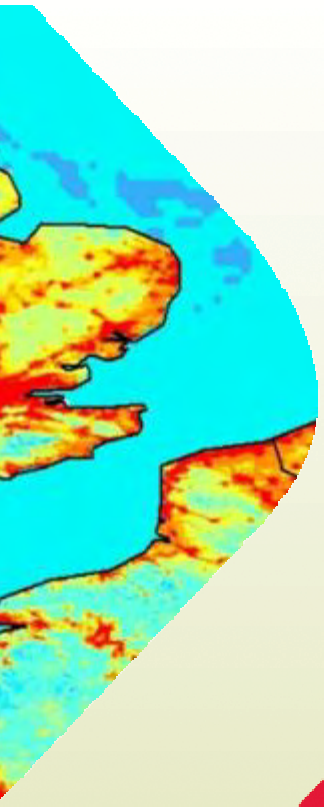

RINSE

Targeting and Prioritisation for INS in the RINSE Project Area

JUNE 2013

2 Mers Seas Zeeën
INTERREG IV A
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Targeting and Prioritisation for INS in the RINSE Project Area

B. Gallardo, A. Zieritz and D.C. Aldridge

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CAMBRIDGE
ENVIRONMENTAL CONSULTING

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DEFINITION OF TERMS

Bioclimatic factors: variables derived from monthly temperature and rainfall values that represent annual trends, seasonality and extreme environmental factors.

Species Distribution Models (SDM): statistical technique that relates species distribution data (occurrence or abundance at known locations) with information on the environmental and/or spatial characteristics of those locations. The model can be used to provide understanding and/or to predict the species' distribution across a landscape (Elith & Leathwick, 2009).

Environmental Niche: range of environmental conditions (biotic and abiotic) and resources that an organism requires to survive and reproduce.

Invasive non-native species (INS): refers to non-native species that adversely affect the regions and habitats it invades environmentally, economically and/or ecologically. This term therefore excludes non-native species that do not pose any significant threat to biodiversity conservation.

Non-native species (NNS): refers to a species that has been introduced through human action outside its natural present or historical range. This term includes species whose main pathway of introduction is human related although they have entered RINSE countries through natural spread from neighboring countries. However the term excludes species expanding their range without direct human action, as in the case of migration or species expanding because of climate change or habitat modification, even if these changes are caused by humans (CBD definition of terms, www.cbd.int/invasive/terms.shtml).

RINSE area: refers to the coastal study area delimited by the Two Seas project within Great Britain, France, Belgium and The Netherlands.

RINSE countries: refers to the four countries in the Two Seas area: Great Britain, France, Belgium and The Netherlands. RINSE countries are generally referred as 'RINSE' or 'RINSE region' throughout the text.

Two Seas area: Geographic region comprising the British Channel and southern part of the North Sea.

EXECUTIVE SUMMARY

- The European project RINSE (Reducing the Impacts of Non-native Species in Europe) investigates the best strategies for managing invasive non-native species across the Two Seas Programme area (i.e. area comprising the British Channel and the southern part of the North Sea).
- The RINSE project specifically aims to develop cross-border tools to improve the prioritisation and targeting of invasive non-native species, so that resources can be directed towards the species and sites of greatest concern.
- As part of RINSE, the main objective of this project is to audit the current state of biological invasions in the RINSE study area and to provide a prioritised list of INS that may pose a threat to local ecosystems in the future. This will be achieved in a series of three inter-related stages:
  - Registry of Non-Native Species (NNS) in the four RINSE countries (Great Britain, France, Belgium and The Netherlands) with information on their taxonomic classification, current distribution and environment inhabited.
  - Horizon scanning of Invasive Non-native Species (INS). Screening of the 'worst' invaders according to national and international organizations. Species will be divided into two groups depending on their presence (Black List) or absence (Alert List) in any of the four RINSE countries. Expert consultation will be used to rank species in each list according to their actual or potential impacts in the region.
  - Distribution modelling of INS. Species distribution Models (SDM) will be developed for a representative number of Black and Alert INS, using a combination of environmental and socio-economic predictors.

The non-native species registry

- The RINSE Registry compiled information from 3,454 non-native species, representing approximately 30% of all known non-native species (NNS) in Europe.
- Great Britain features the largest number of reported non-native species, followed by France, The Netherlands and finally, Belgium.
- The largest number of NNS in the Registry belongs to the phylum of Arthropoda, accounting for about three times as many NNS as Chordata, and four times as many as Angiospermae.
- Over three quarters of NNS reported in the RINSE countries inhabit terrestrial habitats.
- Almost all Anseriformes (e.g. geese, ducks, and swans), mammals, bony fish and flowering plants were deliberately introduced into RINSE countries, and mostly for ornamental reasons or leisure activities such as fishing.

Horizon scanning of invasive non-native species

- Most of the species identified as the world's worst invaders were already present in at least one of the RINSE countries (77%) and were therefore assigned to the Black List of INS. The remaining 23% of species formed the Alert List of INS, being absent from all the RINSE areas.
- The top 12 Alert INS with highest risk scores according to the consulted experts included a mix of primary producers: blady grass (*Imperata cylindrica*), melaleuca (*Melaleuca quinquenervia*) and Kudzu (*Pueraria montana lobata*); herbivores: emerald ash borer (*Agrilus plannipenis*), Canadian castor (*C. Canadensis*) and apple snail (*P. canaliculata*); predators: Japanese sea star (*Asterias amurensis*), racer goby (*Neogobius gymnotrachelus*), Amur sleeper (*Perccottus glenii*), nomad

jellyfish (*Rhopilema nomadica*) and red fire ant (*Solenopsis invicta*); and the filter-feeding Amur clam (*Potamocorbula amurensis*).

- Most of the Black List INS (56%) were present in the four RINSE countries, which exemplify the high level of biological interchange among them resulting from the intensive trade, transport and travel.
- From The Netherlands, several aquatic inland species may pose a threat to Great Britain: Chattonella (*Chattonella verruculosa*), two Ponto-Caspian amphipods (*Chelicorophium robustum* and *Dikerogammarus bispinosus*), marmokrebs crayfish (*Procambarus fallax)* and tubenose goby (*Proterorhinus marmoratus*). From Belgium, an amphibian (*Bufo marinus*) and two insects (*Latrodectus geometricus* and *L. hasselti*) may affect other RINSE countries.
- The top 12 Black INS raising the greatest concern amongst RINSE experts were dominated by primary producers such as the New Zealand pigmyweed (*Crassula helmsii*), floating pennywort (*Hydrocotyle ranunculoides*), killer algae (*Caulerpa taxifolia*), green sea fingers (*Codium fragile*), Japanese knotweed (*Fallopia japonica*) and giant hogweed (*Heracleum mantegazzianum*). Other type of organisms in the list included predators: harlequin ladybird (*Harmonia axyridis*), American mink (*Mustela vison*); herbivores: Canada goose (*Branta canadensis*) and grey squirrel (*Sciurus carolinensis*); and the omnivorous killer shrimp (*Dikerogammarus villosus*).

Distribution modelling of invasive non-native species

- Species distribution models displayed high performance for all Alert and Black INS modelled, and allowed investigation of the partial influence of environmental and socio-economic drivers on the current global distribution of the worst INS.
- The permutation importance of environmental variables ranged between 70 and 82% for inland species (i.e. terrestrial plus freshwater species), and reached 99% for marine organisms.
- Temperature-related variables were the most important driver of inland species distribution since it affects the body size, reproduction, growth, ecological role and survival of species, as well as determining the context for establishment (e.g. habitat and resources available, pool of interacting species).
- In the marine environment, water **t**emperature was also a primary driver of biological invasions, followed in importance by nitrate and chlorophyll-*a* concentration, which reflect the availability of resources and can also indicate human disturbance (eutrophication).
- Several of the INS modelled featured distributions clearly influenced by the location of transport routes. This included invasive plants such as the water hyacinth (*Eichhornia crassipes*), Kudzu (*P. montana lobata*) and Kahili ginger (*Hedychium gardnerianum*).
- Insects were predominantly affected by the Human Influence Index, including the silverleaf whitefly (*Bemisia tabaci*), Mediterranean fruitfly (*Ceratitis capitata*), Argentine ant (*Linophitema humile*) and oak processionary (*Thaumetopoea processionea*).
- Closeness to ports was identified as an important predictor for aquatic inland species (e.g. *Aphanius dispar, Clarias batrachus, Gammarus fasciatus, Dreissena r. bugensis, Myriophyllum heterophyllum, P. marmoratus, Anguillicola crassus*), which are involuntarily transported as contaminants or stowaways.
- The SE of England and NE of Belgium and the Netherlands (urban areas adjacent to major ports like London, Portsmouth, Calais, Oostende, Zeebrudge, Rotterdam and Antwerp) are under the highest risk of multiple invasions. Risk progressively decreases outwards, i.e. north and westwards in Great Britain, and south and eastwards in the continent.

Recommendations

- Halting the pathways of introduction:
  - The ornamental/pet trade is one of the most important vectors of invasive species into the RINSE region and could be controlled by a better enforcement of existing laws and coordination of neighbouring countries. Especial attention should be paid to Internet commerce that has facilitated the import of plants and animals.
  - Unintentional introduction as ship foulants or contaminant of commodities is the second major pathway of invasion. INS prevention may improve through continued ballast water control, ship inspections and control of imports (especially forest products). Educational outreach programs are needed to raise awareness amongst the general public and to promote the early detection of newcomers.
- Strengthen cross-border communication and cooperation in sharing, linking and integrating INS databases and management strategies.
- Species of special concern:
  - Four of the top Alert INS are present in countries as close as Germany and Poland: the racer goby (*N. gymnotrachelus*), Amur sleeper (*P. glenii*), Canadian beaver (*C. canadensis*) and blady grass (*I. cylindrica*).
  - Amongst Alert plants, the Asian wild raspberry (*Rubus ellipticus),* South-American Brazilian holly (*Schinus terebinthifolius*) and Asian salt cedar (*Tamarix ramossisima)* feature high invasive potential and a high suitability scores across RINSE.
  - In Great Britain, Black aquatic inland species present in The Netherlands and Belgium are of special concern: Chattonella (*C. verruculosai*)*,* two Ponto-Caspian amphipods (*C. robustum* and *D. bispinosus*)*,* marmokrebs (*P. fallax),* tubenose goby (*P. marmoratus*) and cane toad (*B. marinus*).
  - Three of the modelled Black terrestrial animals matched high suitability scores across RINSE while at the same time being flagged as one of the worst existing invaders in the region: the grey squirrel (*S. carolinensis*), Asian hornet (*Vespa velutina*) and oak processionary (*T. procesionea*)
  - Amongst aquatic inland INS showing high suitability scores in RINSE, high risk species include the racer goby (*N. gymnotrachelus*), water milfoil (*M. heterophyllum*) and quagga mussel (*D. r. bugensis*)
- The importance of minimum annual temperature in our models suggests that global warming could expand the potential distribution of some of the assessed species northwards by increasing minimum winter records. The interaction of climate change and invasive species should be considered when developing long-term strategies of environmental management.
- Given the importance of the Human Influence Index in our insect models, future studies of invasive insects' potential distribution should consider using this or other similar indicators of the intensity of human disturbance to improve their predictions.
- The Alert and Black lists of INS are not fixed and require continuous update through a wider screening of published lists of INS combined with expert consultation.
- Likewise, distribution models need to be updated should the species expand their distribution towards new areas. In addition, modelling the potential distribution of a larger set of Alert species would provide environmental practitioners with a more complete scenario to inform decisions.

1. INTRODUCTION

The introduction and spread of non-native species causes important ecological and economic losses worldwide and has quickly become one of the most alarming global environmental changes. Illustrating the dimension of the issue, European project DASIE (Delivering Alien Species Inventories in Europe, www.europe-aliens.org) revealed more than 12,000 non-native species have established in Europe.

However, not all non-native species become invasive. According to the IUCN definition, also adopted by the Convention on Biological Diversity, Invasive Non-native Species (INS) are *those species that are introduced outside their natural range by human agency, either direct or indirect, and cause harm to biodiversity or ecosystem services* (CBD definition of terms, www.cbd.int/invasive/terms.shtml). The tens rule states that approximately only 10% of established non-native species are able to develop populations dense enough to be regarded as invasive (Williamson, 1996), although higher invasion rates have been reported elsewhere (e.g. >50% success rate of vertebrate introductions between Europe and North America, Jeschke & Strayer, 2005). The tens rule therefore suggests the number of INS in Europe currently exceeds 1,200 species, with estimated costs of €12.5 to 20 billion annually (FA COST Action TD1209, www.cost.eu). Moreover, with continued range expansion of existing invaders, coupled with establishment of new species, these costs are set to increase (Gallardo & Aldridge, 2012). INS are consequently a growing concern to environmental managers and stakeholders not only because of their diverse impacts on biodiversity and ecosystem services but also associated eradication costs, necessitating effective management policies (Oreska & Aldridge, 2011).

Horizon scanning of future species introductions produces net economic and ecological benefits (Keller *et al.*, 2007; Springborn *et al.*, 2011). Consequently, interest has increased in the development of risk assessment tools to enable informed regulation of potentially harmful species prior to their introduction (Gordon *et al.*, 2012). Horizon scanning of invasive species ideally involves a systematic evaluation of the likelihood and consequences of the introduction, establishment, spread, and impact of an INS using the best available scientific information and often involving expert consultation (CBD definition of terms, www.cbd.int/invasive/terms.shtml). Horizon scanning is pivotal to improve the effectiveness of preventive measures to halt the introduction of the most worrisome species, as well as to focus efforts in the control of species already present.

However, the introduction of a non-native species does not necessarily mean the species will establish. Propagules introduced through recreational and commercial activities are subject to the environmental conditions of the system being invaded, including the local climate conditions, land-

use, water chemistry and current, substrate and vegetation type. A closer match between the current distribution of the species and the habitat to be invaded will imply higher probabilities of a successful invasion. We should therefore expect that the probability of invasion be due jointly to factors related to propagule pressure (e.g. human activities such as transport, trade and tourism) and environmental suitability (e.g. climate, geomorphology, vegetation), both of which need to be integrated in risk assessments (Gallardo & Aldridge, 2013a).

Species Distribution Models (SDM) provide an statistical tool to locate areas at continental or regional scale which are most similar to the current range of an invasive species, and thus are most susceptible to successful colonisation in the event of an introduction (Guisan & Thuiller, 2005). When applied to multiple potential invaders in combination, SDM can be especially powerful in enabling informed prioritisation of limited resources and guide monitoring, management and control decisions (Gallardo & Aldridge, 2012).

The Interreg Two Seas Programme is a European-funded initiative that promotes cross-border cooperation between the coastal regions of four countries – Great Britain, France, Belgium and The Netherlands — comprising the British Channel and the southern part of the North Sea (more info at www.interreg4a-2mers.eu). The Two Seas region has a long history of trade and travel, and includes important commercial ports such as Southampton, Felixstowe, Le Havre, Antwerp and Rotterdam. On the downside, these intensive activities across national borders have led to the introduction of numerous exotic animal, plant and other species to this area, both from other European regions and further afield.

The extensive record of such non-natives in this area is partially reflected in freely accessible, national online databases. The Great Britain Invasive Non-Native Species Secretariat (GBNNSS) database (www.nonnativespecies.org), for example, comprises over 3,000 species. In contrast, the Dutch Biodiversity registry (www.nederlandsesoorten.nl) lists 925 INS, and only 101 INS are highlighted by the Belgian information system Harmonia (ias.biodiversity.be). No similar initiatives exist in France.

Such extreme differences in records between neighbouring countries illustrate the conspicuous lack of international cooperation in this area, which hinders the development and implementation of sustainable cross-border management practices for INS. It is therefore essential that we strengthen cross-border communication and cooperation in sharing, linking and integrating INS databases. Cooperation would guarantee that knowledge on INS gained in one country informs decisions on management and control options for INS in other countries, and raises the alarm on species likely to spread from one country to another, prompting preventive action plans.

Examples exist where international cooperation has significantly improved the prevention of INS spread. These include the Inter-American Invasive Species Network (IABIN-13N, http://i3n.iabin.net/) that supports the detection and management of INS in the Americas, and the Trilateral Committee for Wildlife and Ecosystem Conservation and Management (www.trilat.org), which addresses environmental challenges common to Canada, United States and Mexico. Yet in the Two Seas Programme area little efforts have been made in this direction to date.

To help solve this problem, the European project RINSE (Reducing the Impacts of Non-native Species in Europe) investigates the best strategies for managing INS across the Two Seas Programme area. The project specifically aims to develop cross-border tools to improve the prioritisation and targeting of INS, so that resources can be directed towards the species and sites of greatest concern.

1.1 Study approach and objectives

The main objective of this project is to audit the current state of biological invasions in the Two Seas area and to provide a prioritised list of INS that may pose a threat to local ecosystems in the future. This will be achieved in a series of three inter-related stages, comprising first a registry of all the current known non-native species (NNS) in the region, followed by a horizon scanning of invasive non-native species (INS) of high concern and finally the modelling of a number of high risk INS (Figure 1).

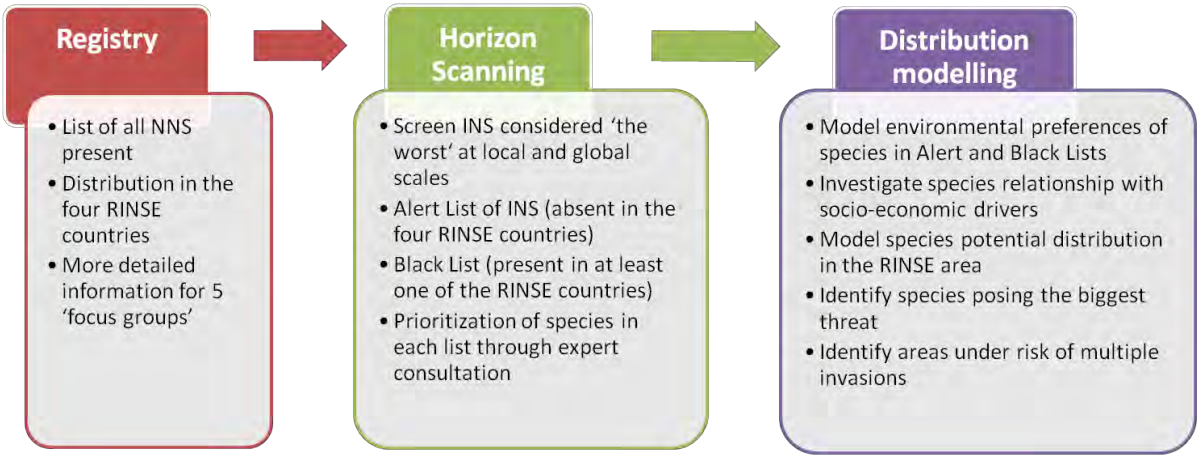


Figure 1. Approach to the targeting and prioritisation of Invasive Non-native Species (INS) into the RINSE region.

The project is designed in a way that each stage feeds on results from the previous one, providing an integrated view on existing and future biological invasions in the area. The main objectives of each stage are listed as follows:

I. **NNS Registry**. First, we compiled a database of NNS present in the four RINSE countries (Great Britain, France, Belgium and The Netherlands) with information on their taxonomic classification, current distribution and environment inhabited. Afterwards, we summarised information about distribution of RINSE NNS across phyla and environments, and analysed the similarity in NNS composition amongst regions. More detailed information was gathered on a number of 'focus groups', with the objective to investigate patterns in i) vectors and pathways of introduction (e.g. intentional, unintentional, release), ii) reasons of deliberate introductions (e.g. aquaculture, leisure fishing), iii) continents of origin, iv) time of introduction, v) functional roles of introduced species (e.g. primary producer, predator, parasite), and vi) direction and speed of colonisation of RINSE countries. The Registry offers a general point of reference for both scientists and practitioners working on NNS in this important region, as well as a tool to assess reliability and completeness of other databases from which data for the present Registry was retrieved.

