Science for Environment Policy

How big a threat do invasive alien species pose to European biodiversity? A ranking of species for urgent risk assessment

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Invasive alien species (IAS) pose a threat to native European biodiversity and cost the EU annual damages worth EUR 12 billion as a result of IAS effects on human health, damaged infrastructure, and agricultural losses[1]. IAS are the focus of Target 9 of the Convention of Biological Diversity (CBD) and Target 5 of the EU Biodiversity Strategy: 'By 2020, IAS and their pathways are identified and prioritised… pathways are managed to prevent the introduction and establishment of new IAS.' The EU framework for action against IAS is set out in a Regulation[2] adopted in 2014. This provides for the adoption of a list of IAS of Union concern that will be subject to restrictions across the EU. The first step in order to consider a species for listing is to undertake a risk assessment.

This study created an ordered methodology for identifying IAS suitable for listing as IAS of EU concern and prioritising them for formal risk-assessment, according to the risk they pose. The list of IAS of Union concern currently includes 49 species. The researchers behind this study consider that this number is not adequate to address the magnitude of the threat IAS pose to EU biodiversity and that previous nominations of species for risk assessment were not based on objective criteria or approached in a systematic manner, leading to a bias in the current list towards well-known terrestrial or freshwater species. They suggest that creating a methodology for identifying IAS species and prioritising them for formal risk assessment will assist the effective implementation of the EU regulation on IAS to achieve the 2020 biodiversity conservation targets.

The scientists identified 1 323 species as potential candidates for listing, and assessed their invasion history and impacts. Based on an assessment of IAS maximum-reported impact, the study prioritises 207 species (25 of which are included in the current EU IAS list) which should be considered for urgent risk assessment by 2020.

A participatory method was used to identify the issues, agree on methodologies and progress by consensus. There were four phases: an **expert** workshop (comprised of 21 European invasion biologists and senior conservationists) and a **policy workshop** (22 professionals from conservation and other interest groups) focused on establishing criteria for species choice and screening. These first two steps identified the databases of available scientific information regarding IAS in Europe, as well as creating a decision tree and systematic criteria for assessing species based on information about their distribution in conjunction with their impact (distribution × impact). The impact of species, taken from information on the databases and in the literature, was assessed following the Environmental Impact Classification of Alien Taxa (EICAT)[3].

The third step was **species screening** in IAS databases and other sources[4], and reviewing literature to identify species for assessment, which identified 1 323 potentially suitable species. These species were screened through the decision tree and those that qualified for assessment were assigned categories in the 'distribution × impact' matrix. The study limited the assessment of a species impact to biodiversity and ecosystem services — in line with the EU regulation.

The fourth stage was to assign a **species priority ranking** — this was defined by the year in which a risk assessment should be attempted, with the timeline running from 2018 to 2020 for the most urgent cases, and from 2025 to 2030 for those less urgent. Species with a major impact, but in the initial stages of invasion, were prioritised over widespread species.

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1. EC Press Release, 9 September 2013 – 'Environment: New EU Action to protect biodiversity against problematic invasive species'

2. Regulation (EU) No 1143/2014 on the prevention and management of the introduction and spread of invasive alien species

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3. Hawkins, C. *et al* (2015). Framework and guidelines for implementing the proposed IUCN Environmental Impact Classification for Alien Taxa (EICAT). *Diversity and Distributions*, 21(11), pp.1360-1363.

4. See: https://besjournals.onlinelibrary.wiley.com/action/downloadSupplement?doi=10.1111%2F1365-2664.12997&file=jpe12997-sup-0001-TableS1.docx

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Nine hundred of the potential 1 323 alien species fitted the criteria for listing according to the EU IAS regulation. The study prioritised 207 species for urgent risk assessment: 59 by 2018 and 128 by 2020, based on their potential to permanently damage native species or ecosystems. Of the remaining species, 336 were identified for a second phase by 2025, to prevent or reverse their impacts on biodiversity, and a further 357 species for assessment by 2030.

As of June 2017, of the 207 high-priority species needing urgent risk assessment, 48 had risk assessments available or in progress and 25 are included in the current EU IAS list. To keep the process moving, however, the researchers say that the remaining 159 species should be risk assessed by the end of 2020 in time for the review of the EU regulation, including the Union list, due by June 2021. This is a swift preliminary analysis to enable a systematic priority list to be created for risk assessments, but it does not replace the requirement for a full risk assessment of each species, as required by the EU regulation.

The Convention on Biological Diversity (CBD) strategic plan for biodiversity 2011–2020, and its associated Aichi Biodiversity Targets, is nearing its end and so is the opportunity for the EU to meet its objectives on IAS and their pathways of introduction. The researchers suggest that these policy targets will be difficult to achieve with a Union list containing only 49 species, which represent less than five per cent of the species estimated to cause ecological or economic impacts in Europe. They suggest that by adopting a coherent and representative list of species, the EU will prevent, decrease and alleviate the adverse impact of the introduction and spread of IAS on biodiversity.

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