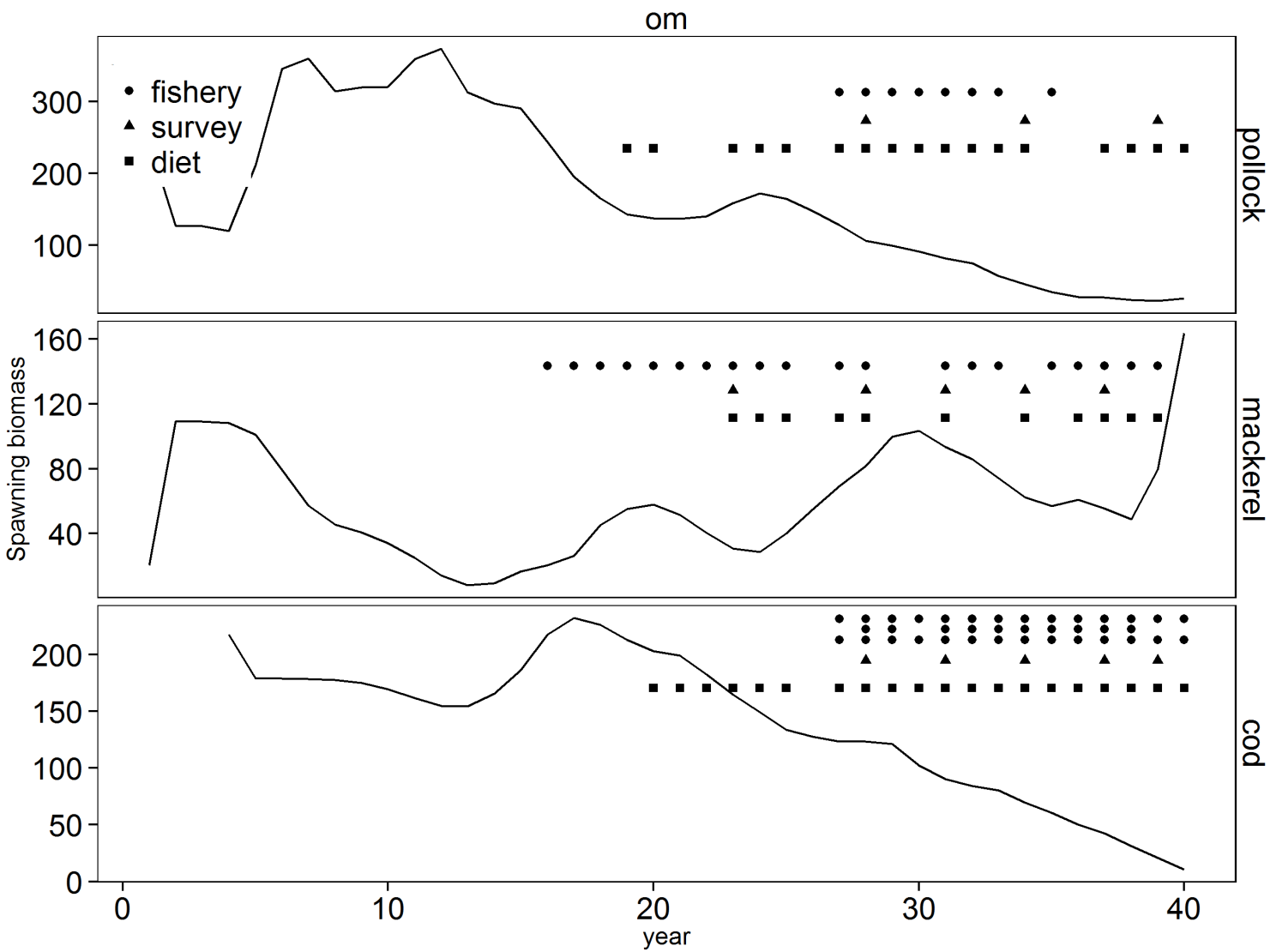


Data 'moderate' system



Operating model



Methods

Weighting

distribution	weight	types
normal	se_{year}	survey
lognormal	cv	catch
multinomial	n	age, length, & diet comps

