**Suggested reviewers**

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* Jennifer Sunday, McGill University, Department of Biology, [jennifer.sunday@mcgill.ca](mailto:jennifer.sunday@mcgill.ca)
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* Amanda K Pettersen, [Sydney Institute of Marine Science](http://sims.org.au), [amanda.pettersen@sims.org.au](mailto:amanda.pettersen@sims.org.au)
* Joel Kingsolver, The University of North Carolina at Chapel Hill, j[gking@bio.unc.edu](mailto:gking@bio.unc.edu)

**Answers to the following questions (max 50 words per answer)**

*What is the scientific question you are addressing?*

How do metabolic rate and feeding rate scale with temperature and body mass *within* species (across temperature experiments on fish)? What relationship between optimum growth temperature and body size do these scaling relationships predict when implemented in a growth model? Are these predictions supported by temperature experiments on growth rates?

*What is/are the key finding(s) that answers this question?*

Within fish species, metabolic rates increase faster with body mass than feeding rates, and feeding rates are unimodal functions of temperature. This leads to the prediction that optimum temperature for body growth declines intraspecifically with mass. Analysis of independent growth rate experiments demonstrates that this prediction holds for fish.

*Why is this work important and timely?*

Understanding how temperature affects growth rates is key for predicting global warming impacts; yet the empirical basis of growth models has been criticised. By estimating parameters from metabolism- and feeding experiments, we show how they predict reduced growth of large fish in warmer environments, and confirm this in independent data.

*Does your paper fall within the scope of GCB; what biological AND global change aspects does it address?*

Our analysis data provide fundamental biological insights into the size and temperature scaling of fish growth. Together with our analysis of a mechanistic growth model, our study contributes to an understanding of the bioenergetic basis for the temperature-size rule and the predicted world-wide shrinking of large individuals with climate warming.

*What are the three most recently published papers that are relevant to this question? This information will assist the Editors in selecting reviewers. If you listed non-preferred reviewers, provide a justification for each*

Marshall, D. J., & White, C. R. (2019). Have we outgrown the existing models of growth?. *Trends in Ecology & Evolution*, *34*(2), 102-111.

Lefevre, S., McKenzie, D. J., & Nilsson, G. E. (2017). Models projecting the fate of fish populations under climate change need to be based on valid physiological mechanisms. *Global Change Biology*, *23*(9), 3449-3459.

This article was followed by several comments and replies:

* Pauly, D. and Cheung, W.W., 2018. Sound physiological knowledge and principles in modeling shrinking of fishes under climate change. *Global Change Biology*, *24*(1), pp.e15-e26;
* Lefevre, S., McKenzie, D.J. and Nilsson, G.E., 2018. In modelling effects of global warming, invalid assumptions lead to unrealistic projections. *Global Change Biology*, *24*(2), pp.553-556.;
* Pauly, D. and Cheung, W.W., 2018. On confusing cause and effect in the oxygen limitation of fish. *Global Change Biology*, *24*(11), pp.e743-e744.)

van Denderen, D., Gislason, H., van den Heuvel, J., & Andersen, K. H. (2020). Global analysis of fish growth rates shows weaker responses to temperature than metabolic predictions. *Global Ecology and Biogeography*, *29*(12), 2203-2213.

*Justification if your manuscript does not conform to author or formatting guidelines (e.g. exceeding word limit)*

NA