II. **INS Horizon Scanning**. We screened INS considered 'the worst' in terms of their ecological impacts at local to global scales. Species were divided into two groups depending on their presence (Black List) or absence (Alert List) in any of the four RINSE countries. Expert consultation was used to rank species in each list according to their actual or potential impacts in the region. This horizon scanning provides a rapid, simple, comprehensive and understandable approach to prioritise species by the threat they pose to the RINSE environments

III. **INS Distribution Modelling**. We developed Species distribution Models (SDM) for a representative number of INS in the Black and Alert Lists. Distribution modelling is complementary to the horizon scanning of Alert and Black INS into the RINSE region, and was intended i) to identify INS for which the environmental conditions of the RINSE region are most suitable, ii) to identify the environmental factors that better explains the current global distribution of Alert and Black INS, and iii) to locate those regions prone to multiple invasions where monitoring and management efforts should be focused in order to avoid an eventual invasional meltdown.

2. METHODOLOGY

2.1 Area of study

The Two Seas area comprises four countries located across the British Channel and southern part of the North Sea: Great Britain, France, Belgium and The Netherlands. In this report we refer to these as the 'four RINSE countries' (Figure 2).

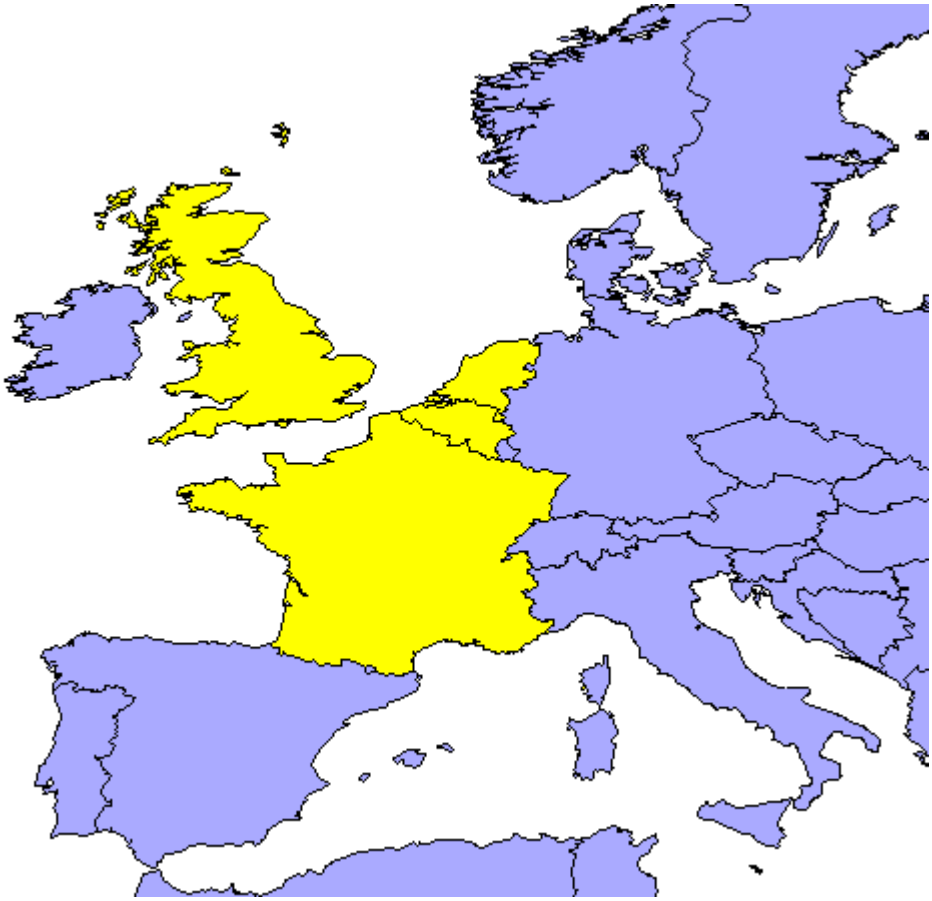


Figure 2. RINSE countries considered in this study included Great Britain, France, Belgium and The Netherlands.

Within the Two Seas area, the RINSE project focuses on the coastal regions of the four RINSE countries. Zones within each country included:

The British Zone : Norfolk, Suffolk, Cambridgeshire, Essex, Kent, East and West Sussex, London, Surrey, Hampshire, Medway, Berkshire, Wiltshire, Dorset, Somerset, Devon and Cornwall.

The French Zone : Nord-Pas-de-Calais and Picardie.

The Flemish Zone : West and East Flanders and Antwerp.

The Dutch Zone: Zeeland, Noord-Brabant, Zuid-Holland and Utrech.

RINSE four zones share similar environmental (e.g. climate, geography, geology, vegetation) and socio-economic (e.g. population density, landscape modification, transport) characteristics, thereby offering comparable susceptibility to the establishment of invasive species. In this report we refer to them as the 'four RINSE areas' (Figure 3):

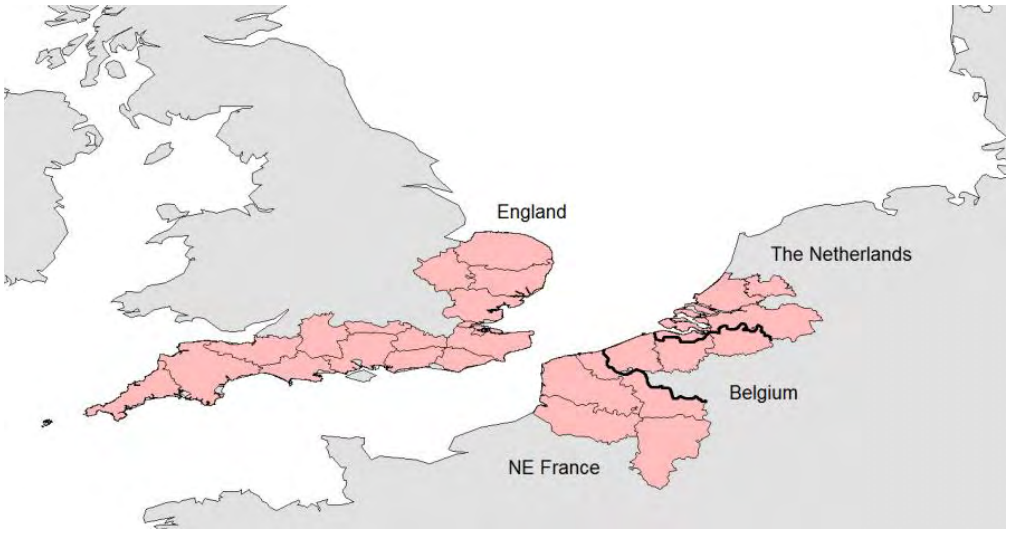


Figure 3. The RINSE study area around the British Channel and southern part of the North Sea.

2.2 NNS species registry

2.2.1 General registry

Data on the presence of NNS in the RINSE region was retrieved by systematic review of 59 internet and literature sources (Table 1), covering a global to local scale and most types of organisms (see below for detailed information on necessary shortcomings).

For each species, presence/absence in each of the RINSE countries and areas was checked by at least two of the gateways providing geographical distribution data (listed as 'Distribution' in Table 1). In addition, information on the general environment occupied by each species (i.e. freshwater, marine, terrestrial or a combination of the three) was retrieved for each species.

Status and spatial distribution in RINSE countries was thereby classified and coded as indicated in Table 2**.** If two or more different sources provided contradictory evidence, a multiple status was assigned to the species in question (e.g. "Y, Er").

Table 1. Internet and literature sources used to compile the Registry and Focus lists of NNS in the RINSE countries and area. Use of source: Distribution, source used to check presence/absence in RINSE countries; Registry (Angiospermae), source only used for Angiospermae species of Registry; Registry (Arthropoda), source only used for Arthropoda species of Registry; Registry (freshwater), source only used for freshwater species of Registry; Registry (marine), source only used for marine species of Registry; Registry (Table 2), source used as indicated in Table 3**.**

Source reference	Geographic coverage	Use of source
Agence de l'eau Artois Picardie (2005) Les espèces végétales invasives des milieux aquatiques et humides du Bassin Artois Picardie. Conservatoire Botanique National de Bailleul. 37 pp.	France	Registry (Angiospermae)
Agence de l'eau Rhin Meuse (2005) Plantes invasives des milieux aquatiques et des zones humides du Nord-est de la France. Une menace pour notre environnement. 20 pp.	France	Registry (Angiospermae)
Banks, A., Wright, L., Maclean, I.M., Hann, C. & Rehfisch, M.M. (2009) Review of the status of introduced non-native waterbird species in the area of the African-Eurasian Waterbird Agreement: 2007 update. British Trust for Ornithology. 146 pp.	Global	Focus list
Belgian Forum on Invasive Species. 2012. Harmonia database. http://ias.biodiversity.be/	Belgium	Registry (Table 2)
Beran, L. & Horsák, M. (2007) Distribution of the alien freshwater snail *Ferrissia fragilis* (Tryon, 1863)(Gastropoda: Planorbidae) in the Czech Republic. Aquatic Invasions, 2, 45-54.	Global	Focus list
Bouquerel, J. (2008) Les canaux: des milieux privilégiés pour les macroinvertébrés invasifs. In: Etude de la région Nord/Pas-de-Calais, 82 pp.	France	Registry (freshwater)
CABI Centre for Agricultural Bioscience International. 2012. Invasive Species Compendium. Wallingford, UK: CAB International. http://www.cabi.org/	Europe	Registry (Table 2) Focus list
Conseil General du Finistère (2008) Plantes invasives un danger pour la biodiversité du Finistère. 16 pp.	France	Registry (Angiospermae)
Costa, C. (2005) Atlas des espèces invasives présentes sur le périmètre du Parc Naturel Régional de Camargue. Parc Naturel Régional de Camargue. 217 pp.	France	Registry (Angiospermae)
DAISIE Delivering Alien Invasive Species Inventories for Europe. 2012a. http://www.europe-aliens.org/	Europe	Registry (Table 2) Focus list
DAISIE Delivering Alien Invasive Species Inventories for Europe. 2012b. 100 of The Worst. http://www.europe-aliens.org/speciesTheWorst.do	Europe	Registry (Angiospermae)
De Prins, W. (1998) Catalogue of the Lepidoptera of Belgium. Studiedocumenten Koninklijk Belgisch Instituut voor Natuurwetenschappen, 92, 1-236. http://webh01.ua.ac.be/vve/Checklists/Lepidoptera/Introduction.htm	Belgium	Registry (Arthropoda)
Delbart, E. & N. Pieret, M.G. (2007) Guide de reconnaissance des principales plantes invasives le long des cours d'eau et plans d'eau en Région wallonne. Directiondes Cours d'Eau.	Belgium	Registry (Angiospermae)
Dewarumez, J.-M., Gévaert, F., Massé, C., Foveau, A., Desroy, N. & Grulois, D. (2011) Les espèces marines animales et végétales introduites dans le bassin Artois-Picardie. 140 pp.	France	Registry (marine)
EMODNET European Marine Observation and Data Network. 2012. http://bio.emodnet.eu/	Europe	Distribution
EPPO European and Mediterranean Plant Protection Organization. 2012. EPPO list of invasive alien plants. http://www.eppo.int/INVASIVE_PLANTS/ias_lists.htm	Europe	Registry (Angiospermae)
ETI BioInformatics. 2013. Marine Species Identification Portal. http://species-identification.org/	Global	Focus list

FAO (2012) Introduction of species. Database on Introductions of Aquatic Species. In: Fisheries and Aquaculture topics. Food and Agriculture Organisation (Fisheries and Aquaculture Department), Rome. http://www.fao.org/fishery/introsp/search/en	Global	Registry (Table 2) Focus list
Froese, R. & Pauly, D. (2008) FishBase. http://www.fishbase.org/	Global	Focus list
GBIF Global Biodiversity Information Facility. 2012. GBIF Data Portal. http://data.gbif.org/	Global	Distribution Focus list
Gollasch, S., Haydar, D., Minchin, D., Wolff, W.J. & Reise, K. (2009) Introduced aquatic species of the North Sea coasts and adjacent brackish waters. Biological Invasions in Marine Ecosystems, 507-528.	Europe	Registry (Table 2)
Hopkin, S.P. (2007) A key to the Collembola (springtails) of Britain and Ireland. FSC Publications. http://www.stevehopkin.co.uk/collembolamaps/	Great Britain	Distribution
Hudin, S. & Vahrameev, P. (2010) Guide d'identification des plantes exotiques envahissant les milieux aquatiques et les berges du bassin Loire-Bretagne. Fédération des Conservatoires d'espaces naturels. 45 pp.	France	Registry (Angiospermae)
Intergovernmental Oceanographic Commission of UNESCO. 2012. The Ocean Biogeographic Information System OBIS. http://iobis.org/mapper/	Global	Distribution
ISSG Invasive Species Specialist Group. 2012. Global Invasive Species Database. http://www.issg.org/database	Global	Registry (Table 2) Focus list
IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. http://www.iucnredlist.org	Global	Focus list
Lacroix, P., Le Bail, J., Geslin, J. & Hunault, G. (2008) Liste des plantes vasculaires invasives, potentiellement invasives et à surveiller en région Pays de la Loire. Conservatoire National Botanique de Brest, Antenne régionale des Pays-de-Loire, 55 pp.	Belgium	Registry (Angiospermae)
Le Conservatoire Botanique National de Bailleul. 2012. Liste des plantes exotiques considérées comme envahissantes en Picardie. Available at http://www.cbnbl.org/nos-actions/mieux-connaitre-la-flore-et-les/plantes-exotiques-envahissantes/article/la-strategie-regionale-de-lutte	France	Registry (Angiospermae)
Leen, V., Vanhoorne, B., Decock, W., Trias-Verbeek, A., Dekeyzer, S., Colpaert, S. & Hernandez, F. (2013) World Register of Marine Species. http://www.marinespecies.org	Global	Distribution Focus list
Lever, C. (1985) Naturalized mammals of the world. Longman. 608 pp.	Global	Focus list
Long, J. (2003) Introduced mammals of the world: their history, distribution and influence. Csiro Publishing. 612 pp.	Global	Focus list
Lützen, J., Faasse, M., Gittenberger, A., Glenner, H. & Hoffmann, E. (2012) The Japanese oyster drill *Ocinebrellus inornatus* (Récluz, 1851) (Mollusca, Gastropoda, Muricidae), introduced to the Limfjord, Denmark. Aquatic Invasions, 7, 181-191.	Global	Focus list
Muséum national d'Histoire naturelle. 2012. INPN Inventaire national du Patrimoine Naturel. http://inpn.mnhn.fr	France	Distribution
Naturalis. 2012. Nederlands Soortenregister, version 2.0. http://www.nederlandsesoorten.nl/	Netherlands	Registry (Table 2)
NBN National Biodiversity Network. 2012. National Biodiversity Network's Gateway. http://data.nbn.org.uk/	Great Britain	Distribution
NLBIF Netherlands Biodiversity Information Facility. 2012. Data portal of the Dutch national node of the Global Biodiversity Information Facility (GBIF). http://www.nlbif.nl/	Netherlands	Distribution

NNSS GB Non-native Species Secretariat. 2012. GB Non-native Species Information Portal. https://secure.fera.defra.gov.uk/	Great Britain	Registry (Table 2) Focus list
NOBANIS North European and Baltic Network on Invasive Alien Species. 2012. Gateway to Information on Invasive Alien species in North and Central Europe. http://www.nobanis.org	Europe	Registry (Table 2)
Observatoire de la Biodiversité et du Patrimoine Naturel en Bretagne(2010) Les espèces marines invasives en Bretagne. 44 pp.	France	Registry (marine)
Paradis, G., Hugo, L. & Spinosi, P. (2008) Les plantes envahissantes: une menace pour la biodiversité. Stantari, 13, 18-26.	France	Registry (Angiospermae)
Plantlife (2010) Here today, here tomorrow? Horizon scanning for invasive non-native plants. 19 pp. http://www.plantlife.org.uk	Great Britain	Registry (Table 2)
Preisler, R.K., Wasson, K., Wolff, W.J. & Tyrrell, M.C. (2009) Invasions of estuaries vs the adjacent open coast: a global perspective. Biological invasions in marine ecosystems, 587-617.	Global	Registry (Table 2)
Q-bank. 2012. Invasive Plants database. Comprehensive databases on quarantine plant pests and diseases. http://www.q-bank.eu/Plants	Europe	Registry (Angiospermae)
Rabitsch, W. (2008) Alien true bugs of Europe (Insecta: Hemiptera: Heteroptera). Zootaxa, 1827, 1-44.	Europe	Registry (Arthropoda)
Reseau regional des Gestionnaires des Milieux Aquatiques (2009) Plantes Envahissantes. Guide d'identification des principales espèces aquatiques et de berges en Provence et Languedoc. 112 pp	France	Registry (Angiospermae)
RINSE_WP1_list.xls 316 Invasive species in Flanders (by Tim Adriaens)	France	Distribution
Roques, A., Rabitsch, W., Rasplus, J.-Y., Lopez-Vaamonde, C., Nentwig, W. & Kenis, M. (2009) Alien terrestrial invertebrates of Europe. Handbook of alien species in Europe, 63-79.	Europe	Registry (Arthropoda)
Simon-Bouhet, B., Garcia-Meunier, P. & Viard, F. (2006) Multiple introductions promote range expansion of the mollusc *Cyclope neritea* (Nassariidae) in France: evidence from mitochondrial sequence data. Molecular Ecology, 15, 1699-1711.	France	Focus list
Soes, D.M., Glöer, P. & de Winter, A.J. (2009) *Viviparus acerosus* (Bourguignat, 1862)(Gastropoda: Viviparidae), a new exotic snail species for the Dutch fauna. Aquatic Invasions, 4, 373-375.	Netherlands	Focus list
Verlaque, M., Ruitton, S., Mineur, F. & Boudouresque, C.F. (2007) CIESM Atlas of exotic macrophytes in the Mediterranean Sea. Rapp. Comm. int. Mer Médit, 38, 14 pp. http://www.ciesm.org/online/atlas/intro.htm	Global	Focus list
Verloove, F. (2006) Catalogue of neophytes in Belgium (1800-2005). http://alienplantsbelgium.be/sites/alienplantsbelgium.be/files/tabel_2.pdf	Belgium	Distribution
Waarneming. 2012. Dutch daughter website of the Global Biodiversity Recording Project. http://waarneming.nl	Netherlands	Registry (Table 2) Focus list
Waarnemingen. 2012. Belgian daughter website of the Global Biodiversity Recording Project. http://waarnemingen.be	Belgium	Registry (Table 2) Focus list
Welter-Schultes, F. (2005) AnimalBase: early zoological literature online. http://www.animalbase.uni-goettingen.de	Global	Focus list
Wikimedia Foundation. 2013. Wikipedia: The Free Encyclopedia. http://en.wikipedia.org/wiki/Main_Page	Global	Focus list
Wolff, W.J. (2005) Non-indigenous marine and estuarine species in The Netherlands. Nationaal Natuurhistorisch Museum.	Netherlands	Registry (Table 2)
Zambettakis, C. & Magnanon, S. (2008) Identification des plantes vasculaires invasives de Basse-Normandie. Conseil régional Basse-Normandie, DIREN Basse-Normandie. 25 pp.	France	Registry (Angiospermae)

Table 2. Classification and abbreviations of types of status and distribution of non-native species in the NNS registry and focus lists.

Abbreviation	Definition
cry	cryptogenic
Er	eradicated, i.e. this non-native species has been seen in the wild and some deliberate management action got rid of the population from the area in question
Ex	extinct, i.e. this non-native species was present in the wild at some time (albeit briefly from an escape) but is no longer present in the area in question
N	not present, i.e. this non-native species has never been seen in the wild in the area in question
nat	native
Y	yes (present), i.e. this non-native species has been seen in the wild and a population of the species (however small) is likely to exist at this time
Y, Indoors	this non-native species is present but has only been seen indoors

Table 3 lists in detail which type of data was gathered from the 14 main internet gateway and published literature sources considered. The table in turn also indicates which of the included phyla will be relatively underrepresented in the resulting RINSE Registry.

For example, due to the extensive number of non-native terrestrial angiosperm species, the timeframe of the project did unfortunately not allow us to consider all species of this group listed on the DAISIE and NNSS websites. Based on information provided by sources such as Q-Bank and Plantlife (see Table 1 species listed as 'Registry (Angiospermae)'), we have thereby focused on including particularly worrisome, invasive terrestrial angiosperms.