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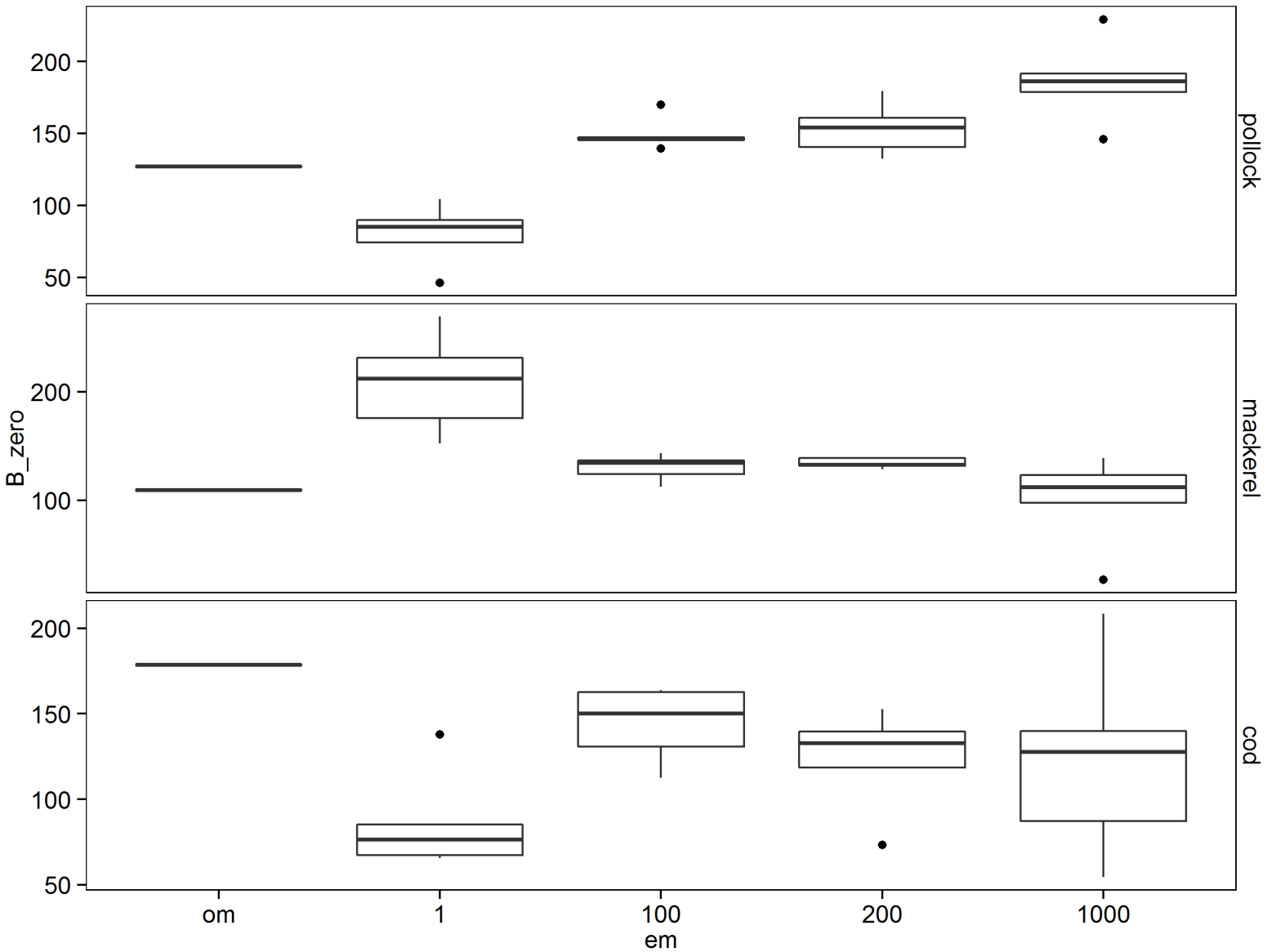
Data

source	type	OM	EM_1	EM_2	EM_3	EM_4
fishery	catch	0.05				
fishery	age & length	100	1	100	200	1000
survey	index	1	0.01	1	2	10
survey	age & length	100	1	100	200	1000
