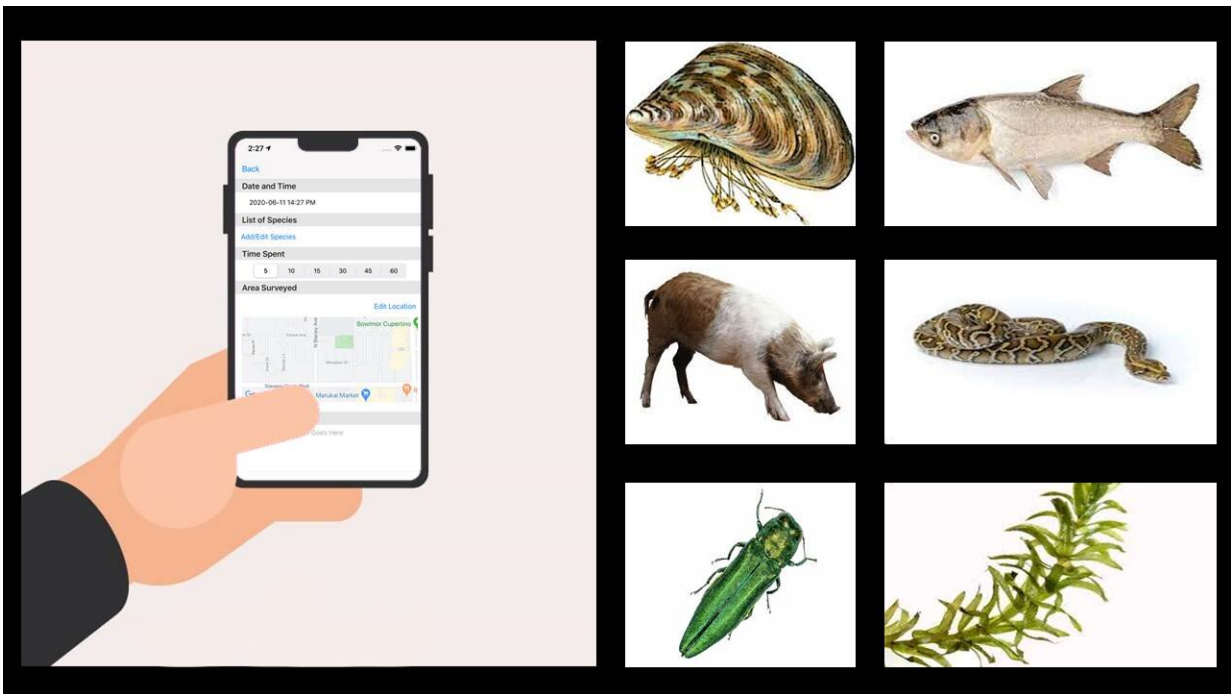


Invasive alien species? Isn't there an app for that?

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Smartphone apps like the soon-to-be-released new EDDmapS platform are promising tools for monitoring, predicting, and reducing the spread of invasive species. However, the same explosion of reports has not been realized as that which has been experienced by biodiversity-wide platforms. Howard et al. investigate why there has not been the same boom in use observed for these invasive species-specific apps. Credit: Leif Howard and Charles van Rees

Invasive alien species (IAS) are a leading contributor to biodiversity loss,

and they cause annual economic damage in the order of hundreds of billions of US dollars in each of many countries around the world. Smartphone apps are one relatively new tool that could help monitor, predict, and ideally prevent their spread. But are they living up to their full potential?

A team of researchers from the University of Montana, the Flathead Lake Biological Station and the University of Georgia River Basin Center tried to answer that in a recent research paper in the [open access](#), peer-reviewed journal *NeoBiota*. Going through nearly 500 peer-reviewed articles, they identified the key features of the perfect IAS reporting app and then rated all known English-language IAS reporting apps available to North America users against this ideal.

Smartphone apps have the potential to be powerful reporting tools. Citizen scientists the world around have made major contributions to the reporting of biodiversity using apps like iNaturalist and eBird. But apps for reporting [invasive species](#) never reached that level of popularity; Howard and his team investigated why.

User uptake and retention are just as important as collecting data. Howard and colleagues found that apps tend to do a good job with one of these, and rarely with both. In their paper, they emphasize that making apps user-friendly and fun to use, involving games and useful functions like [species](#) identification and social media plug-ins is a major missing piece among current apps.

"The greatest advancement in IAS early detection would likely result from app gamification," they write.

Another feature they would like to see more of is artificial intelligence or machine learning for photo identification, which they believe would greatly enhance species identification and might increase public

participation.

The authors also make suggestions for future innovations that could make IAS reporting apps even more effective. Their biggest suggestion is coordination.

"Currently, most invasive species apps are developed by many separate organizations, leading to duplicated effort and inconsistent implementation", they say. "The valuable data collected by these apps is also sent to different databases, making it harder for scientists to combine them for useful research."

A more efficient way to implement these technologies might be providing open-source code and app templates, with which local organizations can make regional apps that contribute data to centralized databases.

Overall, this research shows how with broader participation, more complete and informative reporting forms, and more consistent and structured data management, IAS reporting apps could make much larger contributions to invasive species management worldwide. This, in turn, could save local, regional, and national economies hundreds of millions or billions of dollars annually, while protecting valuable ecological and agricultural systems for future generations.

More information: Leif Howard et al, A review of invasive species reporting apps for citizen science and opportunities for innovation, *NeoBiota* (2022). [DOI: 10.3897/neobiota.71.79597](https://doi.org/10.3897/neobiota.71.79597)

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