Density Dependence

Simulations

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This document provides an example of how to model density dependence in mass and M-at-age.

The life history parameters of mackerel are used to construct an `FLBRP` object that represents the equilibrium dynamics, this is then used to construct an `FLStock` object that models the time series dynamics.

The Lorenzen relationship between mass-at-age and M can model M as a function of weight-at-age. For example, lorenzen M = a*300^-0.288, so if you want M=0.2 at 300g then a= 0.2 /(300^-0.288)

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Error in get_dropbox() : could not find function "get_dropbox"
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Sumulations

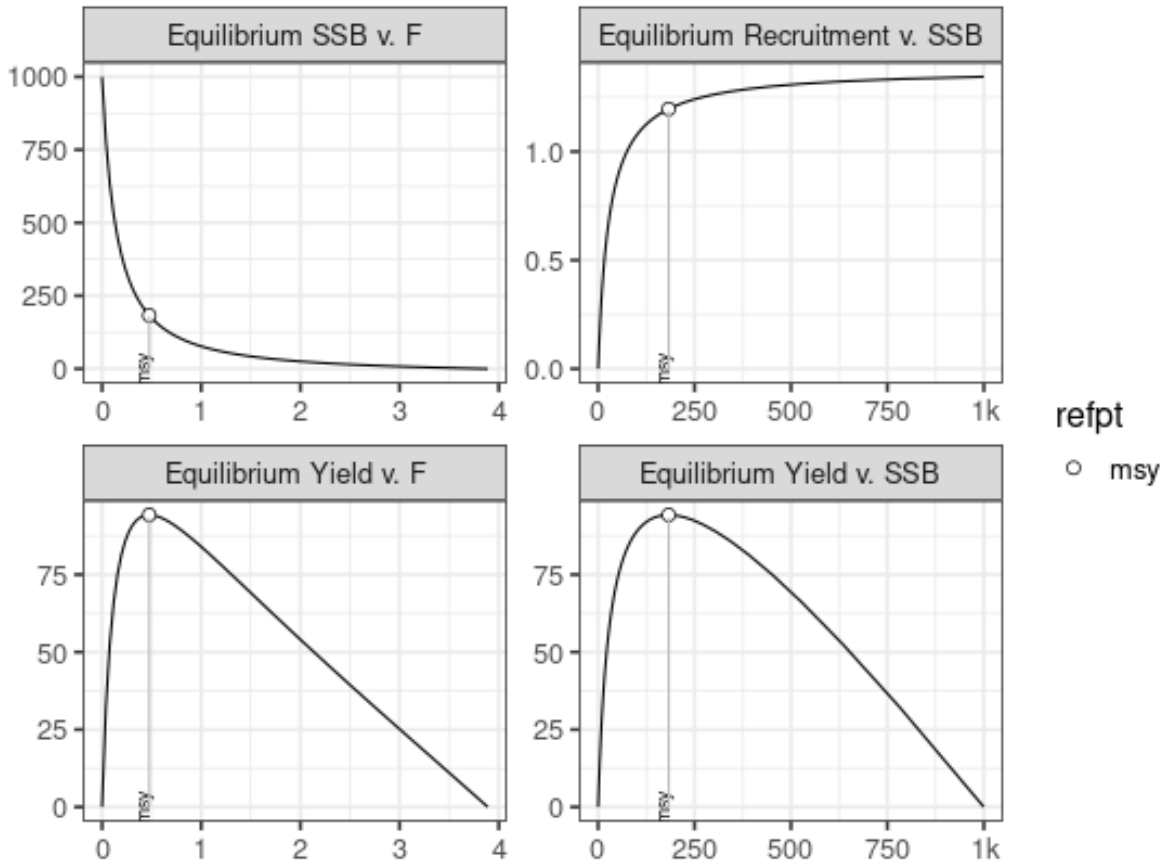