survey	diet weight	100	1	100	200	1000
survey	diet length	100	1	100	200	1000

Model performance metrics

- Unfished spawning biomass
- Unfished recruitment
- Biomass available to survey
- Spawning biomass
- Annual recruitment
- Fishing mortality

Results



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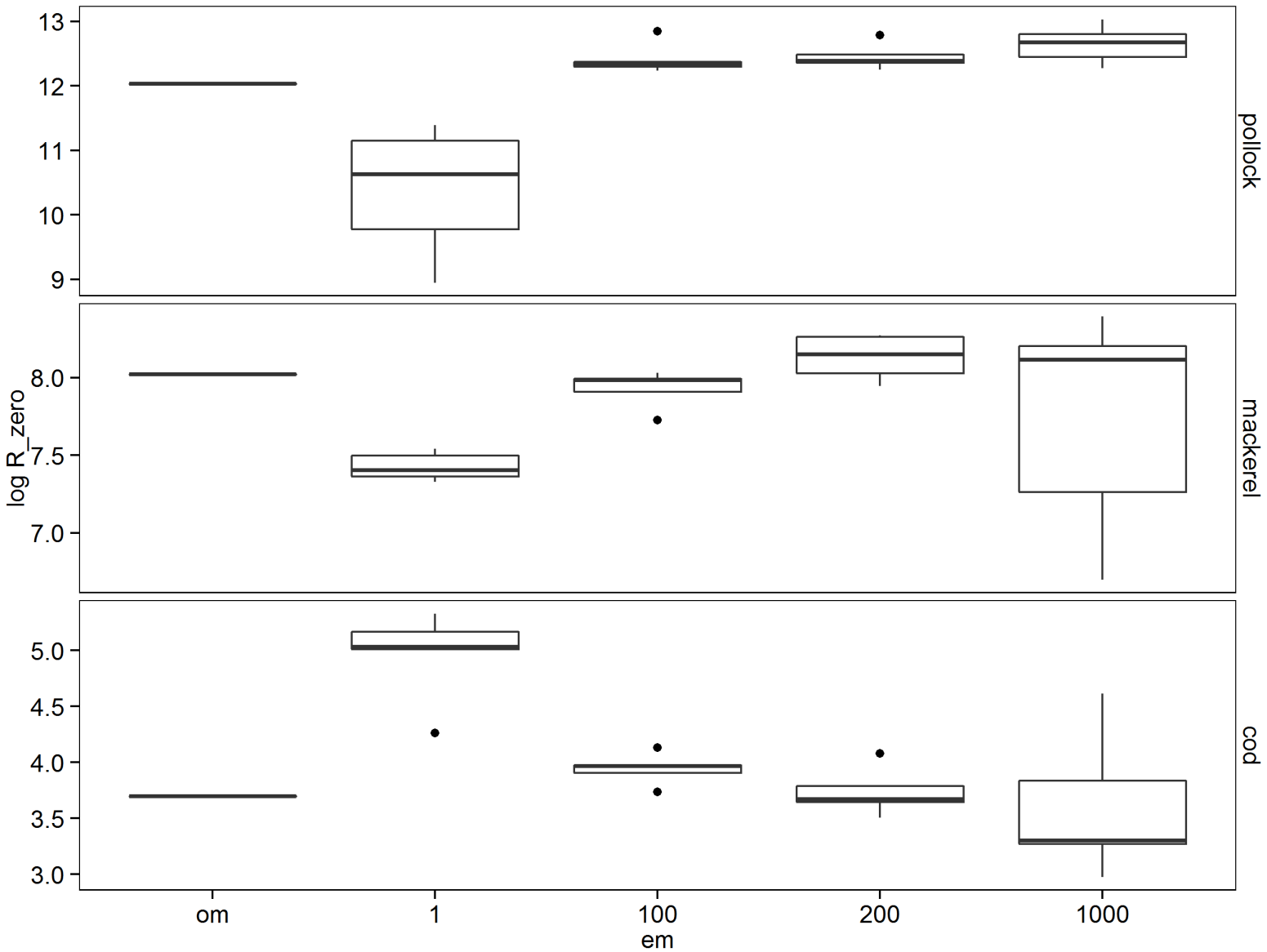
log R_zero
13
12
11
10
9
8.0
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7.0
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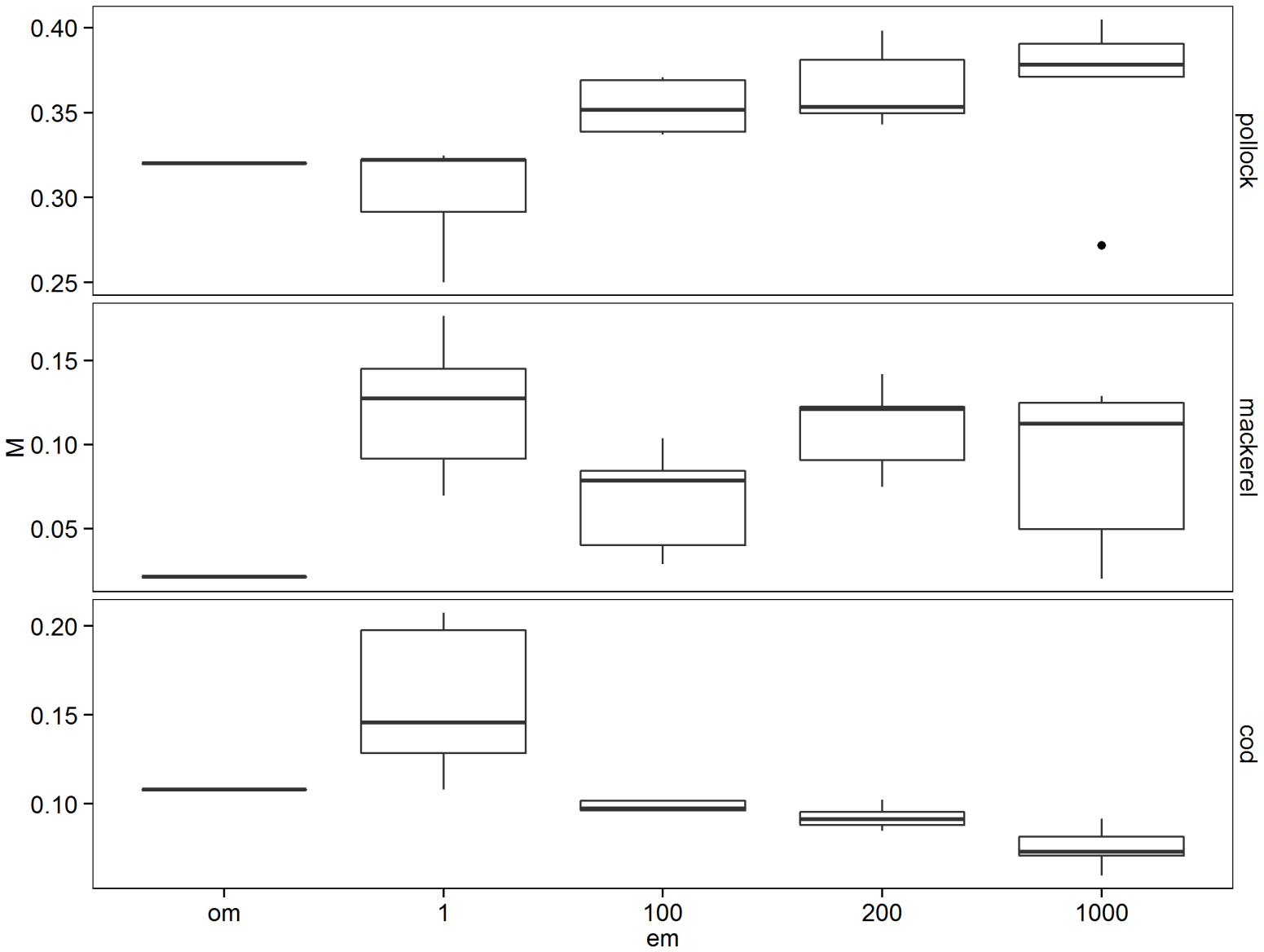
