

More general analyses of interactions

fish5106stockrec Spawning stock, recruitment and production

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Stock and recruit analyses from indices

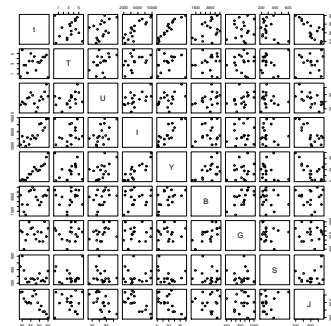
If you only have length and abundance data from surveys along with length-weight relationship and maturity at length, then you can generate:

- Abundance index at length
- Abundance index by length group
- Possibly index of recruitment
- Index of spawning stock biomass

This is enough for a stock-recruit plot with indices on both axes.

Case Study: Some relationships in an ecosystem

Need to investigate the nature of relationships



A simple predation model

Can include predation mortality in several ways, e.g.

$$\begin{aligned}N_{1,a+1,y+1} &= N_{1ay} e^{-Z_{1ay}} \\Z_{1ay} &= F_{1ay} + M_1 + M_{2ay} \\M_{2ay} &= \alpha_a N_{2ay}\end{aligned}$$

need to specify α ...

Same concept used by Pope and Knight to describe recruitment to one stock, affected by predation by another...

Cannibalism by immature fish

$$R = \alpha S^\beta e^{\gamma J}$$