Item number	Title/reference *(academic style) name initials (year) title, publisher, volume, pages*	Name of reviewer
20	Encarnação, J., Teodósio, M.A. and Morais, P., 2021. Citizen science and biological invasions: a review. Frontiers in Environmental Science, 8, p.602980.	Mia Lozanovska, ECO LOGIC

Review of findings / main outcome

This paper evaluates the definitions of citizen science and the possibility of advancing biological invasions research by analyzing 126 peer-reviewed articles that used citizen science methods or data concerning NIS (Non – Indigenous Species). More precisely, it looks through the role of citizen science in the research on the biological invasions, having in mind all the different ecosystems where they are found and can be assessed.

Pyšek and Richardson (2010) stated that biological invasions are increasingly exacerbated by human activities and their impacts on the environment, as ecosystem degradation, overexploitation of biological resources, or global trade.

One of the main advantages of citizen science is the ability to cover larger geographical areas, at a significantly lower cost when compared to traditional scientific surveys (Carr, 2004)

The number of articles about first records of NIS in marine ecosystems is almost the double of those in terrestrial ecosystems. A search for the keywords "first/new" and "record/occurrence" in the titles of the retrieved articles disclosed five articles done in terrestrial ecosystems (Hoebeke et al., 2015;) and nine articles done in marine ecosystems (Boero et al., 2009) This may reflect the inherent difficulty in accessing the aquatic ecosystems by scientific community.

Fitzpatrick 2009 argued that several biases may occur when combining data gathered by scientists and citizen scientists. The level of expertize of the participants involved should be accounted for when assessing the presence and identification of a species. First, scientists can detect low-abundant invasive species more frequently than less experienced citizen scientists

Eritja et al. (2019) suggested that the interest of citizen science in biological invasions has increased steadily, as reflected by the increased number of articles published since 2015. Simoniello et al. (2019) stated that the citizen science has benefited from the easier access of citizens to novel technologies and digital platforms;), Nuñez et al.(2012) mentioned that the benefit arose also to increasing efficiency of the outreach actions of citizen science projects

The implementation of activities to control or eradicate invasive species increase the level of engagement of citizen scientists because they feel being part of the solution. Sometimes of a very noticeable environmental problem.

Citizen science projects may improve the information on the distribution range of known NIS or infer about locations where NIS may expand their distribution. The sampling process of projects studying the distribution range of a NIS, across a broader geographical range, is usually undertaken independently by citizen scientists.

Quotes / very useful statements

Citizen science should also strive to reduce the gap between the scientific community and the general public and promote scientific literacy while increasing the information obtained by scientists.

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