Results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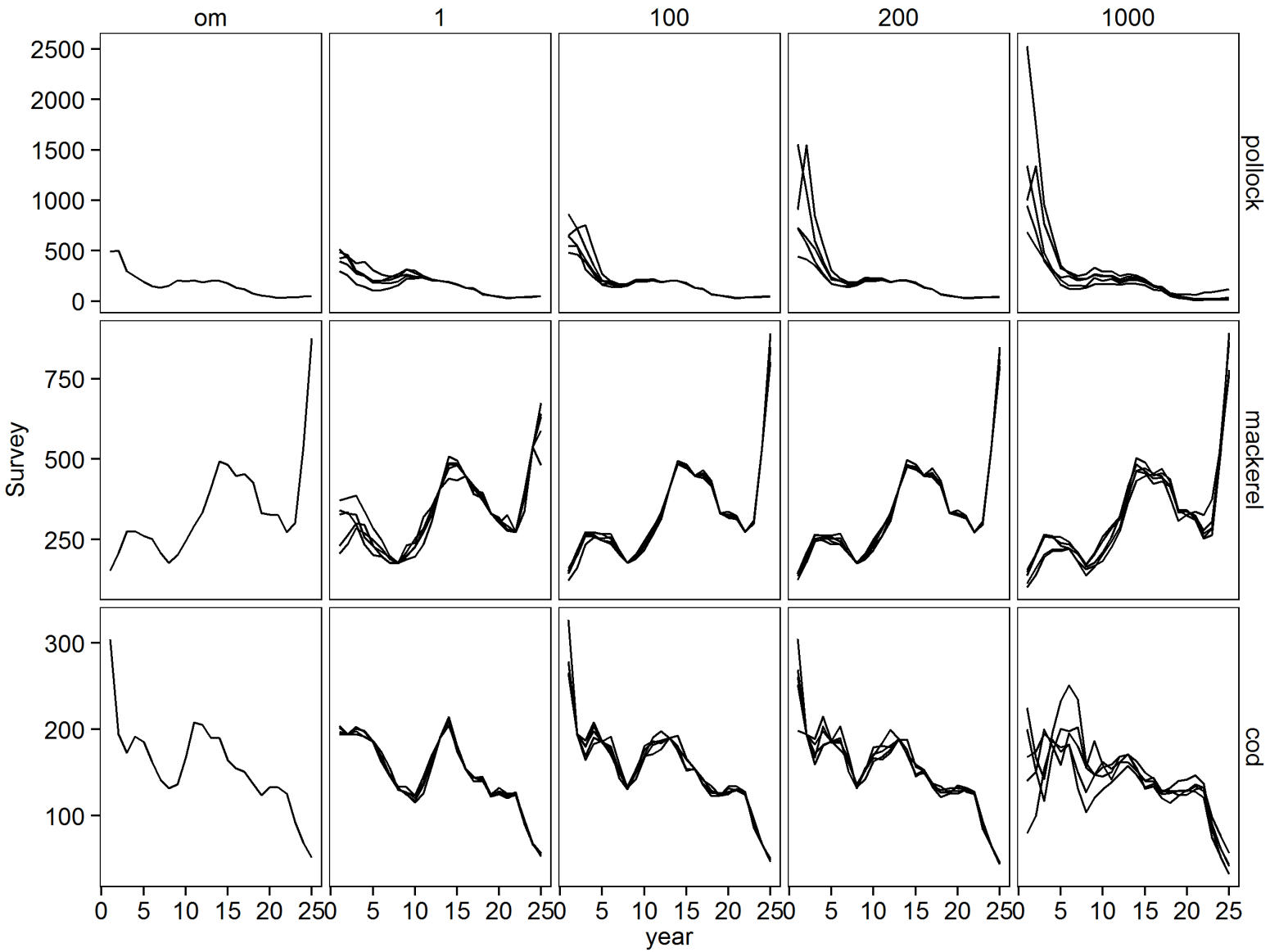
Results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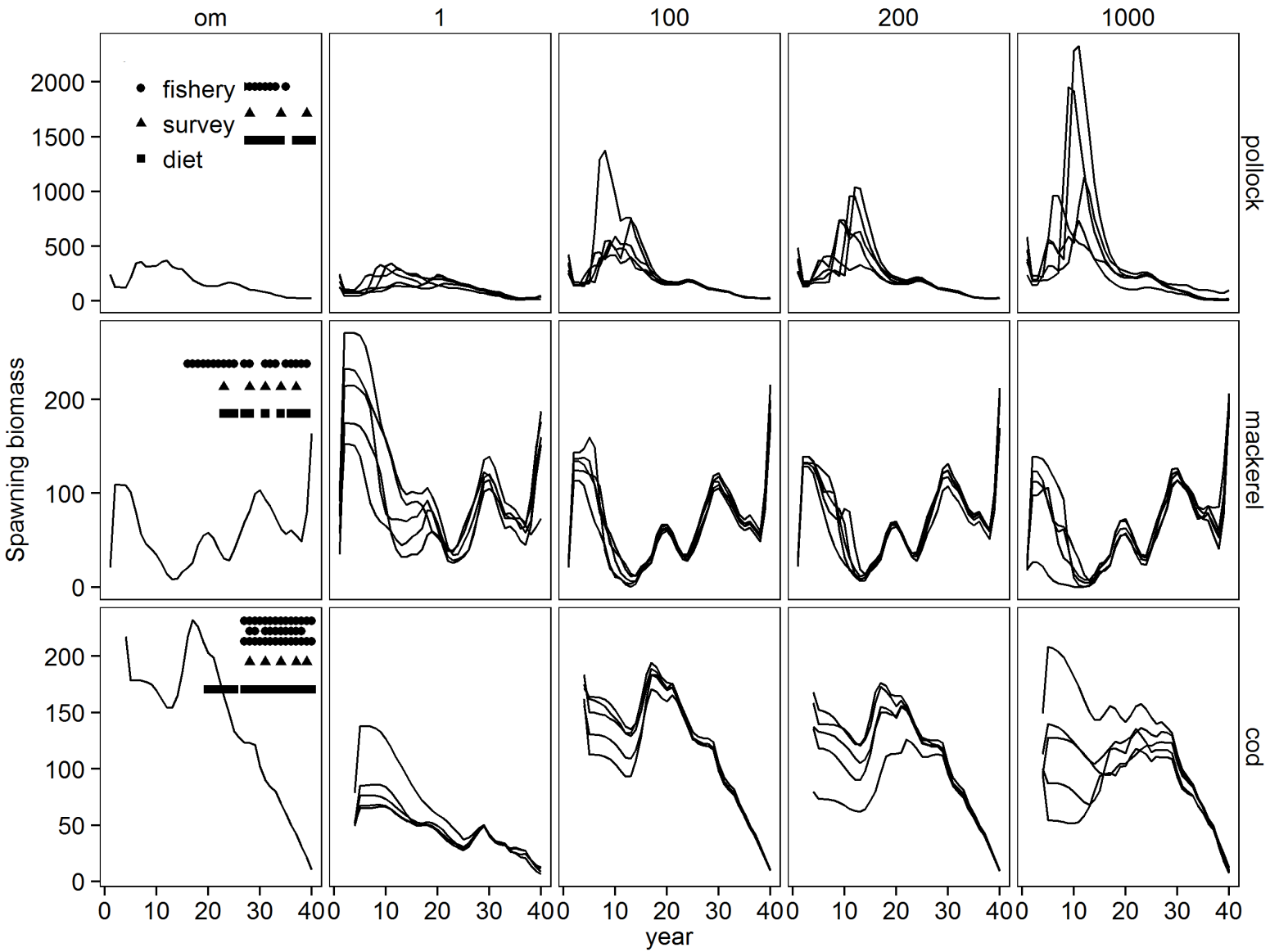
5 10 15 20 25