Figure 1 Equilibrium dynamics

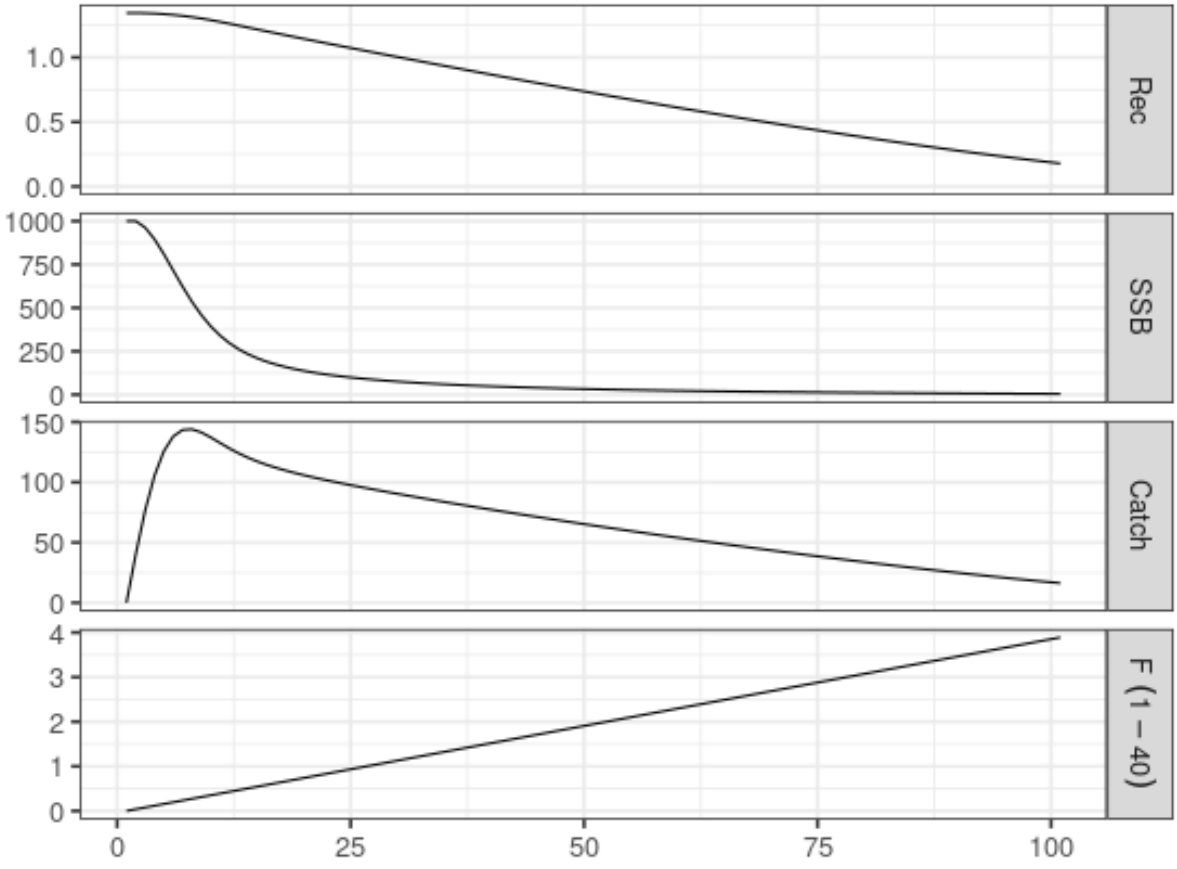

Figure 2 Time series dynamics

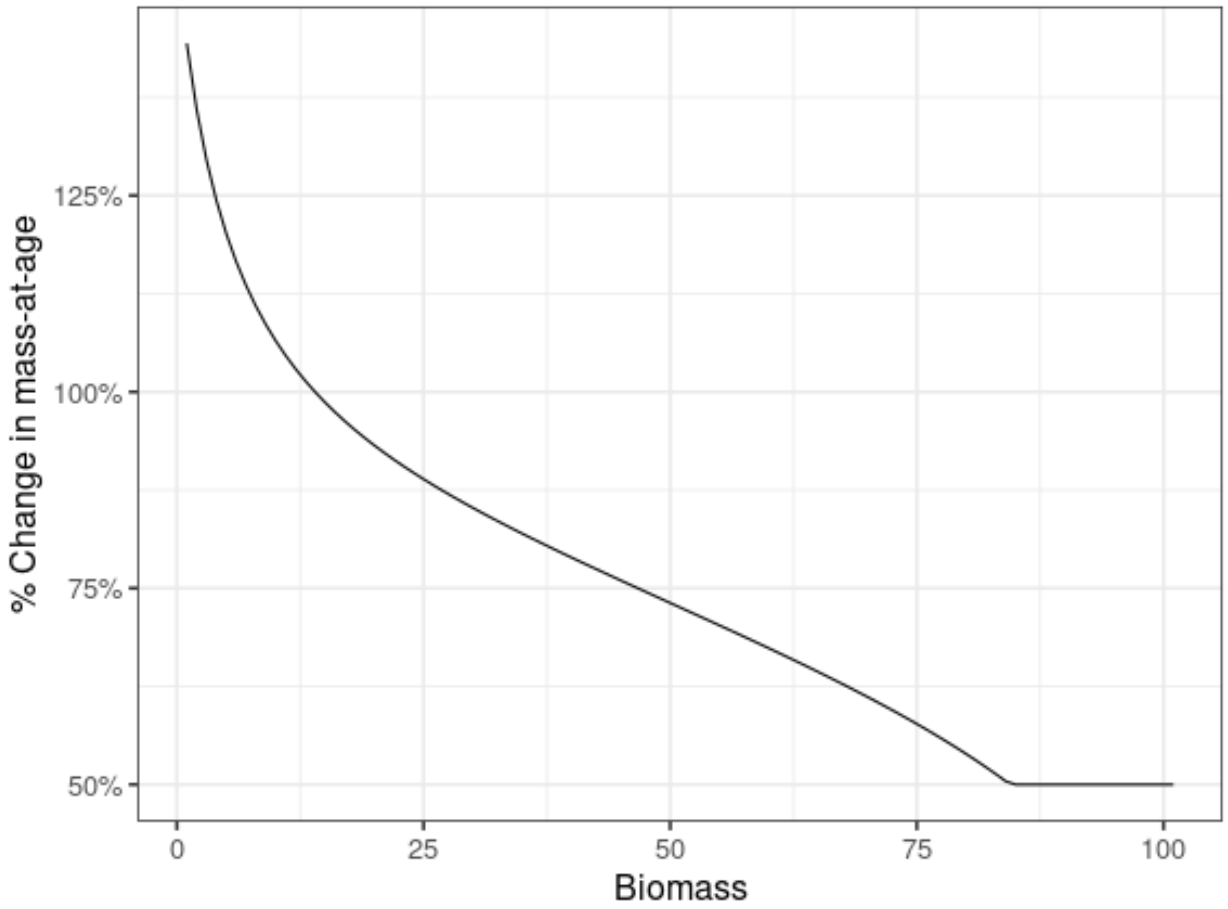

Figure 3 Density dependence multiplier

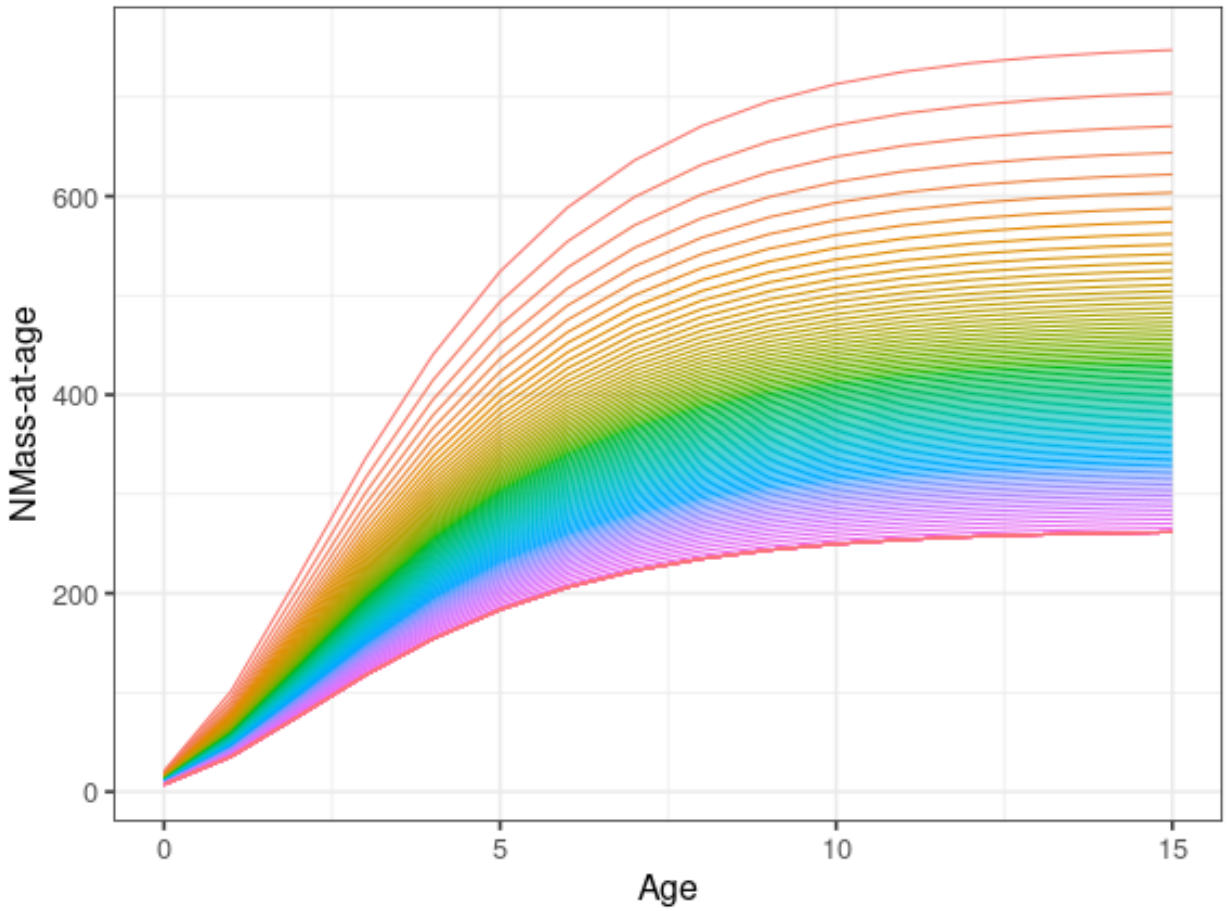

