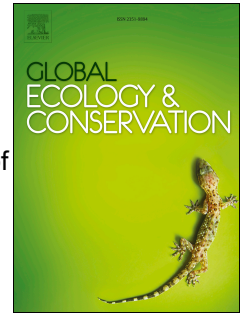


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Persistence of methodological, taxonomical, and geographical bias in assessments of species' vulnerability to climate change: A review

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1 **Persistence of methodological, taxonomical, and geographical bias in assessments of species'**
2 **vulnerability to climate change: a review**

3

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16 **Abstract**

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18 Species vulnerability to climate change has become a well-researched field in recent years: between
19 2000 and 2016, at least 743 articles reporting climate change vulnerability were published in the
20 conservation literature. We reviewed this literature to assess the different methods used to assess
21 vulnerability, how and whether vulnerability was formally assessed, and whether there are trends and
22 biases in either the taxonomic group or the geographic focus of the studies. We found that mechanistic
23 assessment methods prevailed, especially in plant-focused research. Species' exposure to climate
24 change was considered by almost all research articles ($n=741$), but other key components of
25 vulnerability, such as sensitivity and adaptive capacity, were addressed only by a minority ($n=499$ and
26 $n=103$, respectively). Plants ($n=372$) were by far the most studied taxon; invertebrates ($n=138$), birds
27 ($n=70$), fishes ($n=70$), mammals ($n=68$), and other ($n=42$) were the next most studied, but an order of
28 magnitude lower. In terms of the locations of published studies, we found a clear bias towards most-
29 developed nations. Research that does not focus on all three vulnerability components tends to either
30 under- or over-estimate a species' vulnerability to climate change or how they may be impacted. The
31 identified spatial and taxonomic bias means a narrow understanding of the consequences of climate
32 change. More resources should be directed towards the study of under-represented taxa, especially
33 those in less developed countries, in order to gain a more holistic insight on the vulnerability of
34 biodiversity to climate change.

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37 **Keywords:** *Vulnerability, climate change, publishing bias, conservation planning*

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