

Introduction to Gadget

fish610.060 EAFM Tools: Gadget

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What is Gadget?

At its core, Gadget is a simulator which projects forward the number of fish per cell.

The fish in a cell correspond to

a species a length group

an age group

a spatial unit

a temporal unit

a maturity stage

a sex

Gadget processes

Consumption: Suitability functions

Mortality: Due to predation or other natural or fishing

Growth: Can depend on consumption. Several growth update implementations

Migration: Through migration matrices

Maturation: Move from immature to mature stock component

Spawning: Lose weight and generate yearclass

Symmetric: All species can be implemented in same way - fleet is also a predator

Estimation in Gadget

Gadget estimates unknown parameters using least squares (or maximum likelihood)

Most parameters can be set to initial values

Most parameters can be either estimated or fixed

Each forward projection results in a population trajectory

The projection can be compared to data

The comparison gives sums of squares (or likelihoods)

The estimation is done by repeating the process