

Research Summary

Technological innovations enhance invasive species management in the Anthropocene

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1. Role of Technological Innovations:

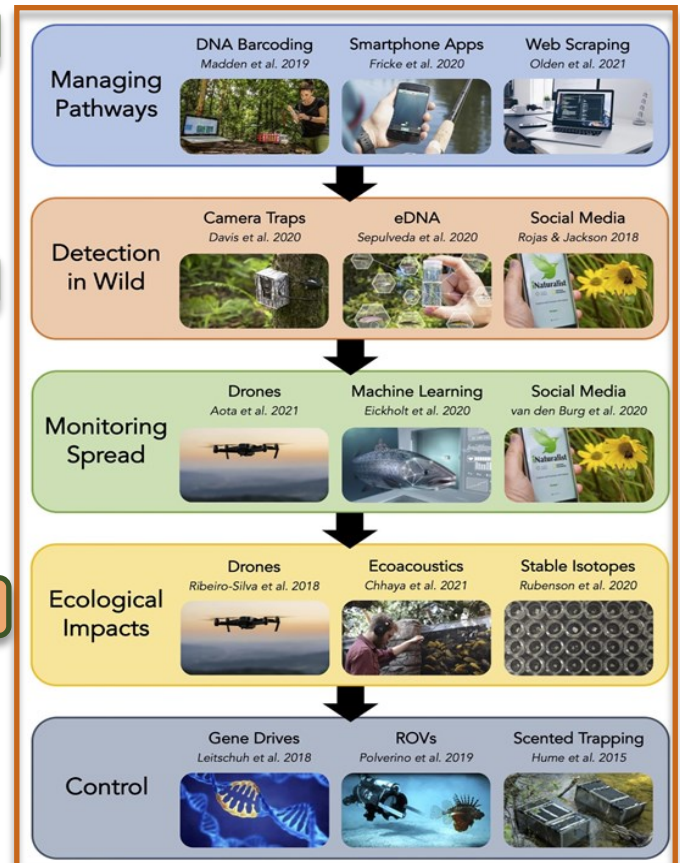
Technology innovations play a crucial role in managing invasive species, and there are various techniques that can be applied to detect, control, and monitor invasive species more effectively.

2. Technologies for Detection and Monitoring:

Technologies such as environmental DNA (eDNA), drones, and satellite imagery are instrumental in detecting and monitoring invasive species. eDNA allows for the detection of species through DNA present in the environment, while drones and satellite imagery facilitate remote sensing to identify invasive species in different habitats.

3. Technologies for Control and Management:

Biopesticides offer an eco-friendly solution, automated traps enable continuous monitoring and control, and gene drive systems can potentially suppress or modify populations of invasive species.



MANAGEMENT IMPLICATIONS

1. Strategic Implementation of Technology:

Management strategies should systemically implement the latest technological innovations like eDNA, drones, and satellite imagery for early detection and continuous monitoring of invasive species, and employ biopesticides, automated traps, and gene drive systems for effective control and eradication.

2. Comprehensive Assessment and Ethical Consideration:

Managers should conduct comprehensive assessments to understand the potential ecological impacts of employing new technologies. Ethical considerations related to biodiversity conservation and animal welfare should be meticulously addressed, ensuring responsible usage of technology in managing invasive species.

3. Interdisciplinary Collaboration:

Management efforts should foster interdisciplinary collaboration involving scientists, policymakers, conservationists, and the general public to develop, refine, and implement technological solutions.

FIGURE 1. New technologies offer exciting opportunities to advance knowledge in invasion science, enhance management actions, and guide policy strategies. Shown in the figure are example technologies, with representative citations, grouped by the stage of invasion (left) they have been used to address. Arrows indicate the progression of introduced species through the stages of invasion.

