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Conference Abstract

Sentinel gardens for the early detection of invasive species using Shiny Apps

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Abstract

Gardens represent important yet often overlooked frontlines for biodiversity change. Many ornamental plants that later become invasive are first cultivated in private or public gardens, while at the same time gardens are also a focal point for the introduction of invertebrate species through the plant trade. Private gardens are difficult to access for researchers to monitor the potential arrival of invasive species and are therefore best observed by their users. Involving gardeners in reporting ornamental plants that are exhibiting weedy or invasive tendency in gardens has been shown to generate useful

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records that have been used in horizon scanning and risk assessment approaches in Britain and Ireland. The Plant Alert project has been running since 2019 and so far generated more than 1000 records of 322 species. The approach has now been expanded to four additional European countries (Belgium, Finland, Portugal, Romania) as part of the OneSTOP project's Living Lab network that bring together local stakeholders — citizens, researchers, local authorities, nature conservation organisations and businesses. In a second citizen science approach, these OneSTOP Living Lab communities collaboratively selected to focus on flatworm species as one of the emerging invasive invertebrate species threats from gardens. Again, the successful Belgian Flatworm Watch Project has demonstrated the usefulness of the approach which has now been expanded to Finland, Great Britain and Portugal.

Both projects have been implemented using R Shiny Apps that have been designed to submit all records into iNaturalist from where they feed into GBIF and contribute to automated alert systems that notify relevant stakeholders, such as local conservation managers, about emerging invasive species threats. By integrating these data streams into the early warning and rapid response system being developed within OneSTOP, we aim to establish sentinel gardens as a scalable, participatory detection method, complementing novel technologies such as computer vision and eDNA. Furthermore, the use of Shiny Apps also offers the advantage that additional information about the reported species can be collected that is relevant for potential risk assessments and cannot be easily collected in existing recording apps.

This poster presentation will present first results from these projects and demonstrate the Shiny App approach.

Keywords

citizen science, community science, non-native species

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Conflicts of interest

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