

Multi-Species Models

fish610.060 EAFM Tools: Gadget

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Several species in Gadget

Gadget is sometimes used for multiple species
Normally this only involves technical interactions
Species interactions or consumption are rarely modelled
Exception: cod-capelin, cod-shrimp, cod cannibalism

Technical interactions

"Technical interactions" means several species get caught in the same fishing operation

Examples: Most bottom trawling

Typical model for one fleet:

fishing mortality on species s in year y = overall effort on * catchability of species s

or

$$F_{sy} = q_s E_y$$

So increased effort affects all the species in the model, as it should

True species interactions

Very simple models:

$$N_{s,a+1,y+1} = N_{s,a,y} e^{-F_{s,a,y} - M_{s,a,y}}$$

M = Natural mortality

$M_{s,a,y}$ = function of other species' abundance