Results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mackerel
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150
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20
30
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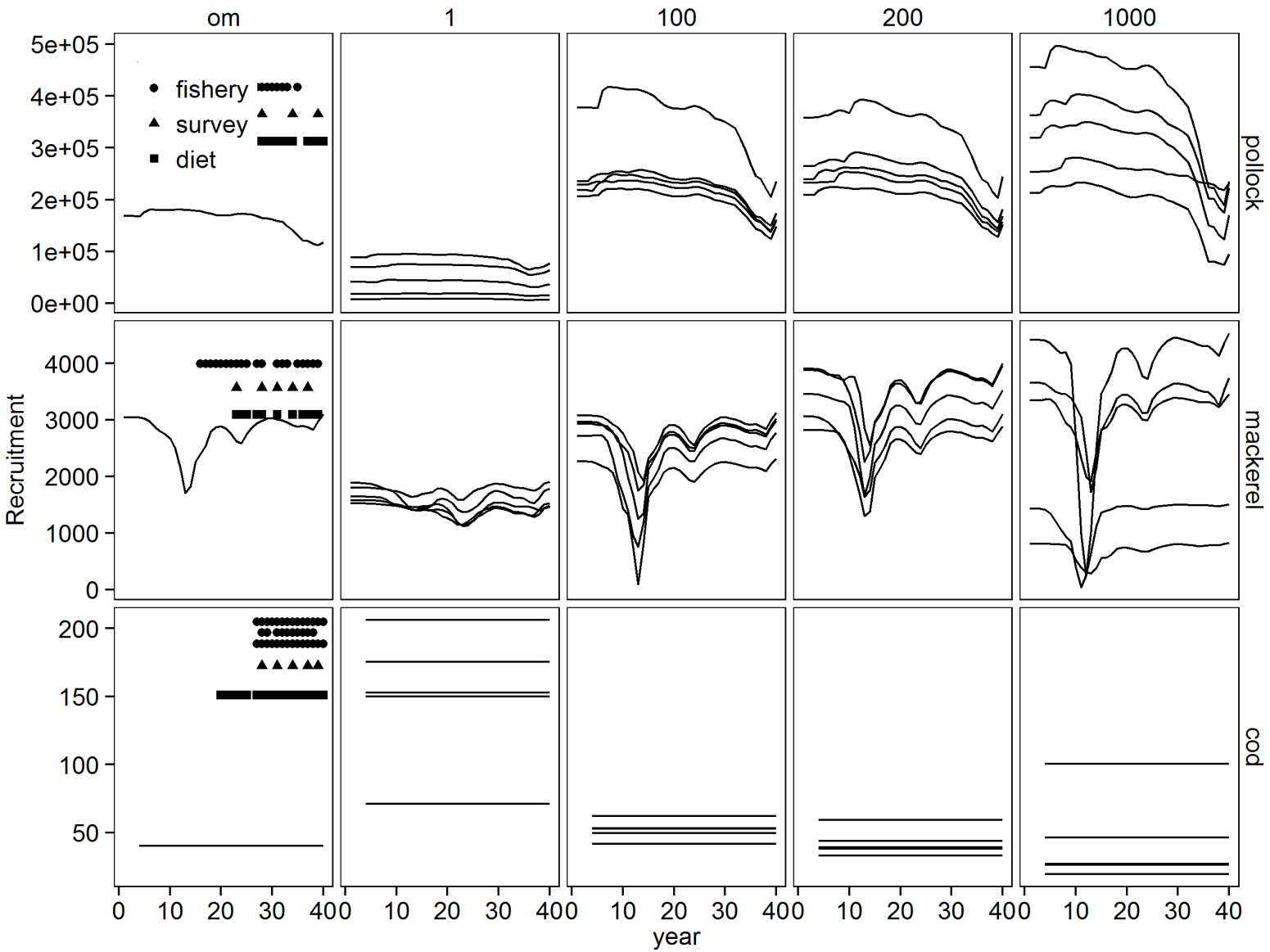
