**Intraspecific size scaling of body growth in fishes**

Does the mass-scaling exponent of growth decline with temperature? There is mixed empirical support for this observations (Wangila & Dick 1988; Elliott & Hurley 1995; Björnsson *et al.* 2007; García García *et al.* 2011), likely because it depends on which body sizes and temperatures are considered. However, in addition to testing the probability of a mass-temperature interaction for the scaling of growth, we can look at what it results in in terms of optimum growth temperature.

The allometric growth can be rewritten as:

Find derivative with respect to *T*. Apply product rule:

Factor out :

Go back to normal form:

cannot be 0, so parenthesis needs to be. If is a constant, the expression for the maximum does not have in it. If declines with temp, optimum is lower for larger masses. (Show this in a figure, two allometric growth curves, with or without temperature effect on )

In this study, we utilize a newly collated dataset on the intraspecific scaling of body growth in relation to temperature. Given that we use strictly below-optimum data, we do not find an overall clear interaction. However, including data near or beyond will lead to an interaction (maybe show this also? Fit the same model to all data?), likely a negative one since large fish have a lower optimum growth temperature (Lindmark et al, 2020/2021).

A close up of a map

Description automatically generated