The hugely diverse phylum of Arthropoda (including all insects) presented a similar problem. In this case, we refrained from including all species listed on the NNSS website and instead focused on publications covering all RINSE countries such as Roques et al. (2009) and Rabitsch (2008)(see Table 1 species listed as 'Registry (Arthropoda)').

Due to these necessary adjustments in our methodology, the reader should bear in mind that Angiospermae and Arthropoda will in comparison to, for example, the Chordata, be relatively underrepresented in the final RINSE Registry.

Table 3. The main 14 web- and print-based sources per taxa used for compiling the Registry of non-native species in the RINSE countries (see Table 1 for full reference details). Abbreviations: na, not applicable because no data on presence of species within the respective phylum/division in the four countries were available from this source; N, source not used with regard to respective phylum/division; Y, all taxa of respective phylum that this source lists as present in one or more of the four countries were included; Y ex T, all taxa except terrestrial ones of respective phylum that this source lists as present in one or more of the four countries were included.

Kingdom	Phylum	DAISIE (2012a)	ISSG (2012)	CABI (2012)	FAO (2012)	NOBANIS (2012)	NNSS (2012)	Waarnemingen (2012)	Waarneming (2012)	Naturalis (2012)	Belgian Forum on Invasive Species	Gollasch et al. (2009)	Preisler et al. (2009)	Wolff (2005)	Plantlife (2010)
Viruses, Protista	Viruses	na	na	Y	na	na	Y	na	na	N	na	na	na	na	na
	Firmicutes	na	na	na	na	na	Y	na	na	N	na	na	na	na	na
	Proteobacteria	na	Y	Y	na	na	na	na	na	N	na	na	na	na	na
	Cercozoa	Y	na	na	na	na	Y	na	na	N	na	Y	na	Y	na
Algae	Dinoflagellata	Y	na	na	na	na	Y	Y	Y	N	na	Y	na	Y	Y
	Haptophyta	Y	na	na	na	na	Y	Y	Y	N	na	Y	na	na	Y
	Heterokontophya	Y	Y	Y	Y	na	Y	Y	Y	N	na	Y	na	Y	Y
	Chlorophyta	Y	Y	Y	Y	na	Y	Y	Y	N	na	Y	na	Y	Y
	Rhodophyta	Y	Y	Y	Y	na	Y	Y	Y	N	na	Y	na	Y	Y
Plantae	Marchantiophyta	Y	na	na	na	na	na	N	N	N	na	na	na	na	Y
	Bryophyta	Y	na	Y	na	na	na	N	N	N	na	na	na	na	Y
	Lycopodiophyta	Y	na	na	na	na	Y	N	N	N	na	na	na	na	Y
	Pteridophyta	Y	na	Y	Y	na	Y	N	N	N	Y	na	na	na	Y
	Pinophyta	N	na	Y	na	na	N	N	N	N	na	na	na	na	Y
	Angiospermae	Y ex T	Y	Y	Y	Y	Y ex T	N	N	N	Y	Y	na	Y	Y
Fungi	Chytridiomycota	Y	na	na	na	na	na	N	N	N	na	na	na	na	na
	Zygomycota	na	na	na	na	na	Y	N	N	N	na	na	na	na	na
	Ascomycota	Y	Y	Y	na	na	na	N	N	N	na	na	na	na	na
	Basidiomycota	Y	Y	Y	na	na	na	N	N	N	na	na	na	na	na
Animalia	Porifera	Y	na	na	na	na	Y	Y	Y	Y	na	Y	Y	Y	na
	Cnidaria	Y	na	Y	Y	na	Y	Y	Y	Y	na	Y	Y	Y	na
	Ctenophora	Y	na	Y	na	na	Y	Y	Y	Y	na	Y	Y	na	na
	Platyhelminthes	Y	na	na	na	na	Y	Y	Y	Y	na	Y	Y	Y	na
	Rotifera	Y	na	na	na	na	na	Y	Y	Y	na	na	na	na	na
	Bryozoa	Y	Y	Y	na	na	Y	Y	Y	Y	na	Y	Y	Y	na
	Entoprocta	na	na	na	na	na	Y	Y	Y	Y	na	na	na	na	na
	Nemertea	Y	na	na	na	na	na	Y	Y	na	na	na	na	na	na

	Mollusca	Y	Y	Y	Y	na	Y	Y	Y	Y	na	Y	Y	Y	na
	Annelida	Y	Y	Y	Y	na	Y	Y	Y	Y	na	Y	Y	Y	na
	Nematoda	Y	na	Y	na	na	Y	Y	Y	Y	na	Y	Y	Y	na
	Arthropoda	Y	Y	Y	Y	na	Y ex T	N	N	Y	Y	Y	Y	Y	na
	Chordata	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	na

2.2.2 Focus lists

To facilitate a more in-depth analysis of patterns of species introductions and invasive histories of RINSE NNS, the following five groups of organisms were investigated in further detail: (1) Angiospermae (i.e. flowering plants) featured in our Black List of INS (see below), (2) Mollusca, (3) Osteichthyes (i.e. bony fish), (4) Anseriformes (i.e. geese, ducks, swans and relatives), and (5) Mammalia.

For this purpose, following additional data were collected on these groups: (a) first year of observation in the wild in each of the 4 RINSE countries, (b) functional type, (c) continent of origin, (d) invasion pathway/vector, (e) habitat types occupied in invaded range, (f) presence/absence of asexual reproduction or self-fertilisation, (g) presence/absence of resistant stages, and (h) presence/absence of predators in invaded range. Sources used for this task include the DAISIE and NNSS gateways, and are listed as 'Focus list' in Table 1. After the data-gathering stage, each focus list was sent out to RINSE partners for review. Partners were given at least two weeks to review and comment on the data collected.

The data collected enabled us, for example, to reconstruct and compare invasion histories of certain taxonomic or functional groups, and provide a basis for predicting future introduction and spread of invasive species into the RINSE region.

2.2.3 Data analysis

Data for the general Registry of NNS were put in an Excel sheet. Cluster analyses were performed using statistical program PAST ver. 2.17c (http://folk.uio.no/ohammer/past/). To investigate similarity in non-native species composition between RINSE countries and areas, the Jaccard similarity coefficient matrix was applied: $J(A,B) = \frac{|A \cap B|}{|A \cup B|}$, where $A \cap B$ is the number of species shared by the two sample sets, and $A \cup B$ is the number of species not shared by the two sample sets.

Focus list data were initially collected in a word file in order to facilitate straightforward visibility of comments and changes performed by RINSE partners during the review process (applying word track-changes option). After completion of that stage, data were copied into an Excel sheet and

transformed to numerical format for visualisation and statistical analysis of data (performed in Minitab ver. 16). Contradictory and other problematic data were thereby handled as following:

- All species that were listed as 'yes (present)' (see Table 2 for definition) by at least one source were included in the analysis.
- NNS recorded before the year 1500 were not further considered.
- When different sources listed different years of first observation in the wild, only the earliest year was considered for data analysis.

2.3 Horizon scanning of INS

Several national and international institutions have produced lists of INS potentially causing the worst impacts on biological diversity. A good example is '100 of the worst European invasive species' compiled by the EU-funded project DAISIE (www.europe-aliens.org), and the alert list of species compiled by the Belgian Forum on Invasive Species (ias.biodiversity.be/).

In this study, we built upon 16 of such 'worst invaders' lists to create a metalist including all of those INS highlighted by national to global horizon scanning. Criteria adopted by each provider for the selection of the worst INS are summarised in Table 4. This exercise resulted in a metalist of 340 species, which were divided into two main groups:

- **ALERT list** of INS in the RINSE region. Includes species not yet present in any of the four RINSE countries. This list included a total of 79 species.
- **BLACK list** of INS already present in at least one of the four RINSE countries, including 261 organisms.

We should note that the geographic scope of some of the source lists was wider than the study area (for instance the ISSG is global, DAISIE is European), thus the metalist might include species unlikely to pose a threat to the RINSE region because of dispersal or climatic constrains (e.g. Mediterranean or tropical species). Because it is often difficult to determine whether a species' climatic constrains will prevent its eventual introduction, we decided to keep all INS in the metalist, and expected subsequent risk assessments to provide further details on their likelihood of introduction and impact. We hereafter refer to organisms in the lists as 'the worst INS' for simplicity although we realize the lists are by no means definite and might be updated in the future.

Although most source lists consulted in this project were taxonomically diverse, microorganisms such as protists, prokaryotes, viruses and protozoans have not been included because of the lack of

reliable information regarding their status (invasive vs. cryptic) and distribution within the RINSE region. Likewise, groups such as fungi and algae may have been underestimated in the metalist.

A "RINSE Experts Workshop" was organized at St Catharine's College, Cambridge, on 21st November 2012 with 22 invited RINSE partners representing all four RINSE countries. During this workshop, partners were discussed the Registry of NNS, the Alert and Black lists of INS and had the opportunity to introduce suggestions and amendments. RINSE experts were arranged into three topical working groups (aquatic animals, terrestrial animals and plants), and asked to use guidelines presented in Table 5 to risk assess species in the Alert List.

Initially only RINSE partners were asked to risk assess species in the Alert List. However, because the expertise of consulted experts was limited to a few groups of organisms (often plants and mammals), we decided to open the consultation to external experts including the IUCN's forum of invasive species 'Aliens-L', which provided abundant and very helpful feedback. The geographic and professional location of each respondent to our consultation was carefully checked for reliability. A list of experts participating in the prioritization of the Alert and Black lists of INS is included in AnnexD.

Table 4. List of providers of the worst INS consulted, and criteria used for species selection. #Num: number of species included in the 'metalist' from each provider.

List	Aims	Geographic scope	Criteria	Other Details	#Num	Source
BFIS-Harmonia (Belgian Forum on Invasive Species)	To gather scientific information on presence, distribution, auto-ecology, adverse impacts and management of invasive alien species	Belgium	Selection of species that aren't yet observed in Belgium but are invasive in neighbour countries where they are considered as highly detrimental to biodiversity	Only in category A0 (not present in Belgium) were here considered for the Alert List and A1-3 for the Black List.	52	ias.biodiversity.be/
Black List of Europe	To review and collate existing lists of INS for Europe, analyse the role of trade in their introduction and identify gaps and potentialities in knowledge	Europe	Collation of species included in five different lists of the 'worst' invaders	Exclusive crop pests have not been considered for this study	211	wcd.coe.int/
DAISIE (Delivering Alien Invasive Species Inventories for Europe)	To create an inventory of all alien species present in Europe	Europe, Israel and part of Russia	Expert consultation Main criterion for inclusion in the list is the known impact to biodiversity, based on published evidence	The DAISIE list excludes species native in some part of Europe, and domestic forms	100	www.europe-aliens.org
EA top 10 IAS (Environment Agency)	To select the worst freshwater species the EA, land-owners, angling clubs, and community groups are working together to eradicate	England	Species selected on the basis of experts' opinion.	Top 10 alien species that have invaded British shores, are spreading and threatening native wildlife.	10	www.environment-agency.gov.uk/static/documents/Invasive_species_top_10_hit_list.pdf
EPPO List of invasive alien plants	To identify plants as having a high potential for spread; as posing an important threat to plant health and/or the environment and biodiversity; and eventually as having other detrimental social impacts in the EPPO region.	48 member states	Species posing the greatest threat to species and ecosystems in the EPPO region and for which management is recommended were prioritised.		34	http://www.eppo.int/INVASIVE_PLANTS/ias_lists.htm#IAPList
Gallardo and Aldridge (2012, 2013a)	To predict the potential distribution of INS in Great Britain and Ireland	Great Britain and Ireland	Expert consultation	Only freshwater species considered	21	www.esajournals.org/doi/abs/10.1890/12-1018.1

GB-NNSS (Non-Native Species Secretariat)	To select species for which NNSS has recommended particular attention in terms of surveillance and reporting	Great Britain	High-risk invasive species not yet present in GB but which might enter in the future. Sleeper species considered to be high risk.		17	secure.fera.defra.gov.uk/
ICES Working group on introduction and transfer of marine organisms (WGITMO)	To update information and discuss several aspects related to the introduction of alien species	Global	Problematic species are identified by experts from each collaborating country.		10	www.ices.dk/ workinggroups/
IUCN's Invasive Species Special Group (ISSG)	To enhance awareness of the complexity and consequences of invasive alien species	Global	Two criteria: their serious impact on biological diversity and/or human activities, and their illustration of important issues surrounding biological invasion.		83	www.issg.org/database
Roy et al. (2012)	To document the distribution and impacts of INS in Great Britain	Great Britain	Database collation and expert consultation coordinated by the Centre for Ecology and Hydrology (CEH)		66	secure.fera.defra.gov.uk/
Nentwig et al. (2010), Kumschick and Nentwig (2010)	To risk-assess 34 alien mammals and 26 birds native from outside Europe.	Europe	Literature research followed by scoring system. Environmental (competition, predation, hybridisation, transmission of disease, or herbivory) and economic (agriculture, livestock, forestry, human health, or infrastructure) impacts assessed. Scores (0-5) for each 10 categories are summed.	Three independent researchers assigned scores and the median value was used.	7	www.cdt.ch/files/docs/ 1be5b9948981b5baead5 de5936237e0f.pdf ftpshare.its.unibe.ch/ iee/pub/7/2010/960.pdf

NOBANIS (North European and Baltic Network on Invasive Alien Species)	To provide tools for preventing the unintentional dispersal of invasive species, and promoting regional cooperation for their eradication, control and mitigation of ecological effects.	Northern Europe: Denmark, Estonia, Finland, Faroe Islands, Germany, Greenland, Iceland, Latvia, Lithuania, Norway, Poland, Sweden and part of Russia	Species selected on the basis of experts' opinion.		82	www.nobanis.org/ Factsheets.asp
Panov et al. (2009)	To develop risk assessment protocols and water quality indicators for aquatic INS	Europe	Species are classified into a black or grey list depending on its risk of dispersal, establishment, adverse ecological and/or socio-economical impacts	Only aquatic inland species are considered	24	www.reabic.net/publ/ IEAM2009_Panov_etal.pdf
Parrot et al. (2009)	To help Natural England identify potential new invasive non-native species in England and their impacts to biodiversity.	England	Species retrieved from European alert species lists (e.g. DAISIE, EPPO, ISSG, GISP, ALARM), literature review and expert consultation.	Protocol adapted from the Belgian Forum on Invasive Species (BFIS, ias.biodiversity.be). Only category A0 (not present in England) and 0.5 (absent from the wild) were here considered.	42	www.naturalengland.org.uk
SEBI2010 (Streamlining European 2010 Biodiversity Indicators)	To compile a set of biodiversity indicators to assess and inform about progress towards the CBD 2010 targets for halting the loss of biodiversity in Europe. Including 'Trends in invasive alien species'.	56 Europe member countries	Severe impacts on ecosystem structure and function; replacement of native species throughout its range; hybridisation with native species; posing threats to unique biodiversity; negative consequences for human activities, health and/or economic interests (e.g. is a pest, pathogen or a vector of disease).	Selection was made by experts. The underlying information was gathered through literature studies, contact with other experts and own knowledge.	56	www.bipnational.net/ IndicatorInitiatives/ SEBI2010
Waarnemingen network	To streamline the process of observation and reporting new species.	Belgium and The Netherlands	Alarm list: species not yet or only in a few places are located.		9	waarnemingen.be/

2.3.1 Prioritisation of the Alert List

In order to prioritise the Alert list of INS, risk scores describing the environmental and economic impact of the species (under a worst potential invasion scenario) were assigned to each species. The risk scoring system was modified from Molnar et al. (2008) and considered the ecological impact, invasive potential, management difficulty and economic impact of the species (Table 5).

Table 5. Guidelines provided to experts to score INS in the Alert List (comprising worst species not yet present in the RINSE countries).

Ecological impact	
U	Unknown or not enough information to determine score
1	Little or no disruption
2	Disrupts single species with little or no wider ecosystem impacts
3	Disrupts multiple species, some wider ecosystem function, and/or keystone species or species of high conservation value
4	Disrupts entire ecosystem processes with wider abiotic influences
Invasive potential	
U	Unknown or not enough information to determine score
1	Very unlikely future introduction because of its environmental preferences, vectors and pathways of introduction
2	Likely introduction of propagules but unlikely establishment of populations in the wild because of environmental constraints
3	Currently present and/or potential for less rapid future spread
4	Very likely introduction in the short term because of suitable environmental conditions, closeness to invaded regions / suitable vectors and pathways, and high potential of spread
Management difficulty	
U	Unknown or not enough information to determine score
1	Easily reversible, with no ongoing management necessary (eradication)
2	Reversible with some difficulty and/or can be controlled with periodic management
3	Reversible with difficulty and/or can be controlled with significant ongoing management
4	Irreversible and/or cannot be contained or controlled
Economic impact	
U	Unknown or not enough information to determine score
1	Little or no economic impact
2	Affects one economic sector (agriculture, livestock, forestry, human health and infrastructure) with little or no wider economic impacts
3	Affects multiple economic sectors (agriculture, livestock, forestry, human health and infrastructure), requiring periodic investment to control damage
4	Affects multiple and/or key economic sectors (agriculture, livestock, forestry, human health and infrastructure), requiring ongoing significant investment to control damage

Ideally, three sets of scores would be assigned to each INS by expert collaborators of the RINSE project and/or independent experts. However, even though the consultation lasted for over three months, this was only possible for 25% of INS in the Alert list, while 45% and 30% were evaluated by two and one expert respectively.

INS were finally ranked according to their overall average risk score, and the top 3 terrestrial plants, terrestrial animals, aquatic inland and marine organisms were extracted to generate a top 12 list of Alert INS whose introduction and management of spread should be prioritised.

2.3.2 Prioritisation of the Black List

Risk scoring the Black List as comprehensively as the Alert List was unfortunately not feasible because of the high number of species included. We therefore decided on a simpler expert consultation. INS were divided into four homogeneous groups: terrestrial plants, terrestrial animals, aquatic inland and aquatic marine. A survey was designed in collaboration with Mike Sutton-Croft (RINSE Technical Coordinator) to invite RINSE experts to select the 10 INS that they regard as the most concerning ones in terms of their current and potential environmental impacts in the RINSE region (Figure 4). This voting system is a rapid cost-effective way of flagging species consistently highlighted by experts as the most worrisome.

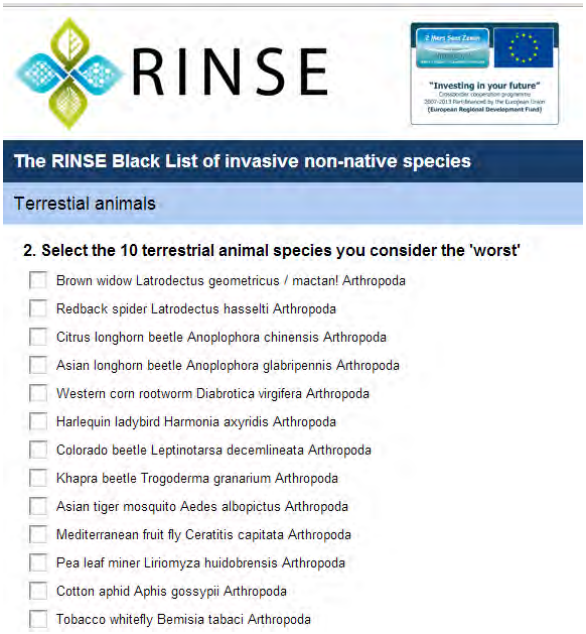


Figure 4. Snapshot of the web-based survey designed to prioritise species in the Black List. Experts in invasive species were asked to select up to 10 species they consider 'the worst' in terms of their ecosystem impacts.

2.4 INS distribution modelling

The establishment and spread of invasive species is likely to be affected by geographic patterns such as the match between the bioclimatic conditions of the native and invaded ranges, vectors and pathways of introduction. Species Distribution Models (SDM) are a statistical technique often used to locate areas at continental or regional scale which are environmentally most similar to the current range of an invasive species, and thus are most susceptible to successful colonisation in the event of an introduction (Guisan & Thuiller, 2005) (Figure 5).

