

### 3.22 Hatchery populations in Ecosim

Multi-stanza populations can be designated as hatchery populations, and hatchery production can be varied over time using time forcing functions. To turn off natural reproduction and replace it with a time series of hatchery stocking rates, open the [Edit multi-stanza groups](#) form for a population from the Ecopath menu, and enter a nonzero value for the hatchery forcing function number. Forcing functions can be sketched using Ecosim's [Forcing function](#) form or can be imported using [Import time series](#) on the Ecosim menu (set the data type to 2). Note that imported time series must be activated using the [Time series](#) form. After activating the imported time series, check the Forcing function form for the number allocated to your hatchery stocking time series. Note that forcing functions to represent historical changes in stocking rates can be entered via the same csv files as used to set up historical fishing and model fitting scenarios. Enter stocking rates as values relative to the stocking rate of 1.0 assumed for the Ecopath base year.

Then at each simulation time step, the base recruitment for the population (calculated from Ecopath input parameters) will be multiplied by the current time value for the designated forcing function. A forcing function value of 1.0 corresponds to the stocking rate that would result in the Ecopath base abundance (biomass) entered by the user.

Note also that if it is desired to simulate stocking of older fish at some age like 18 months, the first stanza for the population should be set to have this duration, the mortality rate ( $Z$  or  $P/B$ ) for the stanza should be set to .001, and the diet for the stanza should be set to 1.0 imported (ie, do not have fish in the stanza feeding in the modelled ecosystem).