**Supporting Information for:**

Functionalizing ecological integrity: using functional ecology to monitor animal communities

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**Supporting Methods:**

*Methods for the qualitative literature review*

We searched SCOPUS on 3 November 2023 using the search string “ecological integrity” OR “biological integrity”. We reviewed papers from five journals that contained high numbers of citations and that we felt were sufficiently broad in scope to be representative of cross-disciplinary trends: Ecological Indicators, Biological Conservation, Ecological Applications, Conservation Biology, and Forest Ecology and Management. The papers in these top journals included 279 total papers for review (7.5% of the total returned from SCOPUS; ~3,720 total). We highlight key patterns in these results in the main text (Figures 1 & 2) and they are consistent with a study that did a more comprehensive review on the topic (Carter et al. 2019). Of these 279 papers, 178 were about ecological integrity, 146 actually measured ecological integrity (e.g., were not review or conceptual papers), 91 included some measure of animals (populations and communities), and 89 (~32%) included animal communities in measures of ecological integrity.

For those papers that included animal communities in their measures of ecological integrity, we reviewed the abstract and main text and compiled information on the taxa, habitat, geographic region, and whether the animal community was measured in terms of functional traits. This resulted in 33 studies that documented functional traits and 6 of those with functional traits were from terrestrial environments. Key results of this scoring are highlighted in Figure 2 and SI Figure 1.

We provide the studies we reviewed as well as their scores for each of the categories described above in the data for this paper on Zenodo (Miller-ter Kuile and Jones 2024).

**Supporting Figures:**

A graph of different types of numbers

Description automatically generated with medium confidence

SI Figure 1: Summaries of different aspects of the literature review. (A) Whether or not a functional metric was calculated for animal communities, (B) which functional traits were used when functional traits were part of an integrity metric, (C) which groups of animals were in the study (multiple usually included fish, aquatic invertebrates, and zooplankton), and (D) the continent on which the study occurred. The † in (B) indicates that the study combined trait categories into a functional diversity metric.

**References**

Miller-ter Kuile A and Jones. 2024. anamtk/Ecological\_Integrity: first release.