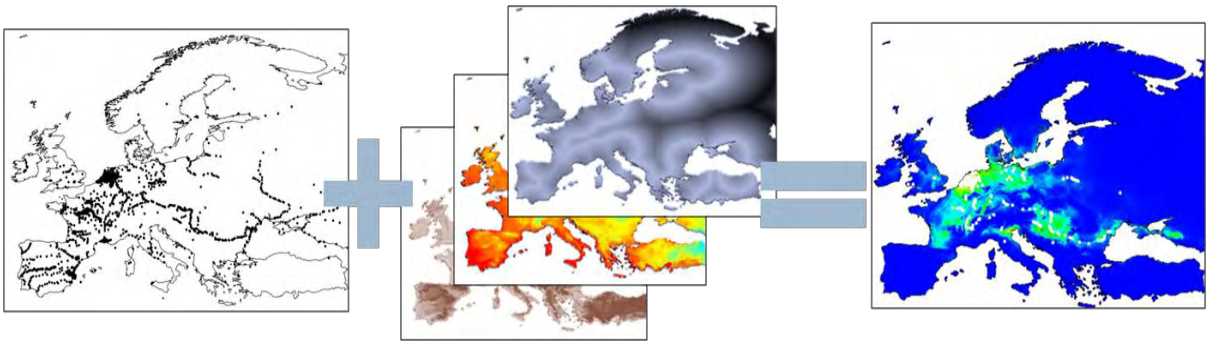


Figure 5. Species Distribution Models (SDM) generally use a map of occurrences and a set of environmental maps to calibrate the species preferences. The suitability of the area of study for the species is afterwards calculated based on its environmental niche.

SDM basically correlate the presence of a given species with the environmental conditions (raster GIS maps) of sites it inhabits. One of the main challenges in this project was the simultaneous modelling of terrestrial, freshwater and marine species, which requires not only expert knowledge on these very different types of organisms but also arranging sets of environmental variables that can be relevant predictors for those three groups of species.

With regards to environmental layers, one important decision to make is their resolution. The resolution of a raster map is given by the size of each of its pixels and usually range between 30 arcseconds (ca. 1km^2) and 10 arcminutes (ca. 400 km^2). High resolutions (30 sec) can be *a priori* preferable in order to detect small scale changes in the potential distribution of species. However, high resolution maps are very data-heavy, difficult to handle and considerably increase computing time and space requirements. Due to the high number of species to be modelled, and after testing several options, we chose an intermediate resolution of 5 arcminutes (ca. 100km^2). This resolution was the best compromise between reducing computer space and modelling times without notably loosing predictive performance.

Species in the Alert and Black Lists were divided into four homogeneous groups: terrestrial plants, terrestrial animals, aquatic inland and marine species. Species that can inhabit more than one habitat were assigned to the most frequent one. For instance semi-aquatic animals such as *Castor canadensis* or *Pomacea canaliculata* were assigned to terrestrial animals. However, habitat assignment does not affect the results of models. A representative minimum number of species from each group were modelled from the Alert and Black Lists respectively (Tables 4 and 6). The selection of species for modelling was done considering risk scores assigned in the first stage of the horizon scanning (i.e. total average score for Alert species and number of votes for Black species), and the availability of reliable data for modelling (see 3.4.1 Species occurrence gathering).

Table 6. Species modelled from the Alert and Black Lists of INS. Total= 72 species (42 from the Alert List and 30 from the Black List of INS).

	Alert List	**Black List**
Terrestrial plants	*Imperata cylindrica* *Lantana camara* *Malaleuca quinquenervia* *Miconia calvescens* *Mikania micrantha* *Prosopis glandulosa* *Pueraria lobata montana* *Rubus ellipticus* *Schinus terebinthifolius* *Tamarix ramosissima*	*Acacia dealbata* *Carpobrotus edulis* *Cortaderia selloana* *Echinocystis lobata* *Hedychium gardnerianum* *Opuntia ficus-indica* *Oxalis pes-caprae*
Terrestrial animals	*Ammotragus lervia* *Anoplolepis gracilipes* *Bison bison* *Boiga irregularis* *Callosciurus finlaysonii* *Castor canadensis* *Chrysemys picta* *Euglandina rosea* *Muntiacus muntjak* *Pomacea canaliculata*	*Aedes albopictus* *Anoplophora glabripennis* *Bemisia tabaci* *Ceratiti capitata* *Linepithema humile* *Sciurus carolinensis* *Thaumetopoea processionea* *Vespa velutina*
Aquatic inland (freshwater and brackish)	*Aphanius dispar* *Cercopagis pengoi* *Clarias batrachus* *Chaetogammarus warpachowski* *Gammarus fasciatus* *Lates niloticus* *Neogobius gymnotrachelus* *Obesogammarus obesus* *Pontogammarus robustoides* *Theodoxus danubialis*	*Anguillicola crassus* *Cabomba caroliniana* *Dreissena r. bugensis* *Eichhornia crassipes* *Marenzelleria neglecta* *Myriophyllum heterophyllum* *Neogobius melanostomus* *Proterorhinus marmoratus*
Aquatic marine	*Anadara inaequivalvis* *Asparagopsis taxiformis* *Asterias amurensis* *Charybdis longicollis* *Chionoecetes opilio* *Fistularia commersoni* *Paralithodes camtschaticus* *Portunus pelagicus* *Potamocorbula amurensis* *Saurida undosquamis* *Seriola fasciata* *Siganus rivulatus*	*Alexandrium catenella* *Balanus improvisus* *Caulerpa taxifolia* *Codium fragile* *Coscinodiscus wailesii* *Musculista senhousia* *Undaria pinnatifida*

2.4.1 Species occurrence gathering

Information on the current spatial distribution of invasive species was obtained from the following data gateways:

- Global Biodiversity Information Facility (GBIF, data.gbif.org)
- Biological Collection Access Service for Europe (BioCase, www.biocase.org)
- Ocean Biogeography Information System (IOBIS, iobis.org/mapper)

- The Netherlands Biodiversity Information Facility (NLBIF, www.nlbif.nl)
- Waarnemingen network (waarnemingen.be/ waarnemingen.nl)
- National Biodiversity Network (NBN, Gateway data.nbn.org.uk)
- Discover Life (www.discoverlife.org)

Accounting for both the native and invasive range of species has been highlighted by several authors as key in order not to underestimate the species' potential distribution (Broennimann & Guisan, 2008; Beaumont *et al.*, 2009). In this case, we used each species' known native and invasive distribution described in DAISIE and ISSG as reference to identify gaps in our distribution maps, and an extensive ISI literature review was conducted to complement our database (Annex A). Only alert species for which georeferenced data covering all of its known range could be retrieved were therefore modelled. This unfortunately excluded species scoring high in the risk assessment of the Alert list, such as the emerald ash-borer (*Agrilus planipennis*) or the Amur sleeper (*Percottus glenii*).

Once we obtained the most accurate distribution map for a species, the software ENMTools v1.3 (enmtools.blogspot.co.uk/, Warren et al. 2008) was used to remove duplicate records using one of the environmental grids as reference. This procedure leaves only one occurrence point per pixel of 5-arcminutes, thereby avoiding redundancies that may bias output predictions.

2.4.2 Continental layers

Continental layers were used to calibrate the environmental preferences of terrestrial plants, terrestrial animals and aquatic inland species.

SDM have been traditionally calibrated with bioclimatic factors, which are derived from monthly temperature and rainfall values and represent annual trends, seasonality and extremes for species survival (Hijmans *et al.*, 2005). These factors are known to constrain species distribution at a global scale (Mokany & Ferrier, 2010), are pertinent to both terrestrial and aquatic taxa, and are thus reliable indicators to investigate invasive species spread at large scales. Data on 19 bioclimatic variables was obtained from WorldClim-World Climate Database (www.worldclim.org) with a 5 arcminute resolution.

Afterwards, we checked the correlation of bioclimatic variables with ENMTools v1.3, and only 7 variables with a Pearson correlation $r < 0.8$ were selected for modelling:

- Annual Mean Temperature (ºC) AnnualT
- Temperature Seasonality (standard deviation) (ºC) Tseason
- Maximum Temperature of the warmest month (ºC) MaxT

- Minimum Temperature of the coldest month (ºC) MinT
- Annual Precipitation (mm) AnnualPP
- Precipitation of the driest month (mm) DriestPP
- Precipitation seasonality (coefficient of variation) (mm) PPseason

In addition, we obtained altitude from WorldClim. Slope and roughness were calculated from altitude using ArcView. However, because the three variables were highly correlated (Pearson $r > 0.8$) we only used altitude for modelling. Altitude may be especially relevant for certain species acclimated to high elevation and also for freshwater species generally associated to lowland areas.

Data on onshore geological units was obtained from the Commission for the Geological Map of the world (©CCGM-CGMW, Paris 2010, http://ccgm.free.fr/) and included seven bedrock geologies: endogenous plutonic or metamorphic rocks, extrusive volcanic rocks, island, lake, ophiolitic complex, sedimentary rocks and undifferentiated facies. The geological map –initially in the form of a shapefile—was converted into a raster with the same resolution (5 arcminutes) and projection (WGS1984) as bioclimate layers. A project attempting to establish a European geochemical baseline (weppi.gtk.fi/publ/foregsatlas/index.php) found a direct relationship between bedrock geology and relevant water, sediment and soil characteristics for the study of INS (Salminen *et al.*, 2005). For instance, low calcium concentration and alkalinity in European waters, relevant for molluscs and crustaceans, were significantly related to acid igneous and metamorphic rocks (e.g. granite and sandstone), while sedimentary rocks (e.g. limestone and dolomite) supply most of the calcium in stream waters (Salminen *et al.*, 2005).

In addition to environmental factors, in this project we introduced a number of socio-economic factors as potential large-scale predictors of the distribution of species. This is based on the assumption that drivers controlling the global scale distribution of INS differ from native species, because their transport and introduction depend on human activities. Furthermore, socio-economic factors can be related not only to propagule pressure, but also to the vulnerability of ecosystems to invasion, since INS often benefit from weakened disturbed native ecosystems. We therefore expect socio-economic factors to promote the suitability of large geographic areas to the establishment of INS.

A total of five socio-economic factors were considered for modelling (Figure 6):

- Global Human Influence Index (HII, Socio-Economic Data and Applications Center, sedac.ciesin.columbia.edu). This map is produced through an overlay of a number of global data layers that represent various factors presumed to exert an influence on ecosystems: human population distribution, urban areas, roads, navigable rivers, and various agricultural

land uses. The combined influence of these factors yields HII, which ranges from 0 (conditions close to pristine) to 64 (most heavily influenced systems).

- Land use was obtained from IGBP- International Geosphere-Biosphere Programme (MODIS Global Land Cover Classification v2, www-modis.bu.edu/landcover) and included nine categories: forest, shrubland, savannah, grassland, wetland, cropland/natural vegetation, urban, snow/ ice and barren/sparsely vegetated.
- Density of human population (Oak Ridge National Laboratory, www.ornl.gov/sci/landscan).
- Distance (in km) from the closest commercial port. A list of ports with > 30 megatonnes total cargo volume in 2009 was obtained from the American Association of Port Authorities (www.aapa-ports.org, last accessed 10th March 2012). The euclidean distance to the closest port was then calculated using ArcGIS 10.0 ©ESRI.
- Distance (in km) from the closest road. A global map of transportation was obtained from ESRI (www.esri.com/). The Euclidean distance to the closest primary road was calculated using ArcGIS 10.0 ©ESRI.

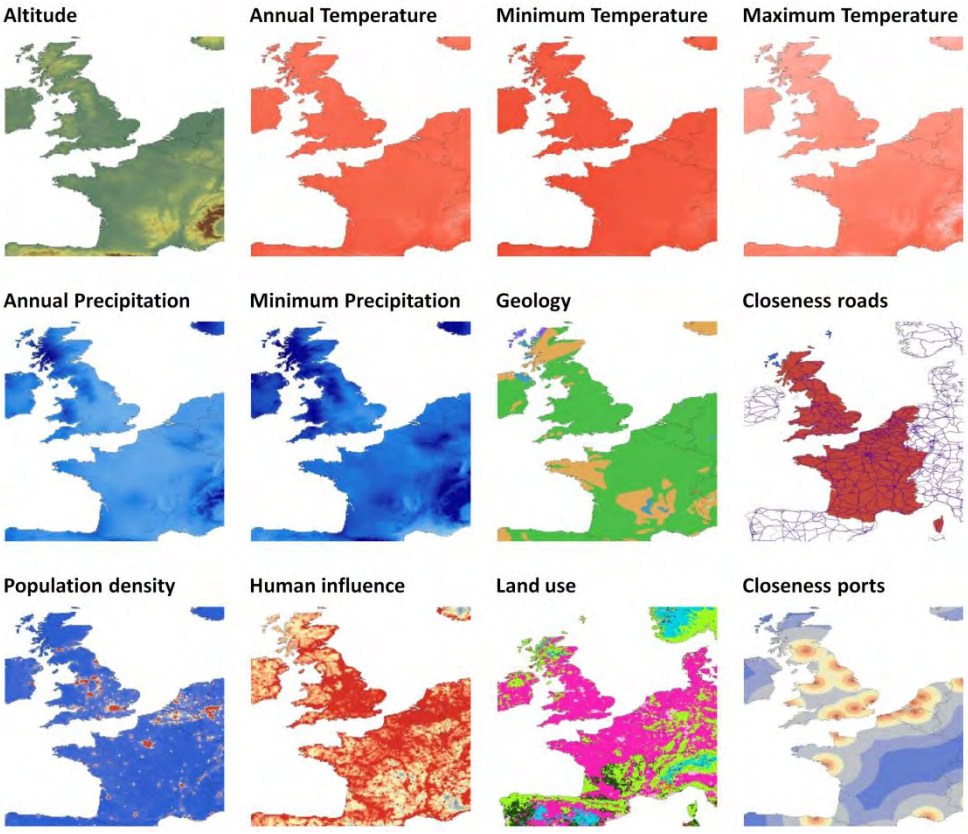
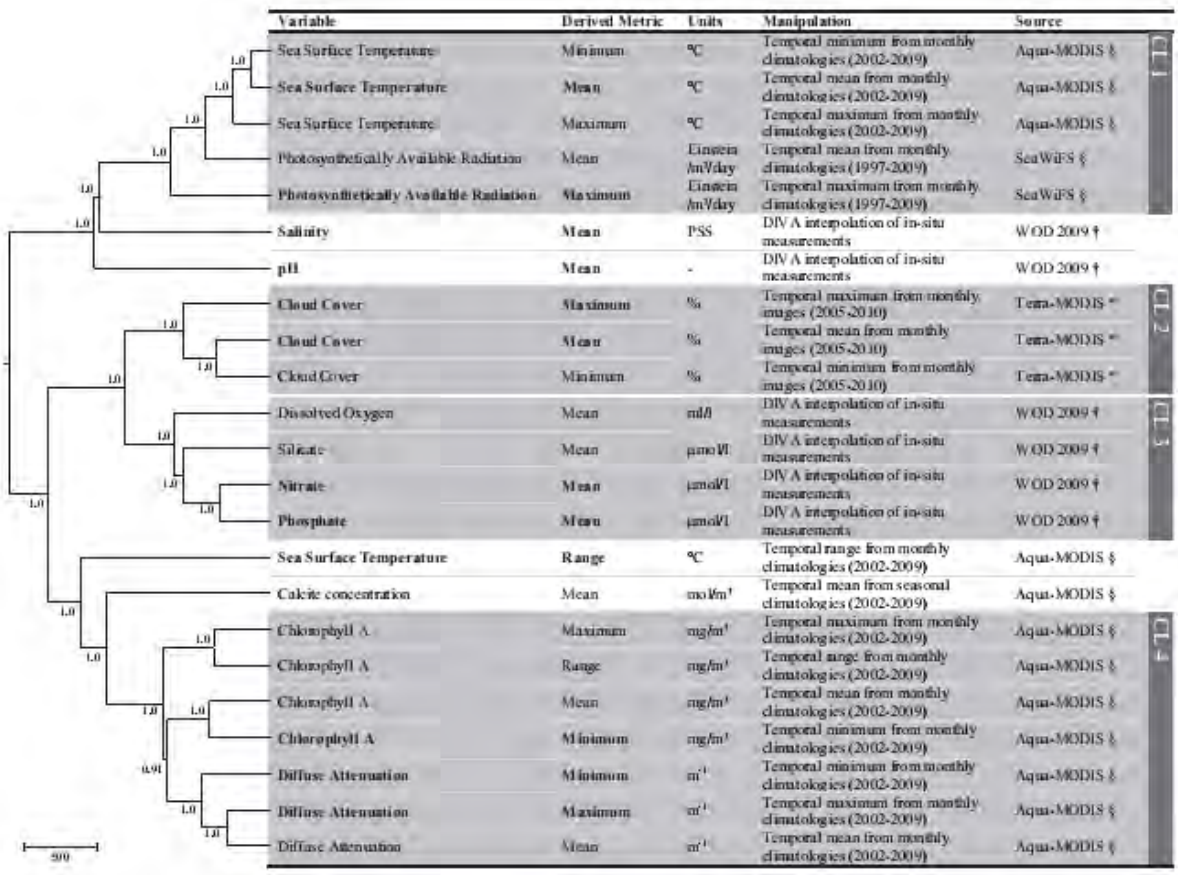


Figure 6. Continental layers used to model the potential distribution in the RINSE region of Alert and Black INS. Please note that global maps were used to calibrate models, while only the study area is shown here for clarity.

2.4.3 Marine layers

A range of geophysical, biotic and climatic data was downloaded from Bio-Oracle (Ocean Rasters for Analysis of Climate and Environment, www.oracle.ugent.be) at a spatial resolution of 5 arcminutes. Further details can be found in (Tyberghein *et al.*, 2012). The dataset included 23 layers summarised in Figure 7.



Variable	Derived Metric	Units	Manipulation	Source	
Sea Surface Temperature	Minimum	°C	Temporal minimum from monthly climatologies (2002-2009)	Aqua-MODIS §	CL1
Sea Surface Temperature	Mean	°C	Temporal mean from monthly climatologies (2002-2009)	Aqua-MODIS §	
Sea Surface Temperature	Maximum	°C	Temporal maximum from monthly climatologies (2002-2009)	Aqua-MODIS §	
Photosynthetically Available Radiation	Mean	Einstein /m²/day	Temporal mean from monthly climatologies (1997-2009)	SeaWiFS §	
Photosynthetically Available Radiation	Maximum	Einstein /m²/day	Temporal maximum from monthly climatologies (1997-2009)	SeaWiFS §	
Salinity	Mean	PSS	DIVA interpolation of in-situ measurements	WOD 2009 †	
pH	Mean	-	DIVA interpolation of in-situ measurements	WOD 2009 †	
Cloud Cover	Maximum	%	Temporal maximum from monthly images (2005-2010)	Terra-MODIS **	CL2
Cloud Cover	Mean	%	Temporal mean from monthly images (2005-2010)	Terra-MODIS **	
Cloud Cover	Minimum	%	Temporal minimum from monthly images (2005-2010)	Terra-MODIS **	
Dissolved Oxygen	Mean	ml/l	DIVA interpolation of in-situ measurements	WOD 2009 †	CL3
Silicate	Mean	µmol/l	DIVA interpolation of in-situ measurements	WOD 2009 †	
Nitrate	Mean	µmol/l	DIVA interpolation of in-situ measurements	WOD 2009 †	
Phosphate	Mean	µmol/l	DIVA interpolation of in-situ measurements	WOD 2009 †	
Sea Surface Temperature	Range	°C	Temporal range from monthly climatologies (2002-2009)	Aqua-MODIS §	
Calcite concentration	Mean	mol/m³	Temporal mean from seasonal climatologies (2002-2009)	Aqua-MODIS §	
Chlorophyll A	Maximum	mg/m³	Temporal maximum from monthly climatologies (2002-2009)	Aqua-MODIS §	CL4
Chlorophyll A	Range	mg/m³	Temporal range from monthly climatologies (2002-2009)	Aqua-MODIS §	
Chlorophyll A	Mean	mg/m³	Temporal mean from monthly climatologies (2002-2009)	Aqua-MODIS §	
Chlorophyll A	Minimum	mg/m³	Temporal minimum from monthly climatologies (2002-2009)	Aqua-MODIS §	
Diffuse Attenuation	Minimum	m⁻¹	Temporal minimum from monthly climatologies (2002-2009)	Aqua-MODIS §	
Diffuse Attenuation	Maximum	m⁻¹	Temporal maximum from monthly climatologies (2002-2009)	Aqua-MODIS §	
Diffuse Attenuation	Mean	m⁻¹	Temporal mean from monthly climatologies (2002-2009)	Aqua-MODIS §	

Figure 7. Marine layers considered for modelling the potential distribution of marine INS in the RINSE region. Extracted from Tyberghein et al. 2012.

