



Editorial of special issue “Ecological and environmental impacts of invasive alien species”

Jeong-Soo Park*

Ecological Observation Team on Climate Change, National Institute of Ecology, Seocheon 33657, Korea

ARTICLE INFO

Received June 15, 2022, Revised July 4, 2022, Accepted July 5, 2022, Published on July 25, 2022

*Corresponding author

Jeong-Soo Park

E-mail jspark@nie.re.kr

Increasing global trades and human activities have led to biological invasions worldwide. Furthermore, climate change increases the risk of expansions of the distribution of invasive alien species (IAS) in recent years (Diez et al. 2012). Such invasion of alien species into the native ecosystem has reduced biodiversity and altered landscape structures and ecosystem functions while also having harmful effects on the social economy and human well-being (Pechar and Mooney 2009). Many aspects of knowledge regarding alien species are required for effective management and control programs.

As an editor of this special issue, I have a particular concern with IAS management and ecological impacts. Our interests also include the potential risk assessment of alien species and predicting invasive species spreading to protect against their harmful effects proactively. These alien species management strategies have been discussed within the 9th East Asian Federation of Ecological Societies (EAFES) International conferences in 2021, and are core to several papers within this special issue.

Atique and An's (2022) analysis of 45 potential risky exotic fish species shows most species have a higher climate match with the Korean territories and suggest that the incoming fish species must be screened before letting them in the country. Along with paper by Khatri-Chettri et al. (2022) found out *Parthenium* was the most dominant in soil seedbank, contributing 65% to the total soil seedbank in the highly invaded plots. This result suggests the need of monitoring the soil seedbank dynamics while managing *Parthenium* weed.

The model results of population dynamics of the red-eared slider (Wi et al. 2022) showed that if red-eared sliders expand their habitats by natural migration, their population can increase to a greater number than when they

have a 99% survivorship in a fixed habitat, and suggested that further introductions of red-eared sliders into wetlands or artificial ponds should be prohibited and managed to prevent future spread of the species.

To categorize major environmental factors and traits of invasive alien, Oh et al. (2021) analyzed the 10,287 distribution points of 126 species by the hierarchical model of species communities framework. These results showed that the disturbance by anthropogenic factors or water flow had positive influences on the occurrences of alien plants.

Finally, Son et al. (2021) introduced ecological risk assessment systems for alert alien species and IAS. These proactive management systems can contribute to preventing the reduction of biodiversity by IAS in South Korea.

We hope that these studies in this issue provide insight for policymakers to control and prevent the spread of IAS.

Abbreviations

Not applicable.

Acknowledgments

Not applicable.

Funding

Not applicable.

Availability of data and materials

Not applicable

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable



Competing interests

The author declares no competing interests.

References

- Atique U, An KG. Potential risky exotic fish species, their ecological impacts and potential reasons for invasion in Korean aquatic ecosystems. *J Ecol Environ*. 2022;46:5. <https://doi.org/10.5141/jee.22.008>.
- Diez JM, D'Antonio CM, Dukes JS, Grosholz ED, Olden JD, Sorte CJ, et al. Will extreme climatic events facilitate biological invasions? *Front Ecol Environ*. 2012;10(5):249-57. <https://doi.org/10.1890/110137>.
- Khatri-Chettri J, Rokaya MB, Shrestha BB. Impact of parthenium weed invasion on plants and their soil seedbank in a subtropical grassland, central Nepal. *J Ecol Environ*. 2022;46:2. <https://doi.org/10.5141/jee.21.00083>.
- Oh M, Heo Y, Lee EJ, Lee H. Major environmental factors and traits of invasive alien plants determine their spatial distribution: a case study in Korea. *J Ecol Environ*. 2021;45:18. <https://doi.org/10.1186/s41610-021-00196-9>.
- Pejchar L, Mooney HA. Invasive species, ecosystem services and human well-being. *Trends Ecol Evol*. 2009;24(9):497-504. <https://doi.org/10.1016/j.tree.2009.03.016>.
- Son SH, Jo AR, Kim DE. Current status of alert alien species management for the establishment of proactive management systems in Korea. *J Ecol Environ*. 2021;45:26. <https://doi.org/10.1186/s41610-021-00204-y>.
- Wi Y, Oh G, Kang HJ, Sung HC, Cheon SJ, Jin HS. Population dynamics of the red-eared slider (*Trachemys scripta elegans*) with changes in the population dependent carrying capacity in Republic of Korea. *J Ecol Environ*. 2022;46:1. <https://doi.org/10.5141/jee.21.00073>.