Population ecology assignment: Exploitation

Work through this by Fri 8 Apr. This assignment will not be marked this year.

Study the R function `explPlots` documented at `https://bio3ss.github.io/explCode/`, and associated explanations.

1. (3 points) Make a "default" plot (call `explPlots` without any parameters). What behaviour does this system show? In addition to the exploiter eating the resource species (and the resource species getting eaten), what other mechanism is incorporated in this simulation? Use `args(explPlot)` and the documentation to help figure out the last part.

2. (2 points) The default plot does not incorporate predator satiation (the idea that there's only so much that the exploiter species can eat). `satF` is the parameter we use to measure satiation – when resource density is high compared to `satF` predator satiation is important. What parameters in the model have the same units as `satF`?

3. (3 points) Experiment with different values of `satF` in this model. What sort of behaviour do you get if `satF` is small; intermediate; large, compared to the other parameters with the same units? Use `explPlots` to make plots demonstrating three different types of behaviour (one plot per behaviour).

4. (1 point) Does increasing `satF` increase or decrease the strength of predator satiation?

5. (3 points) What is the effect of increasing `Kf` on the strength of density dependence? How do you expect it to affect cycling? Pick one of the plots you've already shown, and change `Kf` in a way that changes the behaviour of the system.