After checking the correlation of layers with ENMTools v1.3, the following were selected for modelling the potential distribution of marine INS (Figure 8):

- Maximum Surface Temperature
- Minimum Surface Temperature
- Maximum Photosynthetic Active Radiation (PAR)
- Salinity
- pH
- Phosphate
- Dissolved Oxygen

- Calcite
- Silica
- Minimum Chlorophyll a
- Maximum Chlorophyll a

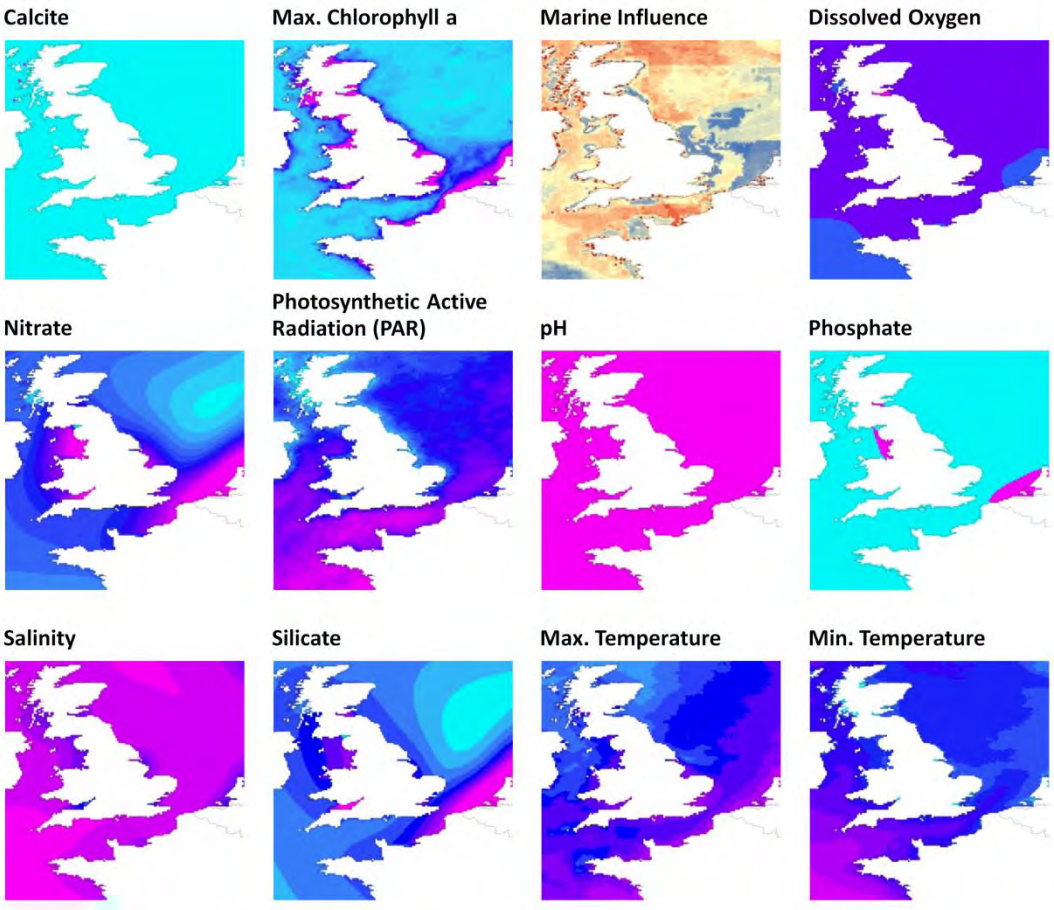


Figure 8. Marine layers used to model the potential distribution of Alert and Black INS in the RINSE region. Please note that global maps were used to calibrate models, while only the study area is shown here for clarity.

In addition we included a Global Map of Human Impacts to Marine Ecosystems (National Centre for Ecological Analysis and Synthesis, www.nceas.ucsb.edu/globalmarine). Similar to the Human Influence Index used for continental species, this map summarises information on 17 human activities that directly or indirectly have an impact on marine ecosystems such as fishing, shipping, pollution, location of benthic structures and population pressure (see the complete set of 17 activities at www.nceas.ucsb.edu/globalmarine/impacts). The cumulative impact of these activities is calculated and mapped (Figure 9). We expected this map to be relevant to explain the potential distribution of marine INS, because of their close relationship with the vectors and pathways of marine invaders.

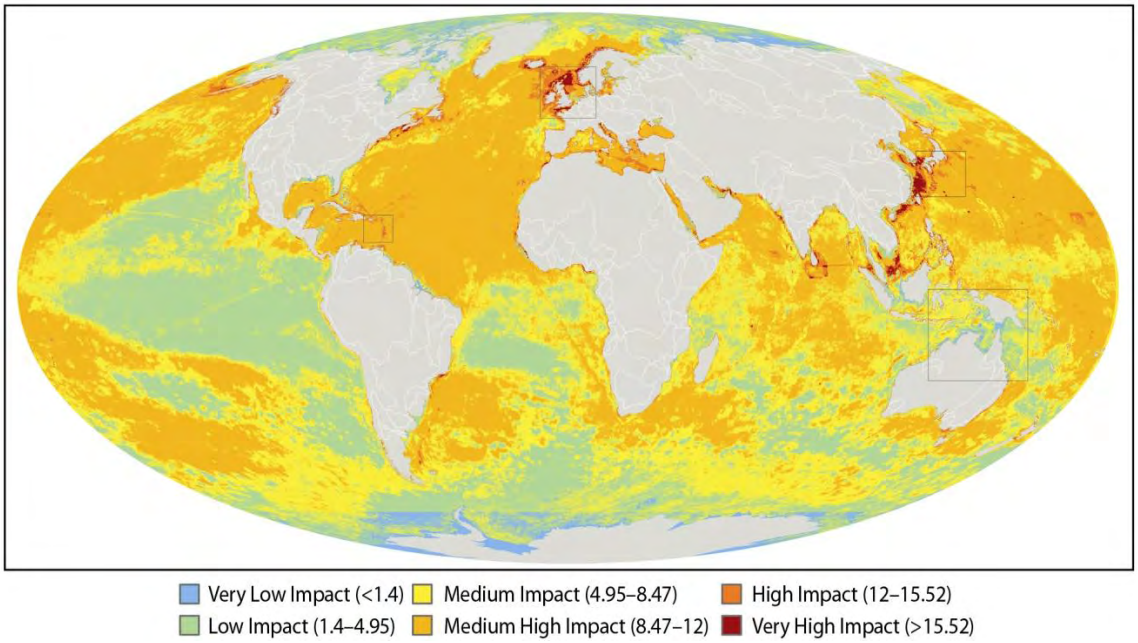


Figure 9. Global Map of Human Impacts to Marine Ecosystems used to model the potential distribution of INS in the RINSE region. Extracted from www.nceas.ucsb.edu/globalmarine.

2.4.4 Modelling approach

Species Distribution Models were used to measure the spatial suitability for INS, by projecting a model of the known species distribution into a region of interest (Guisan & Thuiller, 2005). MaxEnt version v3.3k (www.cs.princeton.edu/~schapire/maxent) was used to develop ENM for those potential invaders identified in the horizon scanning and listed in Table 6. MaxEnt is a machine-learning algorithm that minimises the relative entropy between two probability densities (one estimated from the presence data and the other from the background) defined in covariate space (Elith *et al.*, 2010). According to several studies comparing algorithms, MaxEnt is one of the highest performing methods (Elith *et al.*, 2006; Phillips *et al.*, 2006).

For input, MaxEnt models use the dataset of species occurrences and the set of environmental and socio-economic predictors that might affect the likelihood of species establishment. To test the accuracy of predictions, occurrence data were split into two sets: 70% of the data was used for modelling and the remaining 30% for testing the model. Because no absence data was available, a total of 10,000 random background points were generated from the study area. To assess model performance, the Area Under the Receiving Operating Characteristic (ROC) Curve (AUC) (Hanley & McNeil, 1982) was used, which represents the probability that a random occurrence locality was classified as more suitable than a random pseudo-absence. A model that performs no better than random has an AUC of 0.5 whereas a model with perfect discrimination scores 1.

Regularisation reduces the likelihood of overfitting models, thus increasing the ability of models beyond the training region (Elith *et al.*, 2010). For this reason, it is often recommended increasing the regularisation when evaluating the potential distribution of invasive species (Maxent tutorial available at www.cs.princeton.edu). Yet, no clear guidelines on the appropriate degree of regularisation exist. In this study, we tried a regularisation modifier of 1, 2, 3 and 4 and selected the best model minimising the size corrected Akaike Information Criterium (AICc) that can be calculated using ENMTools v1.3.

Once the optimum regularisation was defined, we tested the inclusion of variables in the model. To that end, we sequentially removed one variable at a time and selected the model with lowest AICc through a backwards stepwise selection. This procedure removed variables that are not relevant to explain the species' distribution or that are redundant. This is especially important given the high inter-correlation existing between variables such as temperature or precipitation.

After calibration, models were projected onto the four RINSE countries to obtain suitability maps, ranging from 0= conditions completely different to those of the current range of the species, to 1= complete match with the current range of the species. Despite calibration layers were used at a 5 arcminutes resolution, we used a set of higher resolution continental layers covering the RINSE region for projection. This new set of layers covered the four RINSE countries (i.e. Great Britain, France, Belgium and The Netherlands) and had the maximum resolution possible (30 arcseconds). This was nevertheless only done for continental species (terrestrial plants, animals and aquatic inland organisms) since no marine layers are available at 30 arcseconds.

The threshold maximising the sensitivity (i.e. number of presences correctly predicted) and specificity (i.e. number of background points correctly predicted) of the model was used to transform suitability maps into a predicted presence/absence map (Liu *et al.*, 2005). This threshold tends to favour sensitivity (true presences) over specificity (true absences), which is preferable in the case on invasive species, and has been consistently found to produce the most accurate predictions (Barbet-Massin *et al.*, 2012). Thresholded maps provided a simple absence/presence prediction for each species allowing identifying broad geographic regions whose environmental conditions may facilitate the successful establishment of an invasive species in an event of an introduction.

Finally, all maps were combined together into a single 'heat map' reflecting the risk of invasion in the four RINSE countries for terrestrial, freshwater and marine species.

3. RESULTS

3.1 NNS species registry

3.1.1 General registry

The registry of non-native species in the RINSE countries counted a total of 3,454 species (see Annex B). According to our database, Great Britain hosts the highest number of non-native species (2,365), followed by France (1,988), The Netherlands (1,741), and Belgium (1,289) (Figure 10). Presence in the four RINSE areas could be confirmed for about 50% (1,760) of all NNS present in the four countries. The highest percentage of RINSE area-species was thereby observed in Belgium (68%), followed by The Netherlands (56%), Great Britain (52%) and France (22%).

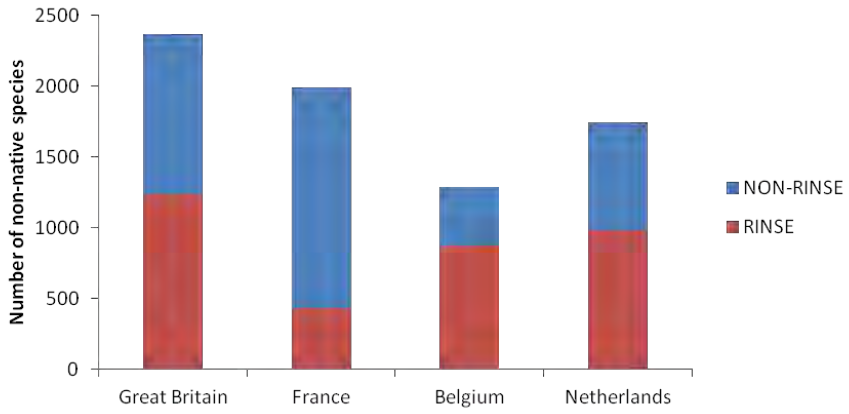


Figure 10. Relative abundance of non-native species present within or only outside the four RINSE areas of the four RINSE countries.

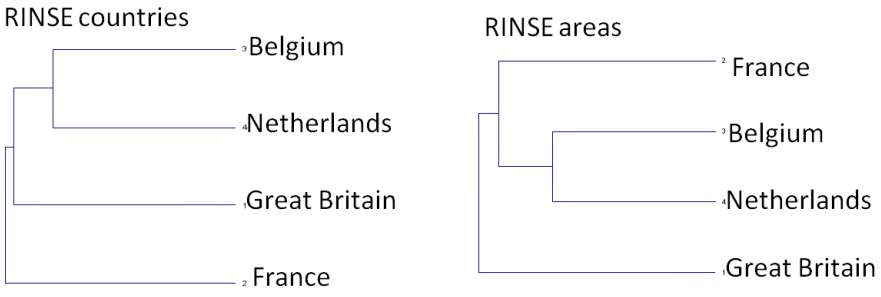


Figure 11. Cluster analysis on similarity in non-native species inventory of RINSE countries and RINSE areas, respectively (based on Jaccard similarity coefficients).

Cluster analysis based on Jaccard similarity coefficients revealed that Belgium and The Netherlands are the RINSE countries most similar in their inventory of non-native species (Figure 11). France is

the most dissimilar country in this respect when considering the whole RINSE countries, whilst Great Britain is most dissimilar from the remaining RINSE countries when considering only species present within the respective RINSE areas.

When looking at the distribution of non-native RINSE species across the various animal phyla and plant divisions (Figure 12), Arthropoda (1,771 species; includes insects and crustaceans), Chordata (598 species; includes birds, mammals and fish) and Angiospermae (323 species; =flowering plants) are the most abundant ones (note that this was despite the fact that not all sources were considered with regard to the Arthropoda and Angiospermae [see Table 3]). Presence in the four RINSE areas could be confirmed for the majority of chordates, angiosperms and particularly for smaller groups such as the molluscs, but only for about a third of the arthropod species.

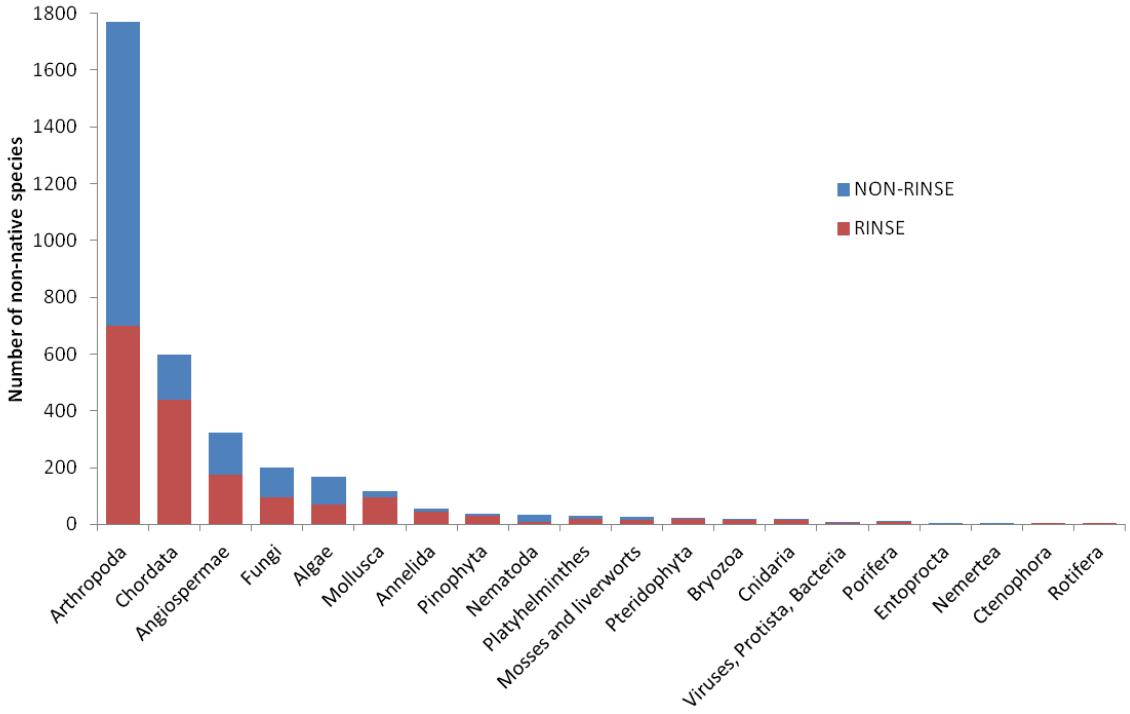


Figure 12. Number of non-native species per higher taxa (animal phyla and plant divisions) that are present within and only outside the four RINSE areas of the four RINSE countries.

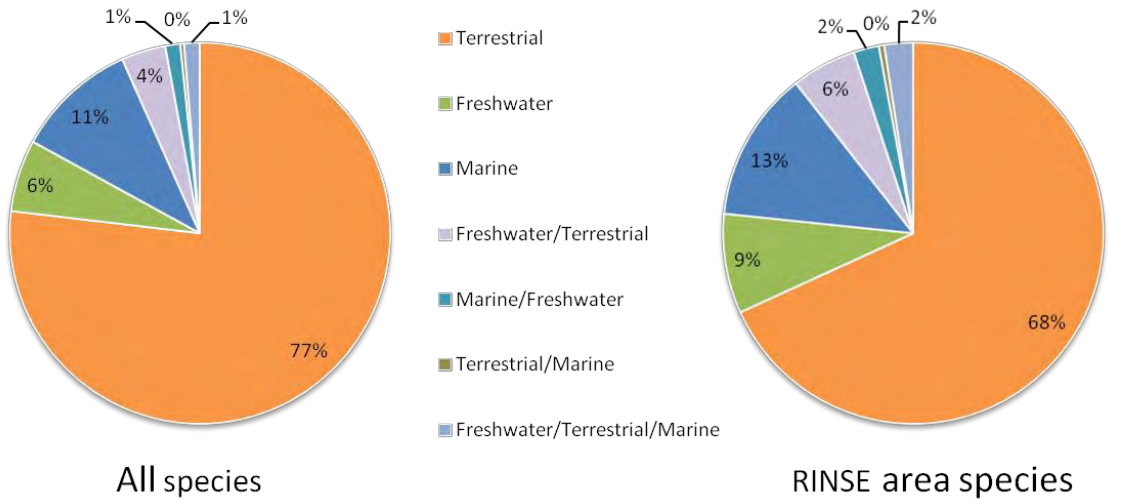


Figure 13. Environments inhabited by non-native species present in RINSE countries and areas, respectively.

More than three quarters of the species listed in the Registry inhabit terrestrial ecosystems, with only 6% and 11% exclusively occupying freshwater and marine habitats, respectively (Figure 13). A considerable proportion (4%) is made up by species inhabiting both freshwater and terrestrial habitats; these include, for example, Amphibia and waterbirds such as ducks and geese. The proportion of purely terrestrial species decreases slightly (to 68%) when considering only those species present in the RINSE area.

3.1.2 Focus lists

The three chordate groups that were investigated in more detail in the focus lists (Annex C), i.e. (1) Osteichthyes (=bony fish), (2) Anseriformes (=geese, ducks, swans and their relatives), and (3) mammals, were to a large extent deliberately imported into RINSE countries (Figure 14). About half of the introduced fish species were subsequently deliberately released to the wild, whilst about 45% of mammals ended up in the wild by escape from captivity. Molluscs, on the other hand, were mostly accidentally introduced, and >30% of the Angiospermae investigated in the focus group are believed to have reached RINSE countries by natural dispersal from other introduced populations.

