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Increasing transparency through open science badges

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EDITORIAL

Increasing transparency through open science badges

Conservation science is a multidisciplinary and collaborative discipline. This journal's policy is to encourage transparent and open practices in science, including sharing of data, code, and survey instruments. Such practices are especially important in light of emerging, broader scientific issues, such as reproducibility of research protocols and results, wasting of research outputs and resources, and questionable data and reporting practices. *Conservation Biology* promotes this agenda through its transparency and openness guidelines and checklist and through the publication of registered reports. Transparency and openness have the potential to improve research design and methods, provide opportunities to validate models and statistical analyses, encourage collaboration, and increase citations (Piwowar et al 2007). Preregistration aims to reduce selective reporting and unplanned exploratory analyses that can lead to unreliable research findings.

The Center for Open Science has introduced "badges" as a way to recognize authors who engage in transparent practices (for further information see https://cos.io/our-services/open-science-badges/). The badges are a step toward a wider cultural change in research publishing in which transparency, openness, and preregistration are rewarded. In particular, it is hoped that awarding badges for open science practices, such as data and material sharing and preregistration, will improve replicability, reduce the prevalence of questionable research practices, and reduce the waste of research outputs and resources.

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Authors who adopt transparent practices for an article in *Conservation Biology* are now able to select from three open science badges: open data, open materials, and preregistration. Badges appear on published articles as visible recognition and highlight these efforts to the research community. There is an emerging body of literature regarding the influences of badges, for example, an increased number of articles with open data (Kidwell et al 2016) and increased rate of data sharing (Rowhani-Farid et al. 2018). However, in another study Rowhani-Farid et al. (2020) found that badges did not "noticeably motivate" researchers to share data. Badges, as far as we know, are the only data-sharing incentive that has been tested empirically (Rowhani-Farid et al. 2017).

Rates of data and code sharing are typically low (Archmiller et al 2020; Culina et al 2020; Herold 2015; Roche et al 2015). Since 2016, we have asked authors of contributed papers, reviews, methods papers, practice and policy papers, and research notes to tell us whether they "provided complete machine and human-readable data and computer code in Supporting Information or on a public archive." Authors of 31% of these articles published in *Conservation Biology* said they shared their data or code, and all authors provide human-survey instruments in Supporting Information or via a citation or online link (i.e., shared materials).

Of course, there may be good reasons why particular data should not or cannot be shared. For example, constraints may arise because of disclosure of potentially sensitive location information for rare and threatened species, privacy of personal information for human participants or interviewees, and confidentially agreements with funders. Reproducibility requires that authors archive complete and reusable data sets and materials. We understand that data archiving takes time to learn and to do well.

By offering badges, *Conservation Biology* is encouraging authors to share data and materials and to preregister studies. Through this incentive, *Conservation Biology* is taking an additional step toward transparency in the research it publishes and toward the ultimate goals of producing reliable scientific findings, improving the credibility of science, and accelerating scientific discoveries and knowledge creation in our discipline.

Frith Jarrad, Managing Editor

Ellen Main, Senior Editor

Mark Burgman, Editor in Chief

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