Lab 3 additional exercises

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4. Getting familiar with a bestiary of functions

The models that we will be fitting to data are composed of a deterministic component and a stochastic component. The deterministic component describes the expected pattern in absence of any randomness. You are not restricted to linear functions (as in linear regression) but you can choose among different functions.

In this exercise you will get familiar with a number of those functions. You will read in a dataset, make plots of six different datasets and choose one (preferably more) appropriate functions for each dataset. Remember that you can choose functions that are purely phenomological or mechanistic (see p.21 of Bolker). Next, by eyeballing you will choose appropriate parameter values so you get a reasonable fit between the data and the choosen function.

A pseudocode that implements this idea:

1. Read the dataset (`shapes.csv`)

2. Plot the datasets in different graphs (*hint*: use subsetting, `par(mfrow=c(..,..)`, and `plot`))

3. For each plot, choose (at least) two appropriate functions based on the type of data or the shape of the data.

- *hint 1*: dataset 1 describes a light response curve of a number of plants
- *hint 2*: dataset 2 describes the intake rate of a predator as a function of prey density
- *hint 3*: dataset 3 the data describe an allometric relationship
- *hint 4*: dataset 4 contains measurements of population size over time
- *hint 5*: no hint for dataset 5
- *hint 5*: **optional** dataset 6 a species response curve (use google)

4. Plot curves of the chosen functions in the seperate plots (*hint*: use `curve()`)

5. Choose appropriate parameter values so that the chosen curves matches the data

- *hint*: You can save time by choosing your values smartly (e.g. look at the value of the asymptote etc.)