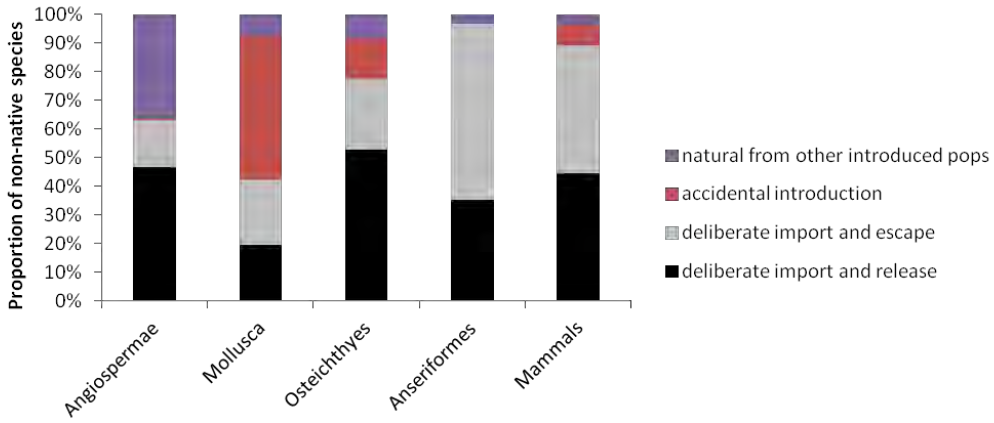


Figure 14. Pathways of introduction of non-native Angiospermae, Mollusca, Osteichthyes, Anseriformes and Mammalia species to RINSE countries.

Ornamental trade (including pet trade and horticulture) was the most common reasons for introducing plants, geese and mammals (Figure 15). About 40% of fish species were introduced for leisure fishing. Aquaculture was the reason for almost all molluscs that were deliberately introduced to RINSE countries. Introductions for environmental control, on the other hand, apparently play only a minor role.

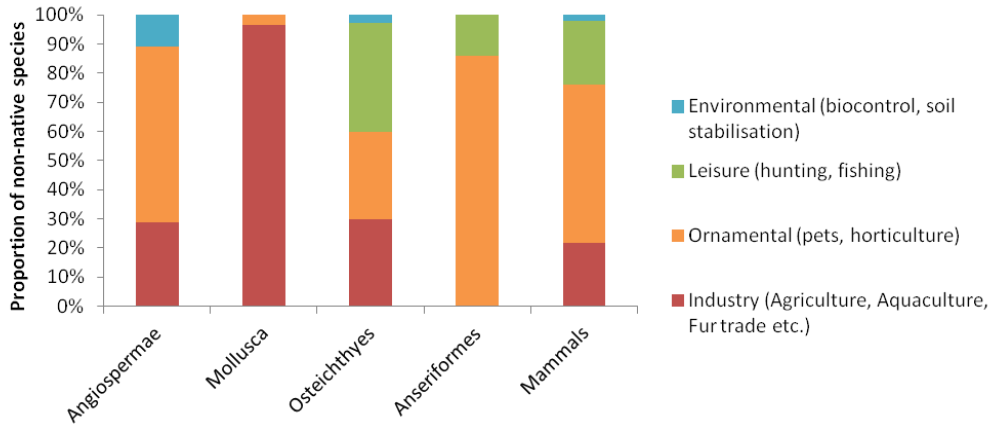


Figure 15. Reasons for deliberate introductions of non-native Angiospermae, Mollusca, Osteichthyes, Anseriformes and Mammalia species to RINSE countries. Data corresponds to deliberate imports represented in Fig. 14.

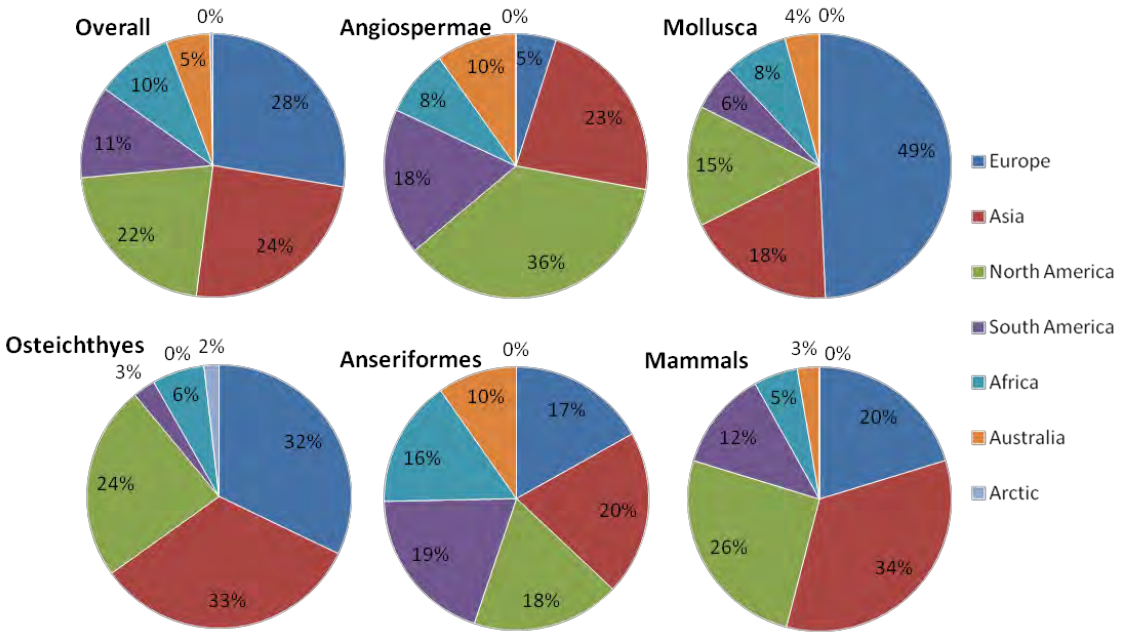


Figure 16. Proportion of focus group phyla from different continents of origin.

In general, across the five focus groups, about a quarter of non-native species present in RINSE countries originate from each Europe, Asia and North America (Figure 16). Focus groups, however, differed significantly in this respect (Chi-square: χ^2=110.8, df=20, *P*<0.001). In particular, a comparatively large proportion of molluscs came from within Europe, and the same was true for Angiospermae from North America and mammals from Asia. Interestingly also, a considerable proportion of exotic geese in the RINSE countries originates from South America and Africa.

Statistical analysis indicated that species originating from different continents colonised their first RINSE country at significantly different times (Kruskal-Wallis: *H*=26.4, df=6, *P*<0.001) (Figure 17). Excluding Arctic species due to low number of replicates, species from North America arrived the earliest (median = 1920), followed by European (median = 1948), Asian (median = 1965) and African (median = 1967) species. Recent colonisers most often come from South America and Australia (median for both = 1982).

A similar difference in the timing of the first record in the wild was also found when comparing the five focus groups (Kruskal-Wallis: *H*=44.4, df=4, *P*<0.001) (Figure 17). Angiospermae on general arrived earliest in the RINSE countries (median = 1893), followed by mammals (median = 1929) and Mollusca (median = 1955). Bony fish (median = 1963), and geese and their relatives (median = 1977) are the groups with comparatively recent arrivals.

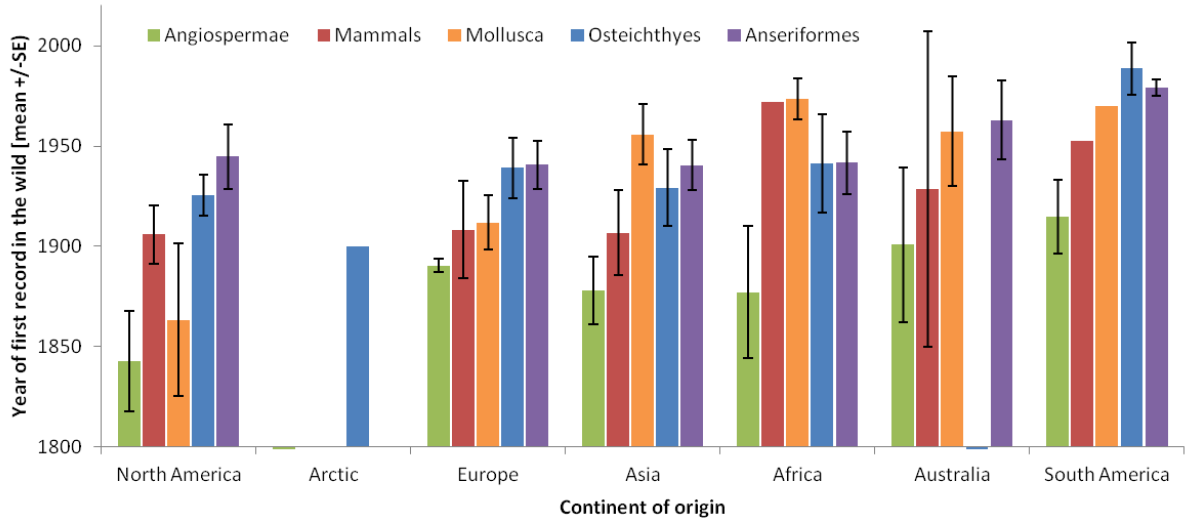


Figure 17. Average year of first record in the wild in one of the RINSE countries per phylum and continent of origin.

As illustrated in Figure 18, most introduced fish species are predators, whilst the majority of mammals are herbivorous. Introduced molluscs come from various different feeding types but are somewhat dominated by herbivores (mostly terrestrial gastropods) and filter feeders (mostly bivalves).

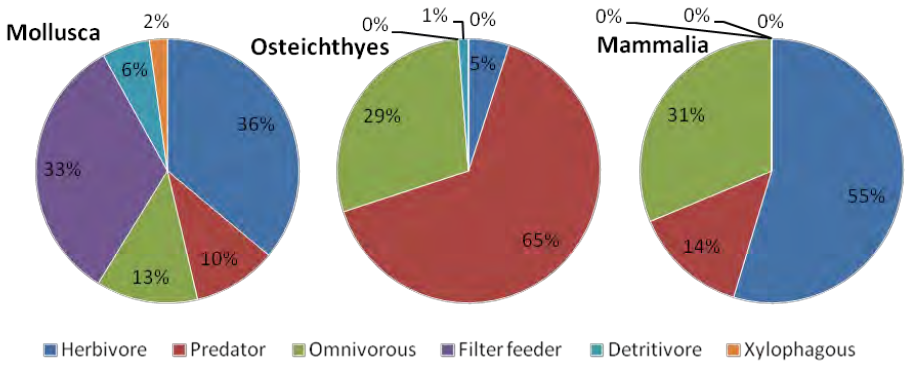


Figure 18. Proportion of focus group phyla belonging to different functional (feeding) types. Note that no pie charts are displayed for Angiospermae (all primary producers) and Anseriformes (all herbivorous and/or omnivorous). Xylophagous: feeding on or boring into wood.

Of the species included in the focus list and for which respective data was available, according to our dataset, about 55% were first recorded from Great Britain, whilst 45% were first recorded from one of the continental RINSE countries. When plotting per 50-years intervals, for the past 300 years or so, the number of species that first occupied Great Britain always exceeded that of species first occupying the continent (Figure 19).

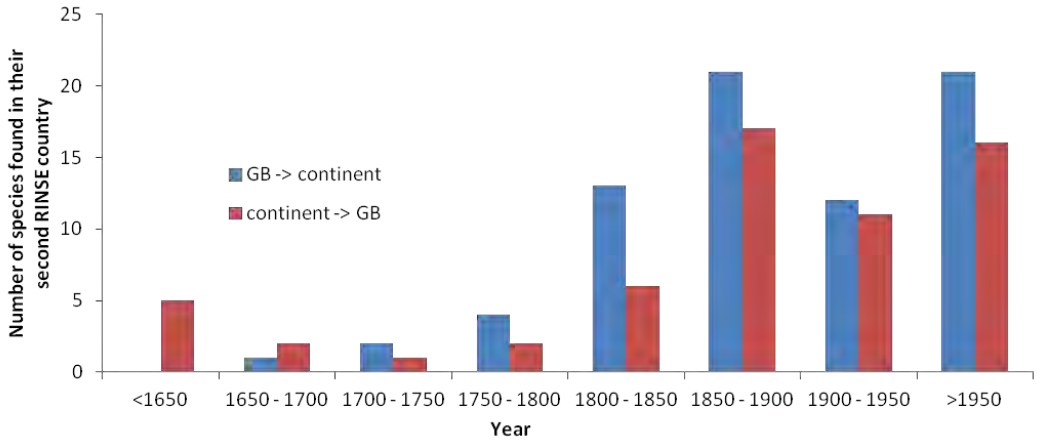


Figure 19. Number of species apparently colonising continental RINSE countries after Great Britain (blue) and Great Britain after continental RINSE countries (red) per 50 year-periods.

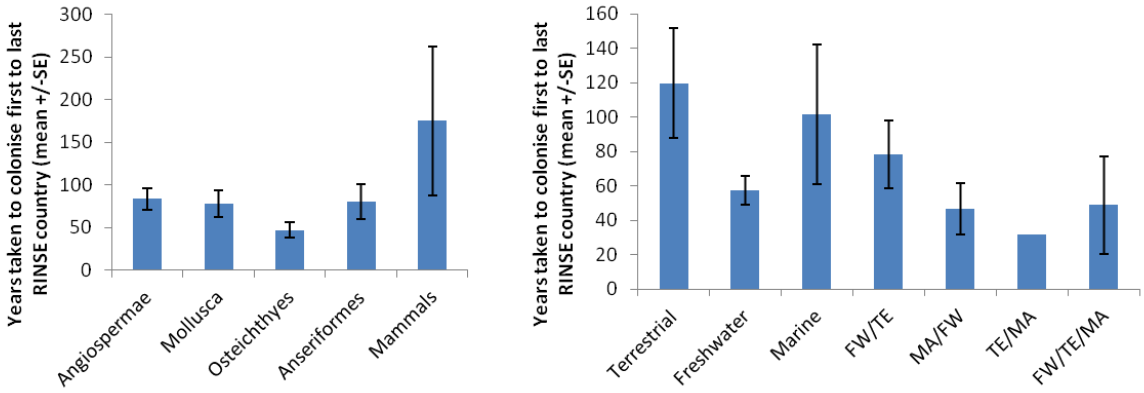


Figure 20. Average number of years taken for spreading from first to last RINSE country (="colonisation rate"). Data displayed per phylum and main environment inhabited. Abbreviations: FW, freshwater; MA, marine; TE, terrestrial.

Of the five focus list groups, fish spread the quickest and took on average only about 47 years to spread from their first to their last RINSE country (Figure 20). On the other hand of the scale, with 175 years on average, mammals took about four times as long to spread. The other three groups, i.e. molluscs, geese and flowering plants, exhibited intermittent colonisation rates (78 to 84 years taken on average). It should be noted, however, that this difference in colonisation rate between species groups was not statistically significant (ANOVA: F=1.94, P=0.106).

When grouping species according to their main habitat, purely terrestrial and marine species showed lowest spread rates, taking on average 120 and 102 years to spread from their first to their last RINSE country, respectively (Figure 20). Species inhabiting only freshwater habitats spread about twice as quickly (mean = 57 years from first to last RINSE country). Species inhabiting several habitats also spread relatively quickly (on average 32 to 79 years from first to last RINSE country).

Once again, this difference in colonisation rate between species groups from different habitats was, however, not statistically significant (ANOVA: F=1.59, P=0.153).

3.2 The INS Horizon scanning lists

After checking a total of 16 source lists of 'the worst' INS, we compiled a metalist with 340 species that were afterwards divided into the Alert and Black Lists depending respectively on their absence or presence in the four RINSE countries. Horizon scanning lists of INS can be consulted in AnnexD, which includes the following information:

- **Alert List of INS.** Species name, risk assessment by experts (including identification of scoring experts), species characteristics (such as invaded environment, continent of origin and functional role) and identification of 'worst INS lists' consulted that flagged the species.
- **Black List of INS.** Species name, presence in the four RINSE countries, species characteristics (such as invaded environment, functional role, native range continent), identification of worst INS lists that flagged the species and percentage of votes received in the prioritisation poll (relative to its group: terrestrial animals, terrestrial plants, aquatic inland and marine).

3.2.1 The Alert List of INS

The RINSE Alert List included 78 INS not yet present in any of the RINSE countries with a balanced representation of terrestrial plants (23 species), terrestrial animals (24), aquatic inland (15) and marine (16) organisms (Table 5). Dominating groups of INS belonged to phyla Chordata (e.g. birds, mammals, fish), Angiospermae (e.g. terrestrial plants) and Arthropoda (e.g. insects, crustaceans) (Fig. 21A). The majority of INS (40%) originated from Asia, followed by North America (18%), South America (15%) and Europe (15%) (Fig. 21B). Most of the species were primary producers, which includes terrestrial plants, aquatic plants and algae (Fig. 21C). However, predators were the most abundant group if we include omnivores capable of opportunistic predatory behaviour (Fig. 21C).

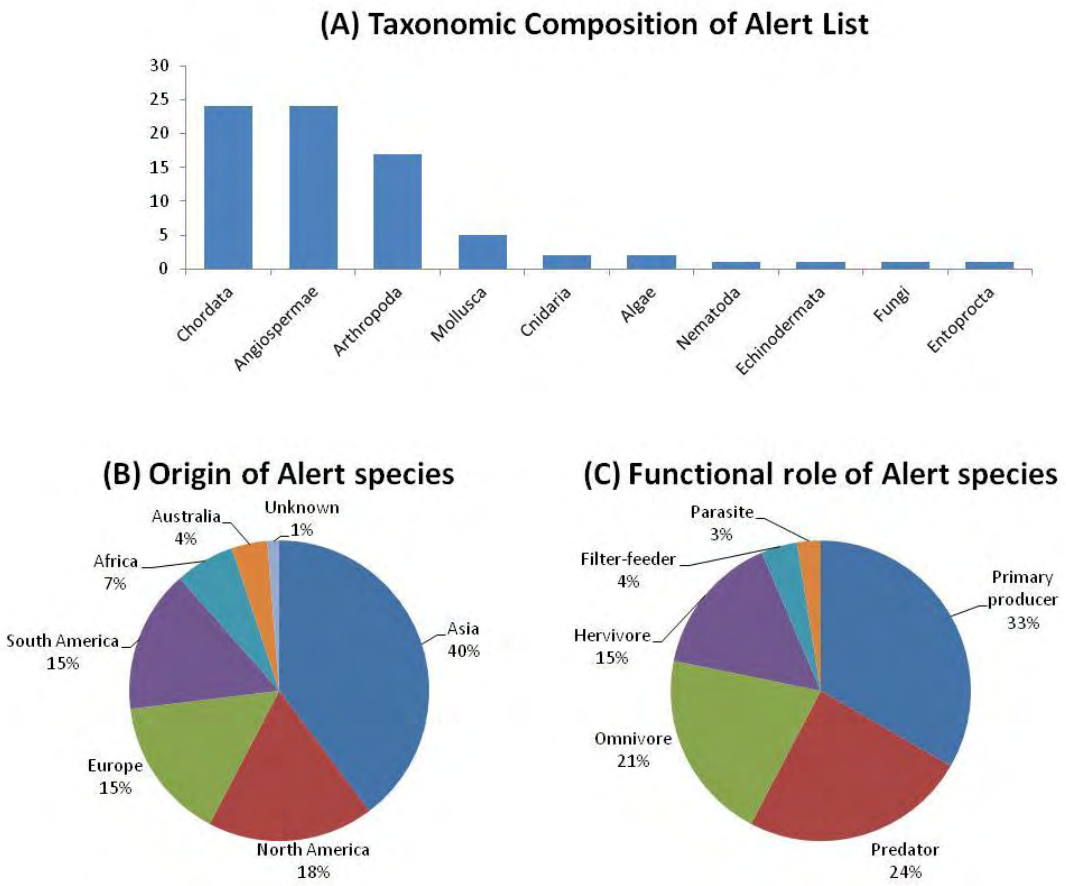


Figure 21. Characteristics of INS included in the Alert List. A: Taxonomic composition. B: Continent of origin. C: Functional role of species.

