



Data on alien species in need of standardisation

A new study has identified several differences between two major European databases on alien species, which could be communicating mixed messages for biodiversity policymakers. Researchers recommend creating a single pan-European database to address these differences.

In recent years, scientific information for alien species policy has improved in Europe with the creation of several publicly available databases. However, the number of databases can cause problems in terms of integration and standardisation between them.

To explore the different approaches to constructing an alien species database, the study compared two independently developed large-scale datasets that cover the same regions in Europe. These are the DAISIE¹ and NOBANIS² databases. For 13 countries shared between the databases the study compared the terminology, taxonomic classification (i.e. which major group of organisms they belong to), representation across countries, and estimates of alien richness (number of different species) per country. They then examined the socioeconomic factors that might influence on alien richness.

The representation of major organism groups (mammals, birds, plants, etc.) was the same for both databases, but they used different classification schemes with DAISIE identifying 33 taxonomic groups and NOBANIS using only 22. Averaging over the different groups, the total number of alien species across all countries was 38.3% higher for NOBANIS compared to DAISIE. When considering only alien species that were established, i.e. those that have been introduced for some time, the difference in species richness was less: only 17.7% higher for NOBANIS compared to DAISIE.

The study also considered whether country area, human population density and per capita GDP could explain regional variation in alien species. In general, these three factors offered greater explanation for differences among countries in alien richness in the DAISIE rather than NOBANIS database. Consistent with finding from other parts of the world, human population density was more important in explaining total alien numbers for DAISIE, but this was not the case for NOBANIS where country area was most important.

The research suggests that differences between databases are likely to be caused by their information sources, knowledge of taxonomies and how they interpret definitions of alien species. This is supported by the finding that differences were more marked for total numbers of aliens than established aliens, suggesting that non-established species (which are included in total numbers) are less easy to define. It is also likely that the cut-off date of species introduction has a role to play as DAISIE restricts its content to species known to have been introduced after 1500AD. However, there is no cut-off for NOBANIS which explains the higher numbers of alien species in this database. The databases also reveal differences in interpretation of 'alien', for example, DAISIE records the greylag goose and rock pigeon as established aliens in Austria. NOBANIS has no record for these species but does record the mute swan and ring-necked parakeet as established aliens, which do not feature in DAISIE.

It is impossible to assess which is the better database for policymaking purposes, but the notable differences between the two are of concern. The researchers suggest working towards a common agreed set of species for each country, which could be encouraged by a centralised data capturing system to help ensure standardisation. Without more consensus there will be mixed messages from the databases, especially when policymakers are using headline indicators without exploring the underlying data. The researchers suggest that this centralised system should be designed to meet the needs of regulatory and legislative institutions.

1. DAISIE (Delivering Alien Invasive Species Inventories for Europe) was supported by the European Commission under the Sixth Framework Programme. See: www.europe-aliens.org

2. NOBANIS (North European and Baltic Network on Invasive Alien Species). See www.nobanis.org

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Contact: Philip.hulme@lincoln.ac.nz

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