Figure 4 Simulation of density dependence in mass-at-age

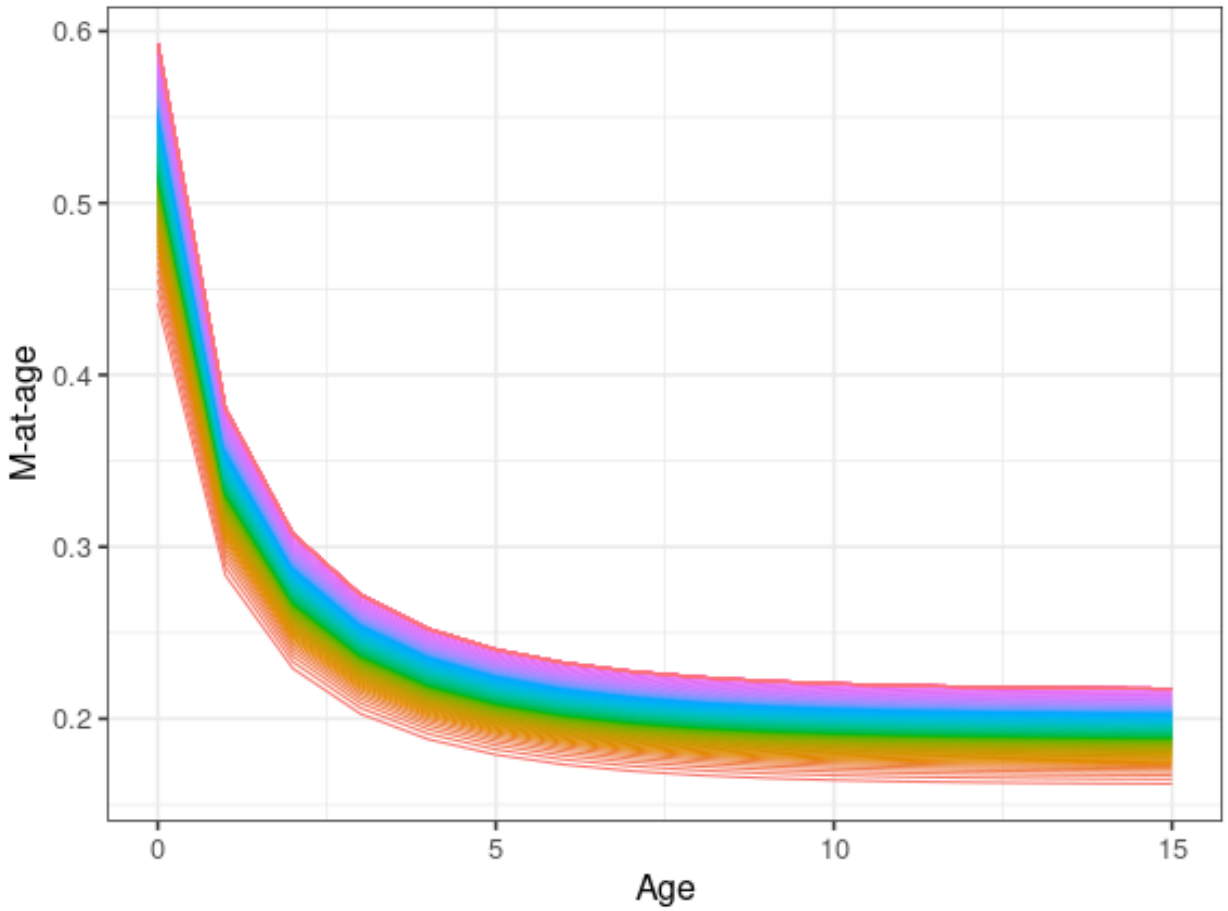

Figure 5 Simulation of density dependence in M-at-age

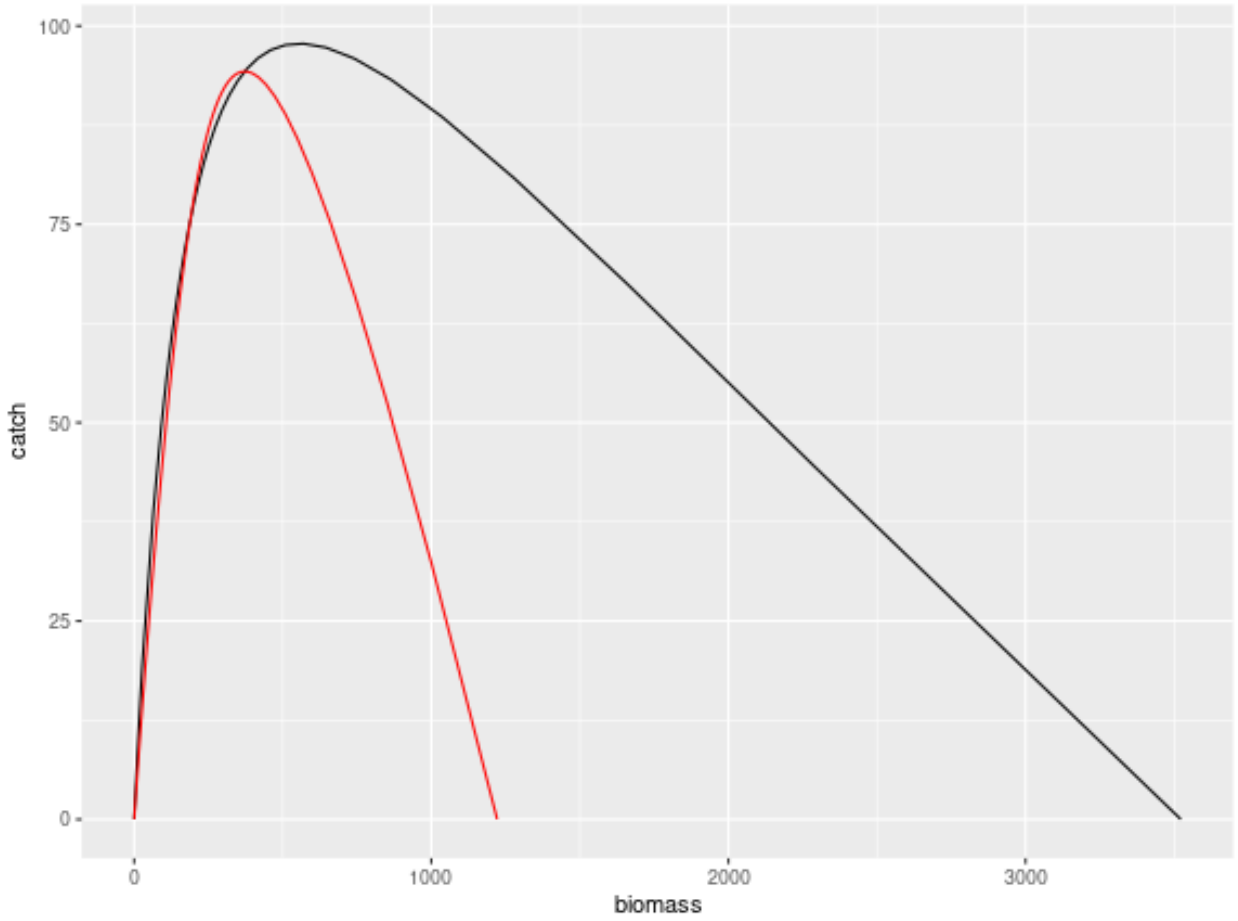

Figure 6 Comparison of equilibrium curves with (black) and without (red) density dependence.