Regarding the risk assessment, plants were generally assigned highest scores in all categories (i.e. ecological impact, invasive potential, management difficulty and economic impact), whereas marine organisms generally yielded low risk scores (

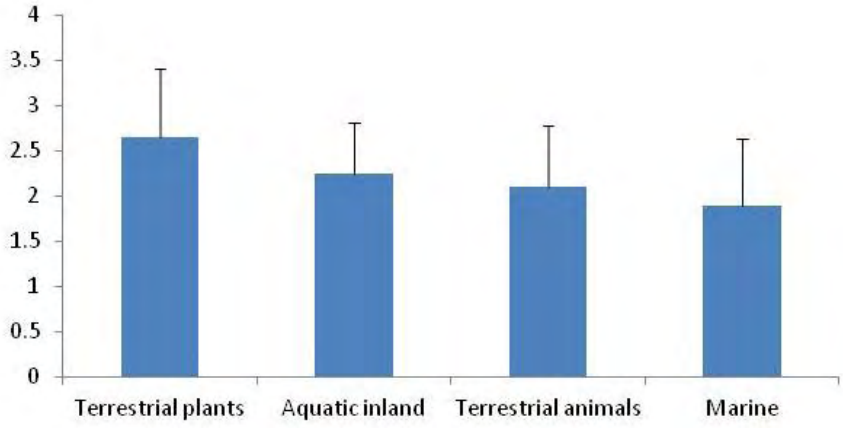


Figure **22**).

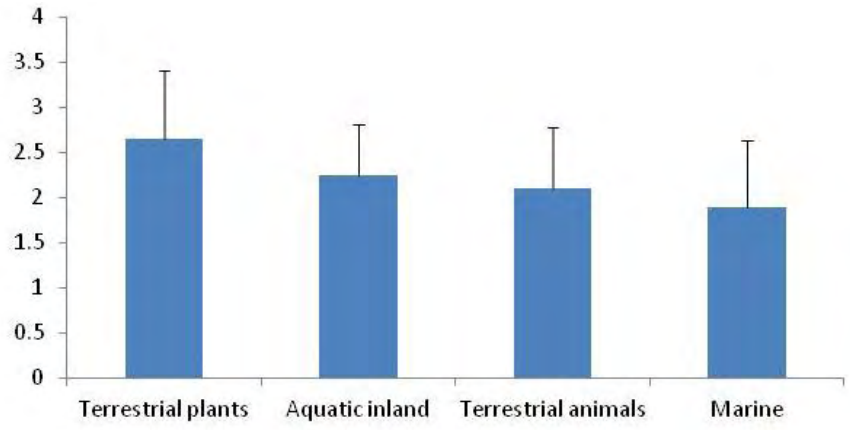


Figure 22. Average total risk score assigned by experts to the four main groups of Alert species. Risk scores range from 0-unknown/unimportant to 5-highest risk of environmental and economic invasion impact (see further information on risk scores in Table 5).

Taking the mean, 25th and 75th percentiles of total risk scores we divided species into four categories of risk (Fig. 23). This colour coding was used in Table 7 for ease of interpretation. The top three INS in each major group of organisms (i.e. terrestrial plants and animals, aquatic inland and marine organisms) were extracted to form a prioritised list of Alert species whose prevention in the RINSE countries should be considered a major priority (Table 8). Half of species in the top 12 were native to Asia. With the exception of *N. gymnotrachelus* and *P. amurensis*, the main vector of introduction of species in the top 12 was associated to commercial activities such as agriculture, ornamental trade, forestry, aquaculture and mariculture.

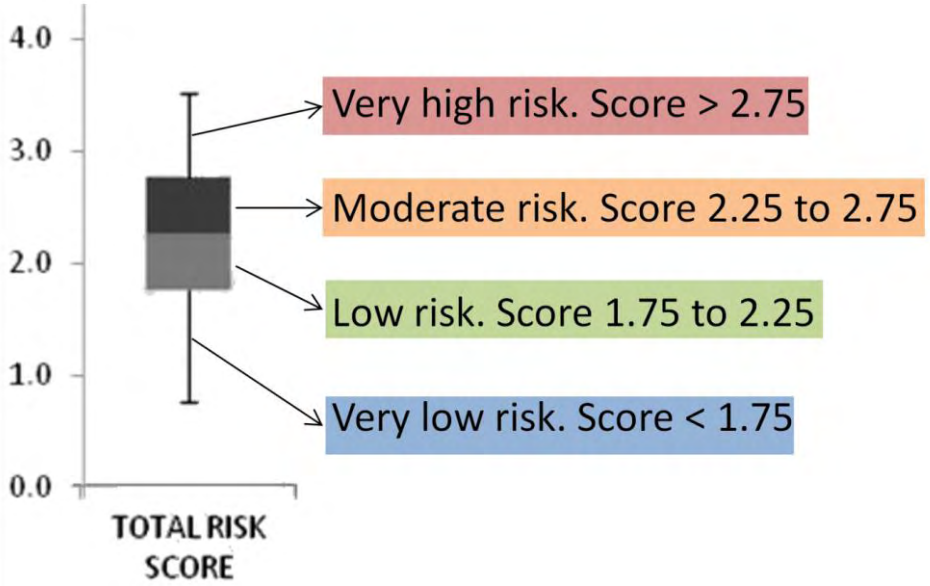


Figure 23. Classification of species into four categories of risk by their total risk score.

Table 7. Alert List of INS not yet present in the four RINSE countries with notes on their taxonomic classification, English name, origin and risk evaluation. Habitat: M-marine, TA-terrestrial animal, TP-Terrestrial plant, AI-Aquatic Inland. Origin: Sam-South America, Nam-North America, Af-Africa, As-Asia, Au-Australia, Eur-Europe, U-Unknown. Total score: average score for the species. Color code: blue-very low risk, green-low risk, orange-moderate risk, red-very high risk. More details are included in Annex D.

Group	Phylum	Taxonomic name	English Name	Habitat	Origin	Ecological impact	Invasive potential	Management difficulty	Economic impact	Total Score
AQUATIC INLAND ORGANISMS	Mollusca	*Pomacea canaliculata*	Apple snail	**AI**	SAm	3.0	2.0	3.5	4.0	3.1
	Chordata	*Perccottus glenii*	Amur sleeper	**AI**	As	3.3	3.3	4.0	1.7	3.1
	Chordata	*Neogobius gymnotrachelus*	Racer goby	**AI**	Eur	3.0	3.3	3.7	2.0	3.0
	Arthropoda	*Pontogammarus robustoides*	Ponto-Caspian shrimp	**AI**	Eur	2.3	3.0	4.0	2.0	2.8
	Arthropoda	*Cercopagis pengoi*	Fish-hook waterflea	**AI**	As	3.0	2.7	3.3	2.0	2.8
	Arthropoda	*Gammarus fasciatus*	Freshwater shrimp	**AI**	NAm	3.0	2.5	4.0	1.0	2.6
	Arthropoda	*Obesogammarus obesus*	Ponto-Caspian shrimp	**AI**	Eur	2.0	2.7	4.0	1.5	2.5
	Arthropoda	*Chaetogammarus warpachowski*	Ponto-Caspian shrimp	**AI**	Eur	2.5	2.5	4.0	1.0	2.5
	Chordata	*Lates niloticus*	Nile perch	**AI**	Af	3.0	1.5	2.5	2.5	2.4
	Cnidaria	*Polypodium hydriforme*		**AI**	Eur	2.0	3.0		2.0	2.3
	Arthropoda	*Katamysis warpachowsky*	Katamysis	**AI**	Eur	2.0	2.0	4.0	1.0	2.3
	Arthropoda	*Pontogammarus maeoticus*	Ponto-Caspian shrimp	**AI**	Eur	1.0	3.0	3.5	1.0	2.1
	Mollusca	*Theodoxus danubialis*	Danube snail	**AI**	Eur	1.0	2.0	3.0	1.0	1.8
	Entropocta	*Urnatella gracilis*	Freshwater goblet worm	**AI**	NAm	1.0	3.0		1.0	1.7
	Chordata	*Clarias batrachus*	Walking Catfish	**AI**	As	1.0	1.0	3.5	1.0	1.6
	Chordata	*Aphanius dispar*	Arabian killifish	**AI**	As	1.0	1.0	2.0	1.0	1.3
MARINE ORGANISMS	Mollusca	*Potamocorbula amurensis*	Amur river clam	M	As	4.0	2.0	4.0	2.5	3.1
	Cnidaria	*Rhopilema nomadica*	Nomad jellyfish	M	Af	3.0	1.0	3.5	3.5	2.8
	Echinodermata	*Asterias amurensis*	Japanese sea star	M	As	3.0	1.5	3.0	2.5	2.5
	Algae - Ochrophyta	*Stypopodium schimperi*		M	Eur	3.0	1.0	4.0	2.0	2.5
	Chordata	*Seriola fasciata*	Lesser amberjack	M	NAm	2.0	1.0	4.0	2.0	2.3
	Chordata	*Fistularia commersoni*	Blue-spotted cornet fish	M	As	2.0	1.0	4.0	1.5	2.1
	Chordata	*Siganus rivulatus*	Dusky spinefoot	M	As	3.0	1.0	3.5	1.0	2.1

	Arthropoda	*Charybdis longicollis*	Erythrean swimming crab	M	Eur	1.5	1.0	4.0	1.5	2.0
	Mollusca	*Anadara inaequivalvis*	Inequivalve ark	M	As	2.5	1.5	2.5	1.0	1.9
	Arthropoda	*Paralithodes camtschaticus*	Red King Crab	M	NAm	2.5	1.0	2.0	2.0	1.9
	Chordata	*Saurida undosquamis*	True lizardfish	M	As	1.7	1.0	3.7	1.0	1.8
	Arthropoda	*Percnon gibbesi*	Sally lightfoot crab	M	NAm	2.0	1.0	3.0	1.0	1.8
	Angiospermae	*Halophila stipulacea*	Halophila seagrass	M	As	2.0	1.0	1.0	0.0	1.0
	Algae - Rhodophyta	*Asparagopsis taxiformis*	Limu kohu	M	Eur	1.0	1.0	0.0	1.0	0.8
	Arthropoda	*Chionoecetes opilio*	Queen crab	M	As	1.0	1.0	0.0	1.0	0.8
	Arthropoda	*Portunus pelagicus*	Blue swimming crab	M	As	1.0	1.0	0.0	1.0	0.8
TERRESTRIAL ANIMALS	Arthropoda	*Agrilus planipennis*	Emerald Ash Borer	TA	As	3.3	3.3	3.7	3.3	3.4
	Arthropoda	*Solenopsis invicta*	Red fire ant	TA	SAm	2.7	1.7	3.0	4.0	2.8
	Chordata	*Castor canadensis*	Canadian beaver	TA	NAm	3.3	2.7	2.3	2.3	2.7
	Chordata	*Chrysemys picta*	Painted turtle	TA	NAm	3.0	3.0	3.0	1.0	2.5
	Chordata	*Axis axis*	Indian spotted deer	TA	As	2.5	1.0	4.0	2.5	2.5
	Chordata	*Boiga irregularis*	Brown tree snake	TA	Au	3.0	1.0	3.0	3.0	2.5
	Mollusca	*Euglandina rosea*	Cannibal snail	TA	NAm	3.0	1.0	3.7	2.0	2.4
	Arthropoda	Coptotermes formosanus	Formosan subterranean termite	TA	As	2.0	1.0	2.0	4.0	2.3
	Chordata	*Eleutherodactylus coqui*	Caribbean tree frog	TA	SAm	3.0	2.0	2.5	1.5	2.3
	Platyhelminthes	*Platydemus manokwari*	Snail-eating flatworm	TA	U	3.0	1.5	3.5	1.0	2.3
	Chordata	*Macaca fascicularis*	Crab-eating macaque	TA	As	3.0	1.5	3.0	1.0	2.1
	Chordata	*Trichosurus vulpecula*	Brushtail possum	TA	Au	3.0	2.0	2.5	1.0	2.1
	Chordata	*Herpestes auropunctatus*	Small Asian mongoose	TA	As	3.0	1.0	2.0	2.0	2.0
	Chordata	*Hystrix brachyura*	Hodgson's Porcupine	TA	As	2.0	1.0	2.0	3.0	2.0
	Chordata	*Felis bengalensis*	Leopard Cat	TA	As	2.7	1.3	2.0	1.3	1.8
	Arthropoda	*Anopheles quadrimaculatus*	Common malaria mosquito	TA	NAm	1.0	1.0	2.5	2.5	1.8
	Arthropoda	*Anoplolepis gracilipes*	Yellow crazy ant	TA	Af	2.0	1.3	2.0	1.7	1.8
	Nematoda	*Ashworthius sidemi*	Asiatic parasite	TA	As	2.0	2.0	2.0	1.0	1.8
	Chordata	*Muntiacus muntjak*	Indian Muntjac	TA	As	2.3	1.3	1.7	1.3	1.7

	Chordata	*Herpestes javanicus*	Javan mongoose	TA	As	2.0	1.0	2.0	1.0	1.5
	Chordata	*Bison bison*	American bison	TA	NAm	1.0	1.0	2.0	1.0	1.3
	Chordata	*Ammotragus lervia*	Barbary sheep	TA	Af	1.0	1.0	1.0	1.0	1.0
TERRESTRIAL PLANTS	Angiospermae	*Imperata cylindrica*	Blady grass	TP	As	4.0	3.7	2.3	4.0	3.5
	Angiospermae	*Melaleuca quinquenervia*	Melaleuca	TP	Au	4.0	3.5	3.0	3.0	3.4
	Angiospermae	*Pueraria lobata montana*	Kudzu	TP	As	4.0	3.5	3.0	3.0	3.4
	Angiospermae	*Lantana camara*	Ach man	TP	SAm	3.7	3.3	3.0	3.3	3.3
	Angiospermae	*Heracleum sosnowskyi*	Sosnowski's hogweed	TP	Eur	3.0	4.0	3.0	3.0	3.3
	Angiospermae	*Tamarix ramosissima*	Salt cedar	TP	As	4.0	3.0	3.0	3.0	3.3
	Angiospermae	*Prosopis glandulosa*	Honey mesquite	TP	NAm	4.0	2.7	3.0	3.0	3.2
	Angiospermae	*Mikania micrantha*	American rope	TP	SAm	3.5	3.0	3.0	2.5	3.0
	Angiospermae	*Rubus ellipticus*	Asian wild raspberry	TP	As	3.7	3.0	3.0	2.3	3.0
	Angiospermae	*Miconia calvescens*	Bush currant	TP	SAm	4.0	2.5	2.5	2.5	2.9
	Angiospermae	*Solidago nemoralis*	Gray goldenrod	TP	NAm	2.5	4.0	3.0	2.0	2.9
	Angiospermae	*Mimosa pigra*	Bashful plant	TP	SAm	4.0	1.0	3.0	3.0	2.8
	Angiospermae	*Schinus terebinthifolius*	Brazilian holly	TP	SAm	3.0	2.0	3.0	3.0	2.8
	Angiospermae	*Sphagneticola trilobata*	Ccreeping ox-eye	TP	SAm	3.0	1.5	3.0	2.5	2.5
	Angiospermae	*Spathodea campanulata*	African tulip tree	TP	Af	3.0	1.0	3.0	2.5	2.4
	Angiospermae	*Ardisia elliptica*	Shoebutton ardisia	TP	As	3.0	2.0	3.0	1.0	2.3
	Angiospermae	*Ligustrum robustum*	Ceylon privét	TP	As	4.0	1.0	3.0	1.0	2.3
	Angiospermae	*Hiptage benghalensi*	Helicopter flower	TP	As	2.5	1.5	3.5	1.0	2.1
	Angiospermae	*Lupinus nootkatensis*	Nootka lupin	TP	NAm	4.0	1.0	1.0	1.0	1.8
	Angiospermae	*Cenchrus incertus*	Coastal sandbur	TP	NAm	1.0	1.0	1.0	2.0	1.3
	Angiospermae	*Cinchona pubescens*	Red cinchona	TP	SAm	2.0	1.0	1.0	1.0	1.3
	Angiospermae	*Cecropia peltata*	Trumpet tree	TP	Unknown	1.0	1.0	1.0	1.0	1.0
	Angiospermae	*Clidemia hirta*	Koster's Curse	TP	SAm	1.0	1.0	1.0	1.0	1.0

Table 8. Summary of characteristics of the top 12 Alert INS.

Scientific name	English name	Origin	Habitat	Pathway	Environmental Impacts	Economic impact	Presence in Europe
Neogobius gymnotrachelus	Racer goby	Eurasia (Ponto-Caspian)	Freshwater / brackish	- Ballast water - Fish stocking - Natural spread (active swimming)	- Food web changes - Displaces native species - Biodiversity loss	- Reduces commercial fish stocks	Germany, Poland, Hungary
Percottus glenii	Amur sleeper	Asia (NE China, N Korea and SE Russia)	Estuaries and shallow lentic waters	- Aquaculture and aquarium trade (release or escape) - Accidental with fish stocks - Natural spread (active swimming)	- Predates on crustaceans, molluscs, insects, amphibians and fish - Biodiversity loss - Competes with native species (e.g. *Carassius carassius, Rhodeus sericeus*)	- Reduces commercial fish stocks (e.g. roach, perch, dace)	Poland, Finland, and Eastern Europe (e.g. Estonia, Ukraine, Hungary, Romania)
Pomacea canaliculata	Apple snail	South America (Argentina)	Lakes, ponds, swamps, agricultural areas	- Aquarium trade (escape or release) - Food source - Natural spread with water currents (larvae)	- Voracious predation of freshwater plants (e.g. lotus, water chestnut) - Habitat loss/ modification - Competes with native species	- Major crop pest - Rice crop notable reduction	Not yet
Asterias amurensi	Japanese sea star	North Pacific Ocean	Estuarine and marine habitats	- Fish trade - Ship ballast water and/or hull fouling - Contaminant of other materials - Natural spread with currents (plancktonic larvae)	- Predates voraciously on benthic organisms (e.g. mussels, scallops, clams) - Decline of threatened species (e.g. *Brachionichthys hirsutus*) - Biodiversity loss	- Mariculture losses - Diminishes oyster production	Not yet
Potamocorbula amurensis	Asian clam	SE Asia (Japan, China, Korea)	Tropical to cold estuarine and marine waters	- Ship ballast water	- Bottom up changes due to filter-feeding of large quantities of phyto and zooplankton - Reduces abundance and diversity of benthic species - Changes habitat structure - Bioaccumulation of metals and other pollutants	- Reduces commercial fishing	Not yet
Rhopilema nomadica	Nomad jellyfish	Red Sea	Water column of marine habitats	- Natural spread with currents (plancktonic larvae)	- Voracious plancktivorous predation	- Affects tourism because of painful stings with erythematous eruptions, itching and burning sensations - Reduces fisheries - Clogs fishing nets, pipes and other coastal infrastructure	Mediterranean Sea
Agrilus planipennis	Emeral ash-borer	SE Asia	Ash trees (*Fraxinus spp.*) in urban or forest habitats	- Accidental transport as contaminant - Forestry imports - Natural spread (flying)	- Alters species composition - Biodiversity loss - Death of the infested tree	- Forestry losses	Not yet
Castor canadensis	Canadian beaver	North America	Riparian zones, forested rivers and	- Intentional introduction (release or escape)	- Outcompetes native species - Hybridisation	- Reduces forestry - Increases flood risk	Finland, Germany, Poland, Austria

			lakes	- Natural spread (active swimming)	- Geomorphological changes - Reduces macroinvertebrate diversity - Changes water chemistry (e.g. increase in organic matter) - Barrier to fish migration		
Solenopsis invicta	Red fire ant	South America	Hot arid regions Disturbed areas in the edge of forests and agriculture areas	- Movement of agricultural equipment, soil and plant material - Natural spread (active spread) - Passive spread during flooding	- Affects ant-dispersing plant species (poor dispersers) - Predates of other insects - Reduces diversity of invertebrates, reptiles, birds, fish and small mammals through predation, competition and stinging	- Crop damage - Painful allergic stinging - Infests electrical equipment (pumps, cars, washing machines)	Not yet
Imperata cylindrica	Blady grass	SE Asia, Australia and E Africa	- From dry sand dunes of shores and deserts to swamps and river margins - Weed of 35 crops worldwide	- Ornamental trade - Erosion control - Natural spread (rhizomes sprout after fragmentation)	- Displaces endangered species - Reduces soil moisture and fertility - Produces inhibition substances - Pyrogenic	- Loss of soil fertility - Increases fire risk - Crop yield losses - Reduces reforestation efficiency - Host of pest insects - Inferior forage crop for animals -Sharp leaves damage feet	Bulgaria, Germany, Italy, Portugal, Spain
Melaleuca quinquenervia	Melaleuca	Australia	Inundated wetlands, riparian zones, coastal areas, brackish estuaries, freshwtaer marshes , wet grassland, disturbed wet forests	- Intentional as ornamental - Agro-forestry - Restoration activities - Road vehicles	- Displaces native species - Reduces biodiversity (limited food and habitat for wildlife) - Habitat loss - Inhibits the growth of other species - Alters soil chemistry and decomposition rates - Modify hydrology and fire regimes (pyrogenic)	- Affects nursery growers - Loss in tourism and recreation - Host of pest insects - Increases fire risk	Italy
Pueraria lobata montana	Kudzu	Asia	Open lands, shrublands adjacent to forested areas Disturbed areas (roads, railways, abandoned pastures, river banks	- Accidental or intentional through the agriculture and horticulture trade - Natural vegetative spread - Road vehicles - With mammals and birds - With garden waste	- Biodiversity loss - Smothers, displaces or kills native plants - Changes soil properties, increases N fixation	- Affects forestry productivity - Affects tourism closing paths for hunting, fishing or hiking - Increases fire risk - Constrains urban and rural development of highly infested areas -Host of pest species	Italy, Switzerland

3.2.2 The Black List of INS

The Black List included INS already present in at least one of the RINSE countries and comprised: 67 terrestrial plants, 69 terrestrial animals, 67 aquatic inland and 62 marine organisms. Most species (56%) were already present in the four RINSE countries, whereas only 16% have been recorded in one country only, usually France (25 species) and Great Britain (11 species). These two countries also showed the highest number of Black list species presence, with France hosting 230 and Great Britain 200 of the INS listed in Annex D.