Results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survey
diet
pollock
mackerel
cod
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4e+05
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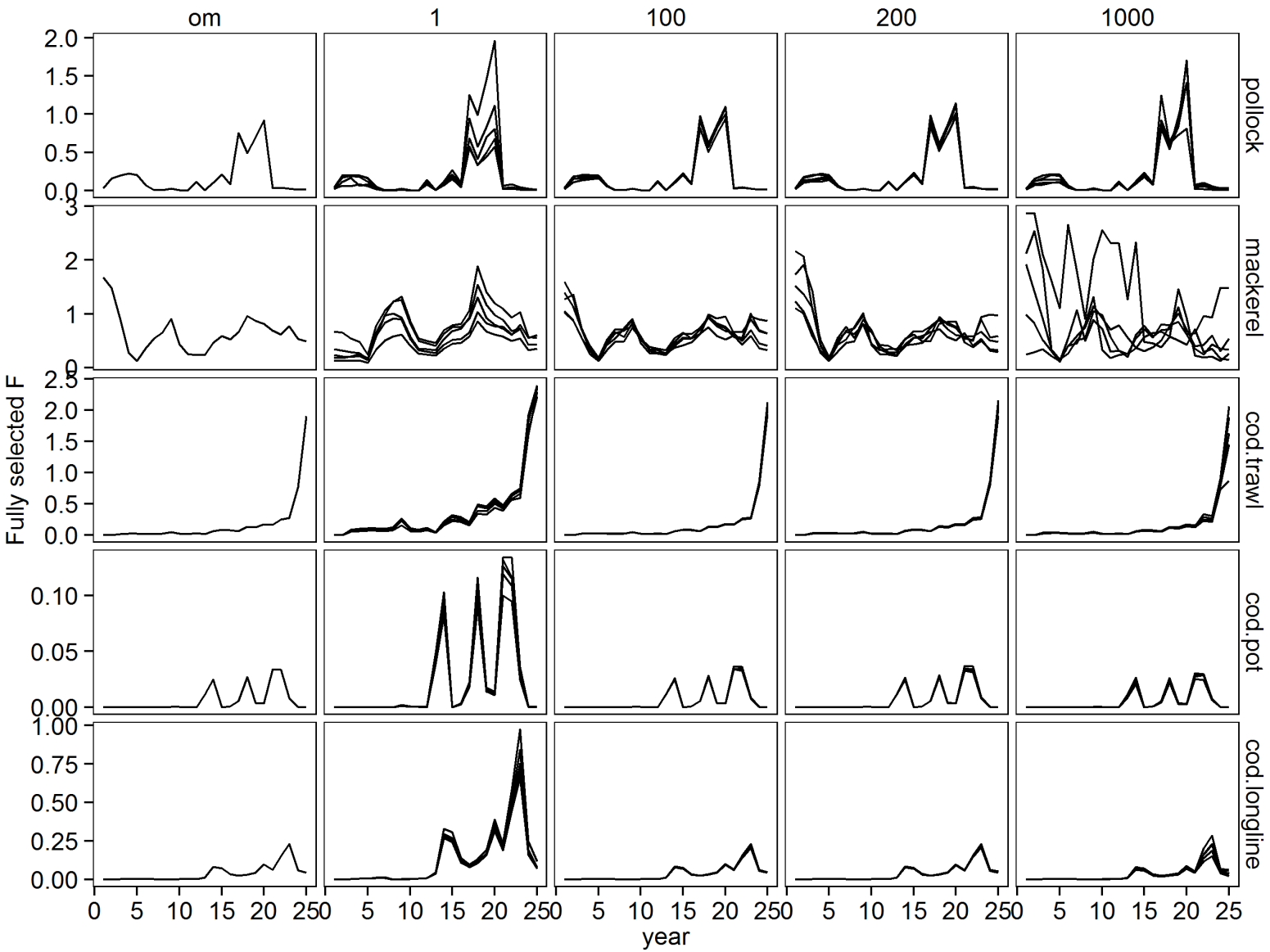
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Fully selected F
year

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  - Move beyond self-test and estimate using Atlantis data

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