


GATHERING TO SERVE: TOFF, A DATABASE ON FISH FUNCTIONAL TRAITS TO PROMOTE THE DEVELOPMENT OF FISH FARMING

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Functional traits are behavioral, morphological, phenological, and physiological characteristics¹. These traits **provide valuable insights for understanding and predicting species interactions and performance in aquaculture**². These insights are particularly useful for developing new productions (e.g. of a new species, in a new rearing system, or by combining species for polyculture). Functional traits can also guide the selection of fish species to maximize resource use in a specific aquaculture system. Additionally, their analysis helps anticipate the impact of environmental changes on species production. Overall, **functional trait analysis facilitates the development of prospective and predictive strategies**, reducing the need for extensive bioassays.

Comprehensive functional trait datasets are thus essential for advancing aquaculture through big data meta-analyses. Despite extensive research on fish traits, broad-scale insights are limited due to scattered datasets. Existing compilations lack the detailed data needed for aquaculture, making meta-analyses challenging without extensive reviews.



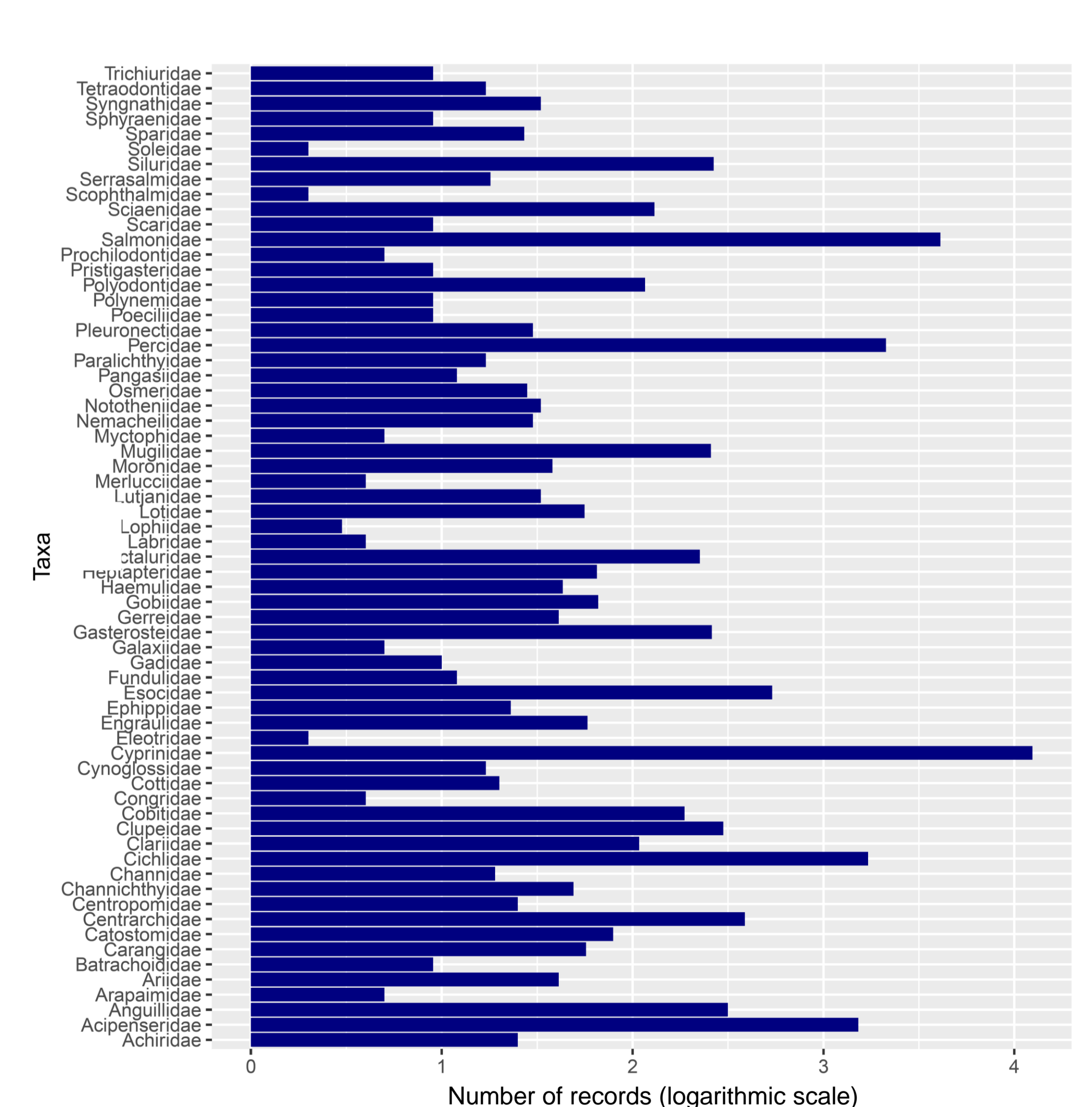
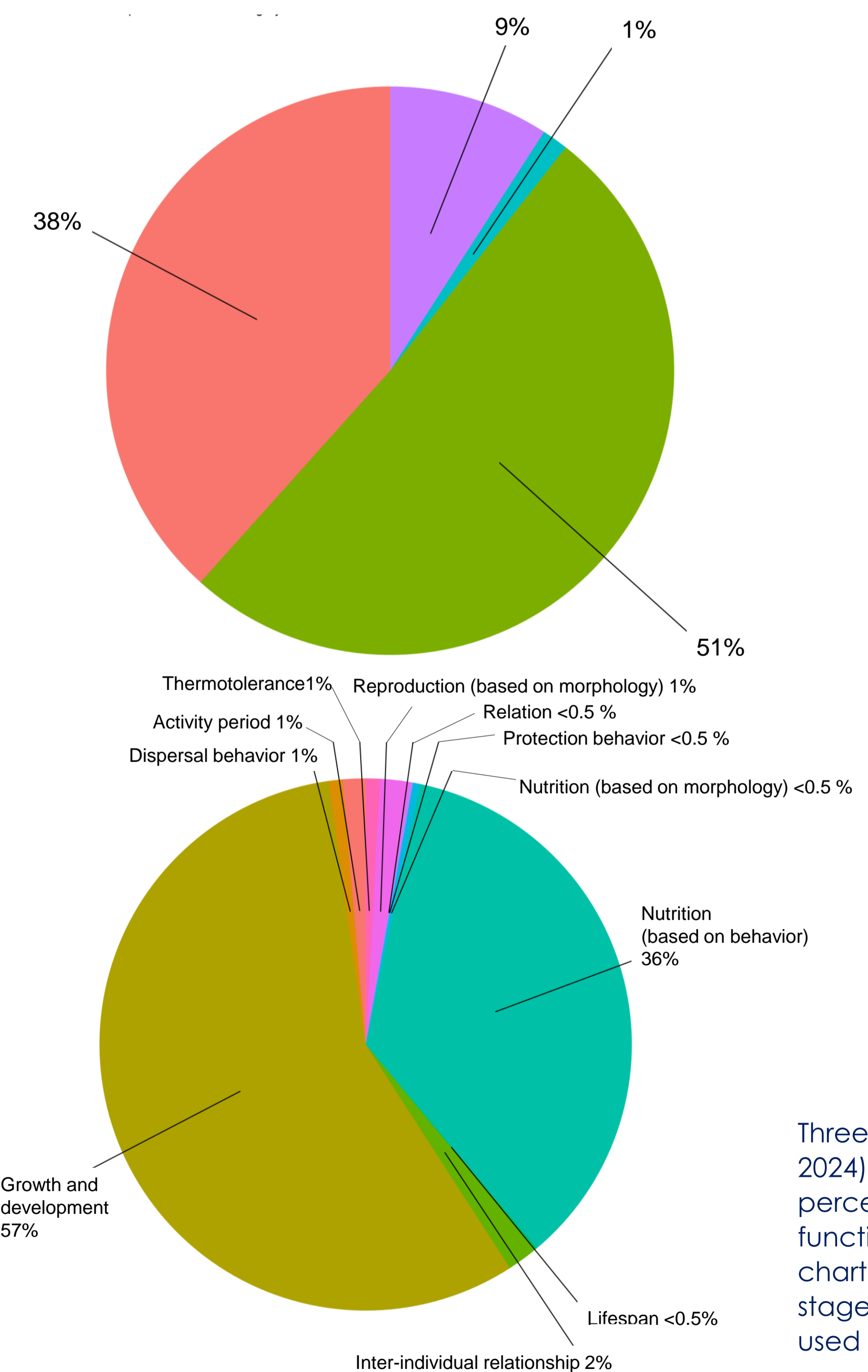
TOFF (Traits OF Fish)³ is an open-access database integrating functional traits with environmental measures for all fish species. TOFF hosts data from published experimental and field studies.



TOFF contains 26,030 records informing on 271 traits for 257 species from 682 references (17th July 2024)



TOFF is freely available via <https://toff-project.univ-lorraine.fr>



Three graphs displaying information on functional fish traits currently available (July 17, 2024) in TOFF. These charts are based on 26,030 records. The pie charts show the percentages of records available by major functional trait category (top left) and by functional trait category (bottom left) according to TOFF thesaurus definitions. The bar chart (right) shows the volume of data available (larval, juvenile, adult, and unknown stages combined) for the fish families. For ease of representation, a logarithmic scale is used for this bar chart.

References

- Violle, C. *et al.* Let the concept of trait be functional! *Oikos* **116**, 882–892 (2007).
- Lecocq, T. *et al.* Stronger together: A workflow to design new fish polycultures. *Rev. Aquac.* **16**, 1374–1394 (2024).
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