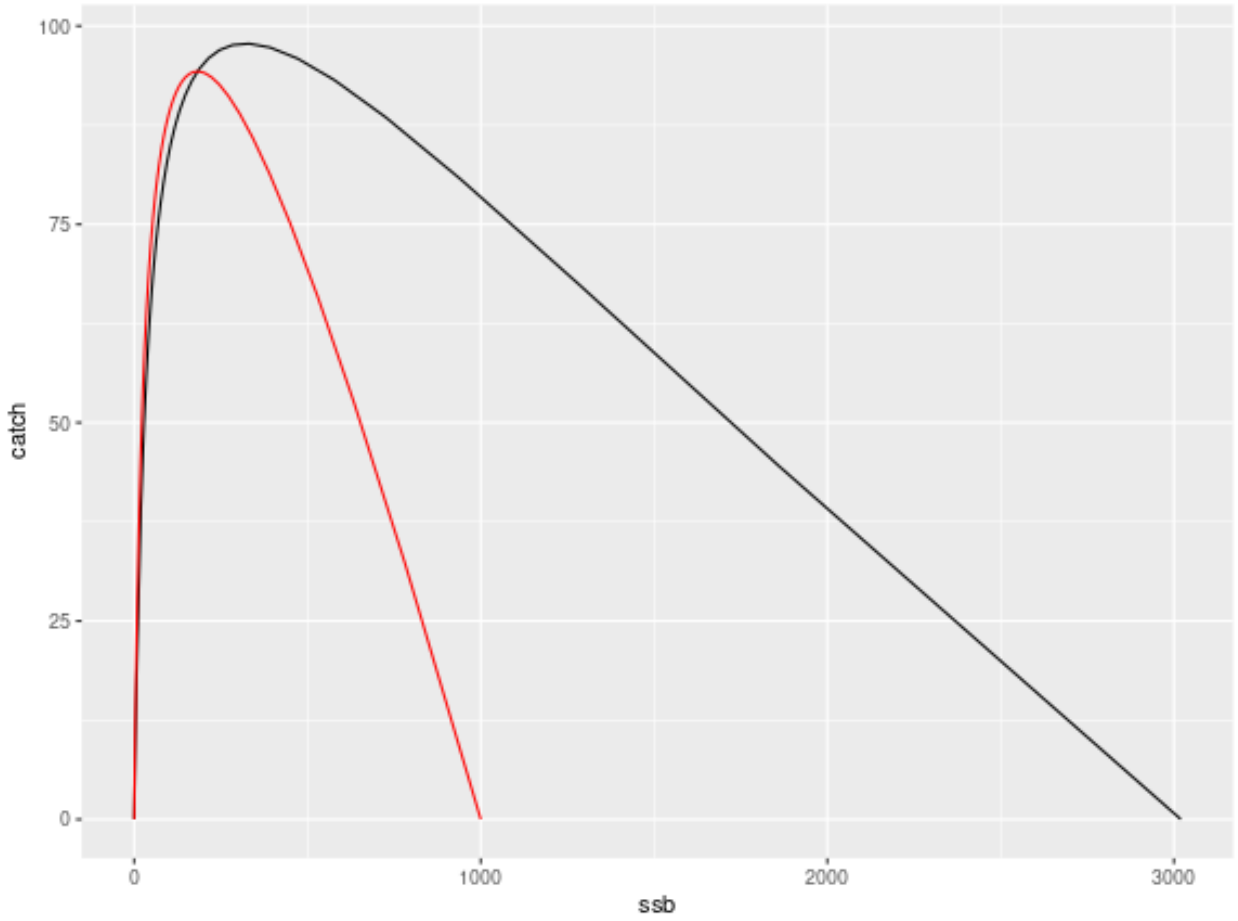

Figure 7 Comparison of equilibrium curves with (black) and without (red) density dependence.

Funding

References