Simulation model specifications

You can use the following table of variables, equations, units and values to complete the simulation model of the fishery.

Variable	Value	Type
Fish population	**Initial Value:** 1000 **Non-Negative:** No **Units:** Fish	Stock
Ships	**Initial Value:** 10 **Non-Negative:** No **Units:** Ships	Stock
births per year	**Rate:** [Fish population]*[hatch rate] **Alpha:** *None* **Omega:** Fish population **Positive Only:** Yes **Units:** Fish per year	Flow
catch per year	**Rate:** [Ships]*[catch per ship] **Alpha:** Fish population **Omega:** *None* **Positive Only:** Yes **Units:** Fish per year	Flow
deaths per year	**Rate:** [Fish population]*[death rate] **Alpha:** Fish population **Omega:** *None* **Positive Only:** Yes **Units:** Fish per year	Flow
new ships	**Rate:** [profit]*[investment rate]/[cost price] **Alpha:** *None* **Omega:** Ships **Positive Only:** Yes **Units:** Ships/year	Flow
area	**Value:** 100 **Units:** Square Kilometers	Auxiliary variable
carrying capacity	**Value:** 1200 **Units:** Fish	Auxiliary variable
cost price	**Value:** 400 **Units:** Euros/ships	Auxiliary variable
costs	**Value:** [Ships]*[running costs per ship] **Units:** Euros/year	Auxiliary variable
density	**Value:** [Fish population]/[area] **Units:** Fish/Square Kilometers	Auxiliary variable
hatch rate	**Value:** 6 **Units:** 1/year	Auxiliary variable
investment rate	**Value:** 0.2	Auxiliary variable

	Units: Unitless	
price of fish	**Value:** 15 **Units:** Euros/fish	Auxiliary variable
profit	**Value:** [revenues]-[costs] **Units:** Euros/year	Auxiliary variable
revenues	**Value:** [price of fish]*[catch per year] **Units:** Euros/year	Auxiliary variable
running costs per ship	**Value:** 250 **Units:** Euros/ships/year	Auxiliary variable
saturation	**Value:** [Fish population]/[carrying capacity] **Units:** Unitless	Auxiliary variable
catch per ship	**Data:** 0,0; 1,5; 2,10.4; 3,15.9; 4,20.2; 5,22.1; 6,23.2; 7,23.8; 8,24.2; 9,24.6; 10,25; 11,25.35; 12,25.48 **Source:** density **Interpolation:** Linear **Units:** Fish/ships/year	Convertor
death rate	**Data:** 0,5.22; 0.2,5.23; 0.4,5.255; 0.6,5.345; 0.8,5.665; 1,6; 1.2,6.44; 1.4,7.13; 1.6,7.97; 1.8,9.32; 2,11 **Source:** saturation **Interpolation:** Linear **Units:** 1/year	Convertor