

**Table S1.** The open data policies of journals included in Fig. 2 of the main text. DAS = data availability statement. The implementation date of some policies are not indicated. This information can be difficult to obtain, even from editorial offices who often have little or no record of when policy changes were made.

| Journal              | Data policy  |
|----------------------|--|
| J Comp Physiol       | Recommended open data except for molecular data (mandatory). DAS = recommended. <a href="#">link</a>   |
| J Exp Biol           | Mandatory open data for high-throughput molecular data and recommended open data for all other data types. Integration of submission system with data deposition in Dryad in 2016. DAS = recommended. <a href="#">link</a> |
| J Exp Zool A         | Recommended open data and mandatory DAS. <a href="#">link 1</a> , <a href="#">link 2</a>   |
| Physiol Biochem Zool | Optional open data and DAS. Dryad fees covered by journal. <a href="#">link</a>  |
| Anim Behav           | Recommended open data and DAS. <a href="#">link</a>  |
| Behav Ecol           | Mandatory open data and DAS for all data types since 2016. <a href="#">link</a>  |
| Behav Ecol Sociobiol | Mandatory open data and DAS for all data types as of 2021. <a href="#">link</a>  |
| Ethology             | Recommended open data and mandatory DAS. <a href="#">link1</a> , <a href="#">link 2</a>  |

**Table S2.** Lists of resources, training materials, and tools for researchers wanting to engage in open and reproducible science.

| Resource  | Description   |
|---|---|
| <a href="#">Table 1</a> in Wittman and Aukema (2020)                            | Resources to learn about reproducibility and open science   |
| <a href="#">Table S1</a> in Buxton et al. (2021)                                | Resources to aid researchers with data management, open data, and open code   |
| <a href="#">Table 1</a> in ‘Open Code and Software: a Primer from UKRN’         | Resources to learn about code and software sharing  |
| <a href="#">Other resources</a> in ‘Data Sharing: a Primer from UKRN’           | Resources to learn about research data management and open data   |
| Framework for Open and Reproducible Research Training ( <a href="#">FORRT</a> ) | A curated list of over 700 resources on reproducible research and open science  |
| <a href="#">Open Scholarship Knowledge Base</a>                                 | A curated list of resources on the ‘what, why, and how’ of open scholarship   |
| <a href="#">List of online reproducibility trainings</a>                        | A Google Spreadsheet with open science resources and training compiled by Malika Ihle (@MalikaIhle on Twitter)                                  |
| <a href="#">NBIS Tools for reproducible research</a>                            | Materials and online course to learn tools for reproducible research including Git, Conda, Snakemake, R Markdown, Jupyter, Docker, Singularity. |

\* Useful reproducible research tools that might not be mentioned in the resources above include [Stencila](#) for publishing executable research articles and the [workflowr](#) R package for project management, reproducibility, collaboration, and results sharing.

**Table S3.** The number of journal articles identified after each step of the systematic review for research articles contributing to the advancement in our understanding of three paradigms investigating the impacts of climate change on aquatic ectotherms: oxygen- and capacity-limited thermal tolerance (OCLTT), gill-oxygen limitation (GOL), and ocean acidification-driven behavioural changes (OA). The steps involved in the selection process of research articles involved: (1) a forward reference search of journal articles citing foundational papers for each paradigm (citations), (2) removal of duplicates to identify unique citations (unique), (3) use of keywords to identify potentially relevant journal articles (keywords), and (4) manual review of papers to determine their suitability for inclusion in the analysis of open data and code (review).

| <b>Paradigm</b> | <b>(1) citations</b> | <b>(2) unique</b> | <b>(3) keywords</b> | <b>(4) review</b> |
|-----------------|----------------------|-------------------|---------------------|-------------------|
| OCLTT           | 5,282                | 3,541             | 1,100               | 532               |
| GOL             | 543                  | 471               | 270                 | 10                |
| OA              | 1,413                | 804               | 424                 | 186               |

**Table S4.** Keywords used to assist with the selection of papers that contribute to advancing our understanding of three paradigms investigating the impacts of climate change on aquatic ectotherms: oxygen- and capacity-limited thermal tolerance (OCLTT), gill-oxygen limitation (GOL), and ocean acidification-driven behavioural changes (OA). The presence of these keywords in a paper’s title or abstract led to a manual review of the paper to determine its relevance for an analysis examining the presence of open data or code.

| OCLTT                 | GOL               | OA             |
|-----------------------|-------------------|----------------|
| aerobic scope         | aerobic scope     | activity       |
| cardiac               | gill              | alarm          |
| cardiorespiratory     | GOL               | avoidance      |
| cardiovascular        | GOLT              | behavior       |
| critical thermal      | growth            | behavioral     |
| heart rate            | mass              | behaviour      |
| OCLTT                 | metabolic rate    | behavioural    |
| oxygen and capacity   | oxygen demand     | choice         |
| oxygen consumption    | oxygen limitation | cue            |
| oxygen limitation     | oxygen supply     | exploration    |
| oxygen limited        | oxygen uptake     | flume          |
| oxygen uptake         | respiratory       | GABA           |
| temperature tolerance | size              | gabazine       |
| thermal limit         | surface area      | lateralisation |
| thermal tolerance     |                   | lateralization |
| thermal limits        |                   | olfactory      |
|                       |                   | swimming       |

References

Buxton, R., Nyboer, E. A., Pigeon, K., Raby, G. D., Rytwinsky, T., Gallagher, A. J., Schuster, R., Lin, H. S., Fahrig, L., Bennett, J. R. et al. (2021). Avoiding wasted research resources in conservation science. *Conservation Science and Practice* **3**, e329.

Wittman, J. T. and Aukema, B. H. (2020). A guide and toolbox to replicability and open science in entomology. *Journal of Insect Science* **20**, 6.