

The growing promise of community-based monitoring and citizen science

April 28 2021



Volunteer monitoring programs, such as eBird, typically rely on observations made by nonscientist members of the public. Credit: Kayla Farmer

Over recent decades, community-based environmental monitoring (often called "citizen science") has exploded in popularity, aided both by

smartphones and rapid gains in computing power that make the analysis of large data sets far easier.

Publishing in *BioScience*, handling editors Rick Bonney, of Cornell University, Finn Danielsen, of the Nordic Foundation for Development and Ecology, and colleagues share a special section that highlights numerous community-based [monitoring](#) programs currently underway. They also describe the potential for such efforts to advance the scientific enterprise well into the future and make recommendations for [best practices](#) and future directions.

In an article on [locally based monitoring](#), Danielsen and colleagues describe the potential for monitoring by local community members—who may have little scientific training—to deliver "credible data at local scale independent of external experts and can be used to inform local and national decision making within a short timeframe." The authors argue that this important source of data can prove particularly valuable in areas in which scientist-led monitoring is sparse or too costly to administer.

Community-based monitoring efforts also have the potential to empower Indigenous rightsholders and stakeholders through their broader inclusion in the scientific process, writes Bonney in an [introductory Viewpoint](#). Likewise, he explains, "Indigenous and local peoples' in situ knowledge practices have the potential to make significant contributions to meeting contemporary sustainability challenges both locally and around the globe." This topic is explored in depth in an [Overview article by Maria Tengö and colleagues](#).

A [contribution from Noor Johnson and colleagues](#) discusses the role of [digital platforms](#) in enabling community-based monitoring, including among Indigenous communities. While digital platforms, such as those that use smartphones, have the potential to improve [data management](#) in

community-based monitoring, the authors caution that care must be taken with sensitive data and that such platforms may "increase inequities across communities because being able to use digital tools requires technical capacity that may or may not exist at the community level."

Key to realizing the potential of community-based monitoring will be linking large-scale, top-down monitoring programs with bottom-up approaches managed or initiated at the community level, [write Hajo Eicken and colleagues](#) a short video about the article can be [found here](#). This effort will rely on a number of factors, including an ability to match program aims and scales while also fostering compatibility in methodology and data management—and ensuring that Indigenous intellectual property rights are respected. Only by linking monitoring programs, argue the authors, will it be possible to fully realize the value of community-based monitoring and effectively respond to the rapidly changing global environment.

Provided by American Institute of Biological Sciences

Citation: The growing promise of community-based monitoring and citizen science (2021, April 28) retrieved 26 April 2024 from <https://phys.org/news/2021-04-community-based-citizen-science.html>

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