To prioritise the Black List, RINSE partners were asked to select up to 10 species from each major group of organisms (i.e. terrestrial plants and animals, aquatic inland and marine organisms) that are most damaging in the Two Seas region. 17 experts answered the poll, 11 of them from Great Britain, four from Belgium and two from France, so results from this survey might be skewed towards Great Britain. Aquatic inland organisms were evaluated by 16 experts, terrestrial plants by nine, terrestrial animals by 7 and marine organisms by only two experts. Species receiving the highest number of votes from each major group were selected, although a higher participation –most notably in the case of marine organisms—would be needed to increase the reliability of this top 12 list (Table 9).

Table 9. Summary of characteristics of the top 12 Black list INS.

Scientific name	English name	Origin	Habitat	Pathway	Environmental Impacts	Economic impact	Presence in RINSE
Crassula helmsii	New Zealand pigmyweed	Australia, Tasmania, New Zealand	-Surface standing waters of ponds, lakes, reservoirs, canals and ditches	- Ornamental use - Ship/boat contaminant - Fragments transported by birds and other animals - Passive dispersal with water currents	- Outcompetes all other native plants forming very dense stands - Changes water oxygen, temperature, light and pH creating poor conditions for invertebrates, amphibians and fish - Obstructs water flow	- Affects recreational and commercial activities - Reduces opportunities for angling and interferes with navigation - Clogs waterways and drainages	Great Britain, France, Belgium and The Netherlands
Dikerogammarus villosus	Killer shrimp	Europe (Ponto-Caspian)	-River, lakes, canals, reservoirs -Slow flowing water with gravel substrata	- Contaminant of ballast water, boats, fishing gear/bait - Attached to birds/waterfowl - Natural spread (active swimming)	- Displaces native species (e.g. *D. pulex*) - ChangeS trophic web interactions - Predates on benthic invertebrates reducing biodiversity - Host of parasites (e.g. *Echinorhyneys truttae, Pomphorynclus laevis*)	- Predate fish eggs - Affects fishing, recreational use of lakes	Great Britain, France, Belgium and The Netherlands
Hydrocotyle ranunculoides	Floating pennywort	North America	-Shallow shaded pools in lakes, ponds, streams, ditches and canals -From still to slow-flowing waters	- Ornamental plant for garden ponds and aquaria - Attached to birds and other animals - Contaminant of boats and other equipment - Passive dispersal with water currents	- Decline in native species - Changes erosion/deposition cycles - Disrupts movement of animals - Blocks light, prevent wind mixing, increases temperature and decomposes leading to oxygen depletion and eutrophication - Breeding areas to mosquito	- Obstructs boat movement - Affects recreational use of rivers and lakes - Damage waterworks by blocking pipes and pumps	Great Britain, France, Belgium and The Netherlands
Caulerpa taxifolia	Killer algae	Caribbean coasts, Red Sea, East African coast, northern Indian Ocean, southern China Sea, Japan, Australia	-Subtidal zone - Sheltered bays, exposed coasts and seagrass meadows -Attaches to rock and artificial substrates (jetties, pipes, ropes, buoys)	- Ornamental use in aquaria (escape or release) - Ballast water or stowaway - Introduced for landscape restoration - Attached to fishing gear - Natural spread with currents	- Alters habitat structure - Displaces native flora and fauna - Outcompetes other seagrasses (e.g. *Posidonia oceanica* and *Cymodocea nodosa)* - Produces toxic caulerpines inedible to most species - Barrier to migrating/foraging fishes	- Affects tourism - Affects fishing getting entangled in nets and other fishing gear and poisoning the fish that eats it - High eradication costs	Great Britain, France and The Netherlands
Codium fragile	Green sea fingers	Pacific Ocean (Kapan, Korea)	-Shallow subtidal waters to depths of 15 m. -Protected bays and estuaries -Attaches to bivalve shells, rocks or artificial structures	- Ballast water and hull fouling - Aquaculture (movement of shellfish and associated equipment) - Passive dispersal with water currents	- Competes with native species - Alters community structure - Habitat modification - Attaches to bivalves - Dense fronds impedes movement of invertebrates and fish and increases sedimentation	- Nuisance to fisheries and aquaculture (fouls nets and shellfish beds, smothers mussels and scallops, clogs and move commercially produced shellfish and seaweed) - Affects tourism (accumulates and rots on beaches) - Fouls boats, fishing nets, wharf pilings and jetties	Great Britain, Belgium and The Netherlands
Branta canadensis	Canada goose	North America	-Still and slow-flowing fresh waters -Urban, suburban	- Intentional introduction as ornamental and for hunting	- Droppings can increase nutrient levels (water eutrophication) in water and soil - Aggression to other birds (e.g. *Gallinula chloropus, Fulica atra*)	- Fouls parklands, damaging riverbanks, polluting water and posing a risk to aviation near airfields	Great Britain, France, Belgium and The Netherlands

			and rural sites		- Hybridisation (e.g. *Anser anser*) - Overgrazing, fouling and trampling leads to drastic changes of vegetation, reedbeds damage and soil erosion	- Transmits *Salmonella* to cattle - Damage to grassland and crops - Increases flood risk and accelerate bankside erosion - Deterioration of water quality	
Harmonia axyridis	Harlequin ladybird	Asia	-Wide range of habitats: farmlands, orchards, wetlands, forest margins	- Biocontrol - Accidental as contaminant of fruits, vegetables, flowers or other packed commodities - Natural spread (active flight)	- Displaces native species, overall native coccinellids (e.g. *Adalia bipunctata*) through predation and competition for space and resources - Changes in upper trophic levels	- Home and building infestation, damaging furniture, causing bites and allergic reactions - Pest of pear, grape, raspberry, potato and apple agriculture	Great Britain, France, Belgium and The Netherlands
Mustela vison	American mink	North America	-Brook and riverbanks with dense vegetation, damp forests, reed beds and marshes	- Fur farming (escape or release) - Natural spread (active swimming)	- Reduces populations of prey (e.g. salmonids, amphibians, waterfowl, rodents) - Affects critically endangered ground nesting birds - Displaces native species (e.g. *M. lutreola, M. putorius*) - Transmits diseases	- Affects trout and salmon hatcheries, poultry farms and sheep farms by preying on animals - Propagates influenza virus	Great Britain, France, Belgium and The Netherlands
Sciurus carolinensis	Grey squirrel	North America	-Natural and planted forests, parks, shrublands -Mature deciduous woodlands	- Pet trade	- Displaces native species (e.g. *Sciurus vulgaris*) through competitive exclusion leading to their local extinction - Transmits diseases (parapoxvirus) - Damage woodlands through bark stripping (e.g. sycamore and beech)	- Garden pest (digs up bulbs, eats the bark of ornamental plants)	Great Britain, Belgium and The Netherlands
Fallopia japonica	Japanese knotweed	Eastern Asia (Japan)	-Urban areas and riverbanks -Edge of arable fields, roadsides and parks	- Ornamental trade - Introduced to stabilise soil in coastal areas - Translocation of infested machinery/equipment - Fragments attached to animals - Garden waste	- Forms dense stands that shades and crowds out native vegetation - Reduced species diversity - Alters habitat affecting native fauna - Increased risk of flooding and bank erosion	- Prolific rhizome and shoot growth can damage foundations, walls, pavements, drainage works, and flood prevention structures	Great Britain, France, Belgium and The Netherlands
Heracleum mantegazzianum	Giant hogweed	Asia (Azerbaijan, Georgia, Russian Federation)	-Lowland riverbanks -Waste ground - Rough pastures -Open grasslands -Along roadsides	- Ornamental trade	- Loss of biodiversity - Forms a dense canopy that outcompetes other native vegetation - Increases soil erosion - Hybridises with European native *Heracleum sphondylium*	- Produces phytotoxic sap that provokes burning in the skin - Affects tourism lowering the recreational value of invaded lands - Problematic weed to agricultural and urban environments	Great Britain, France, Belgium and The Netherlands
Impatiens glandulifera	Himalayan balsam	Asia (India)	-Soft riverbanks by slow-moving streams and rivers -Moist and semi-shaded places -Waste ground -Woodlands	- Ornamental trade - Transportation of infested machinery or material - Passive dispersal with water currents - Natural spread by explosive dehiscence of seed capsules - Cling to the shoes or clothes of hikers	- Displaces other native species shading them out and producing much nectar that attracts most pollinators - Negatively affect wildlife habitat - Promotes erosion - Impedes flow	- Increase the risk of flooding	Great Britain, France, Belgium and The Netherlands

3.3 The INS distribution modelling

A total of 72 species were modelled, 42 from the Alert list and 30 from the Black list of INS.

The accuracy of models ranged from 0.90 to 0.99 AUC, which can be considered a very high quality. A summary of modelling outputs, including accuracy, the contribution of each predictor to the model and % of RINSE area predicted suitable for the species can be consulted in Annex E.

3.3.1 Modelling the potential distribution of Alert INS

Alert terrestrial plants

Temperature seasonality and annual mean temperature were the most important environmental variables explaining the potential distribution of Alert terrestrial plants. The suitability for most terrestrial plants was greater at an average annual temperature of 15-20°C (Figure 24). Bush currant (*M. calvescens)* and American rope (*M. micrantha)* showed preference for higher average temperatures of approximately 25°C, while the blady grass (*I. cylindrica)* and Kudzu (*P. lobata montana)* maximum suitability was located at lower temperatures of 10-20°C (Fig. 24). Amongst socio-economic factors, closeness to roads and the human influence index also seemed to exert a significant influence on their distribution. All terrestrial plants showed an almost linear response to the human influence index, with increasing suitability at HII>20 (Fig. 24).

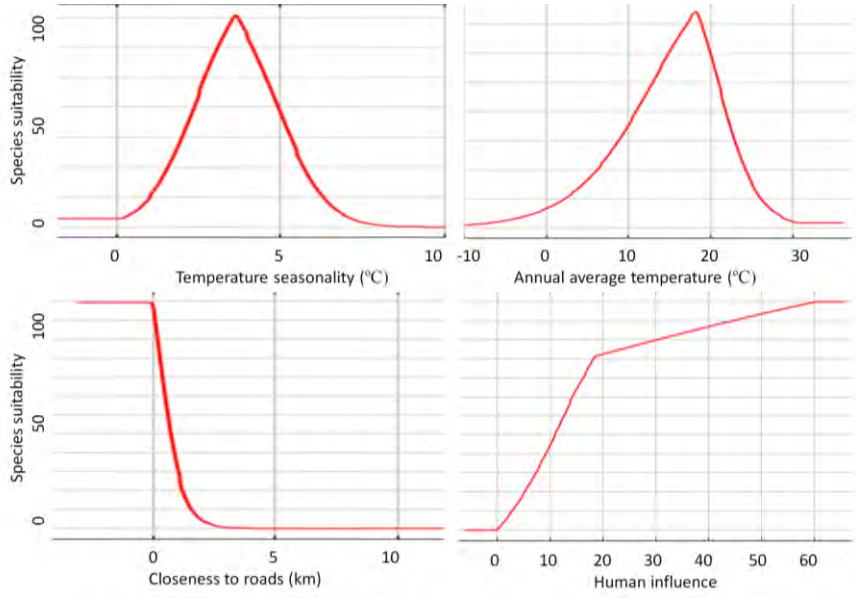


Figure 24. Response of Alert terrestrial plants to the most important drivers of their current global distribution. Graphs correspond to *Rubus ellipticus* as representative example.

Spatially, most species showed relatively low risk scores in the four RINSE countries (Figure 25), with the exception of the Asian wild raspberry (*R. ellipticus*), South-American Brazilian holly (*S. terebinthifolius*) and Asian salt cedar (*T. ramossisima*). These three species obtained very high scores in the risk assessing exercise (>3) and therefore their risk should not be dismissed, overall because most of them are introduced for ornamental/horticultural purposes and their trade has not been restricted in the area. It has to be noted, however, that low suitability scores for terrestrial plants might be data-driven, related to a very high number of global presence records that results in modelled distributions very tight around already invaded areas, and very low suitability scores elsewhere.

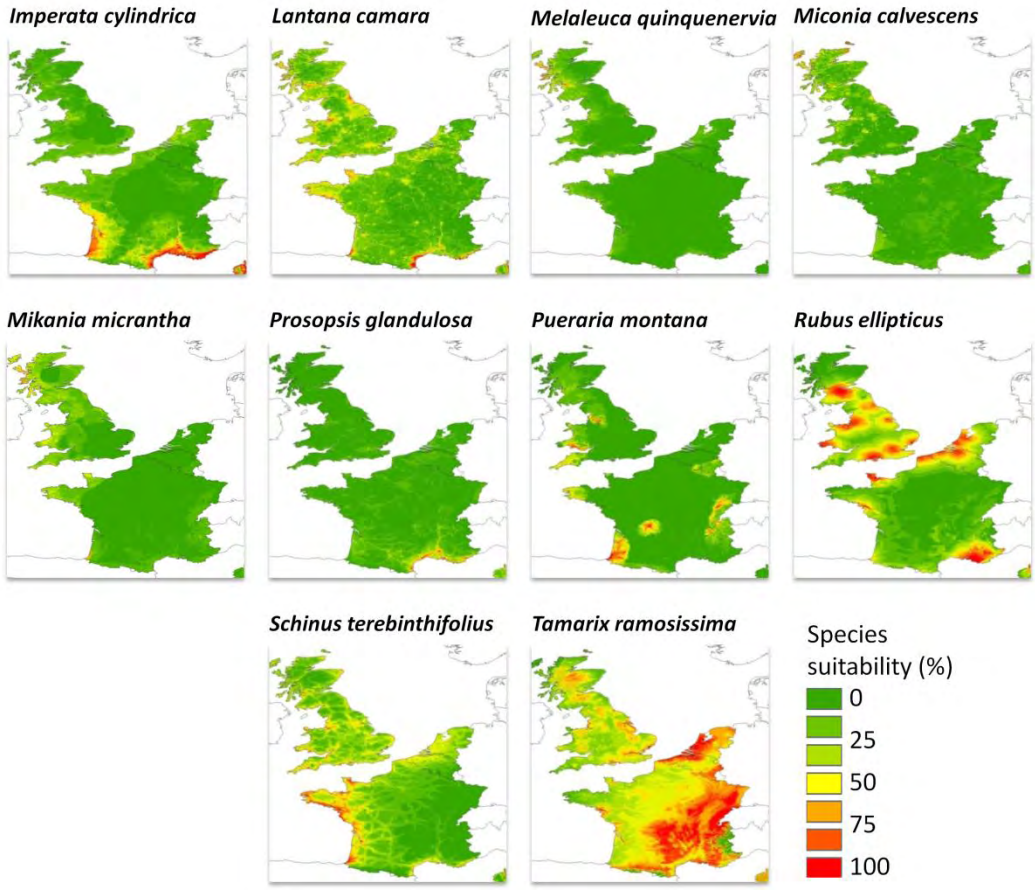


Figure 25. Predicted distribution of 10 Alert plants in the RINSE region. Likelihood of establishment ranges from 0% when conditions are completely different from the current range of the species to 100% when conditions match perfectly.

Alert terrestrial animals

The most important contributor to Alert terrestrial animal models was minimum temperature of the coldest month (Figure 26). For instance, this variable contributed more than 70% to the models of the apple snail (*P. canaliculata)* and yellow crazy ant (*A. gracillipes*). Some species showed maximum

suitability at very cold temperatures including the Barbary sheep (*A. lervia*), American bison (*B. bison*), Canadian beaver (*C. canadensis)* and painted turtle (*C. picta*). On the contrary, yellow crazy ant (*A. gracillipes),* brown tree snake (*B. irregularis*), Finlayson's squirrel (*C. finlaysonii*), cannibal snail (*E. rosea*), Indian muntjak *(M. muntjak)* and apple snail (*P. canaliculata*) showed maximum suitability at warm temperatures between 10 and 20ºC. Closeness to roads and the human influence index were the socio-economic factors most influencing over species distribution, while population density was often dropped during model optimization.

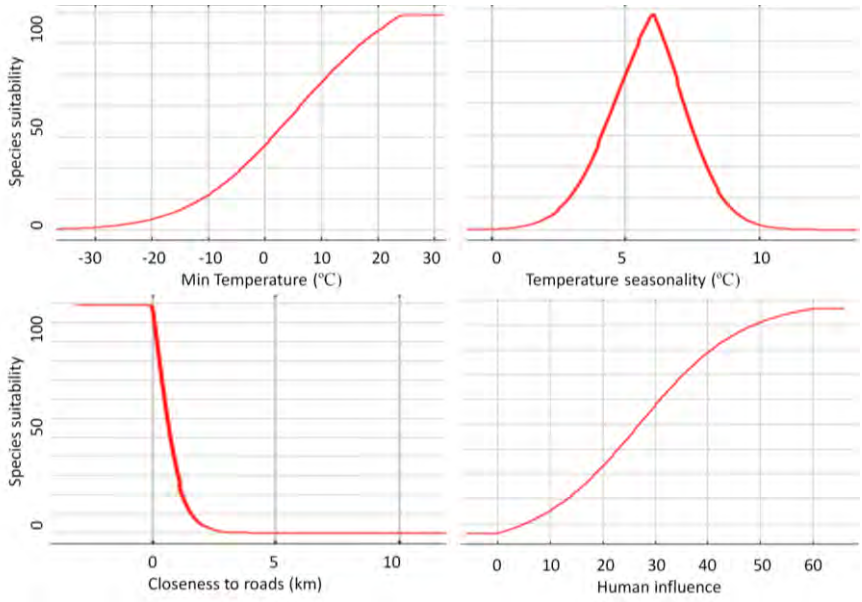


Figure 26. Response of Alert terrestrial animals to the most important drivers of their current global distribution. Graphs correspond to *Muntiacus muntjak* as representative example.

The Finlayson's squirrel and apple snail featured highest risk scores in RINSE countries, overall in coastal and urban areas (Figure 27). The apple snail is mostly considered aquatic, , although in this study we included it along with terrestrial animals because it colonises both terrestrial and aquatic plants. Suitability for the cannibal snail (*E. rosea*) and Indian muntjak (*M. muntjak*) was also relatively high close to urban areas (Figure 27).

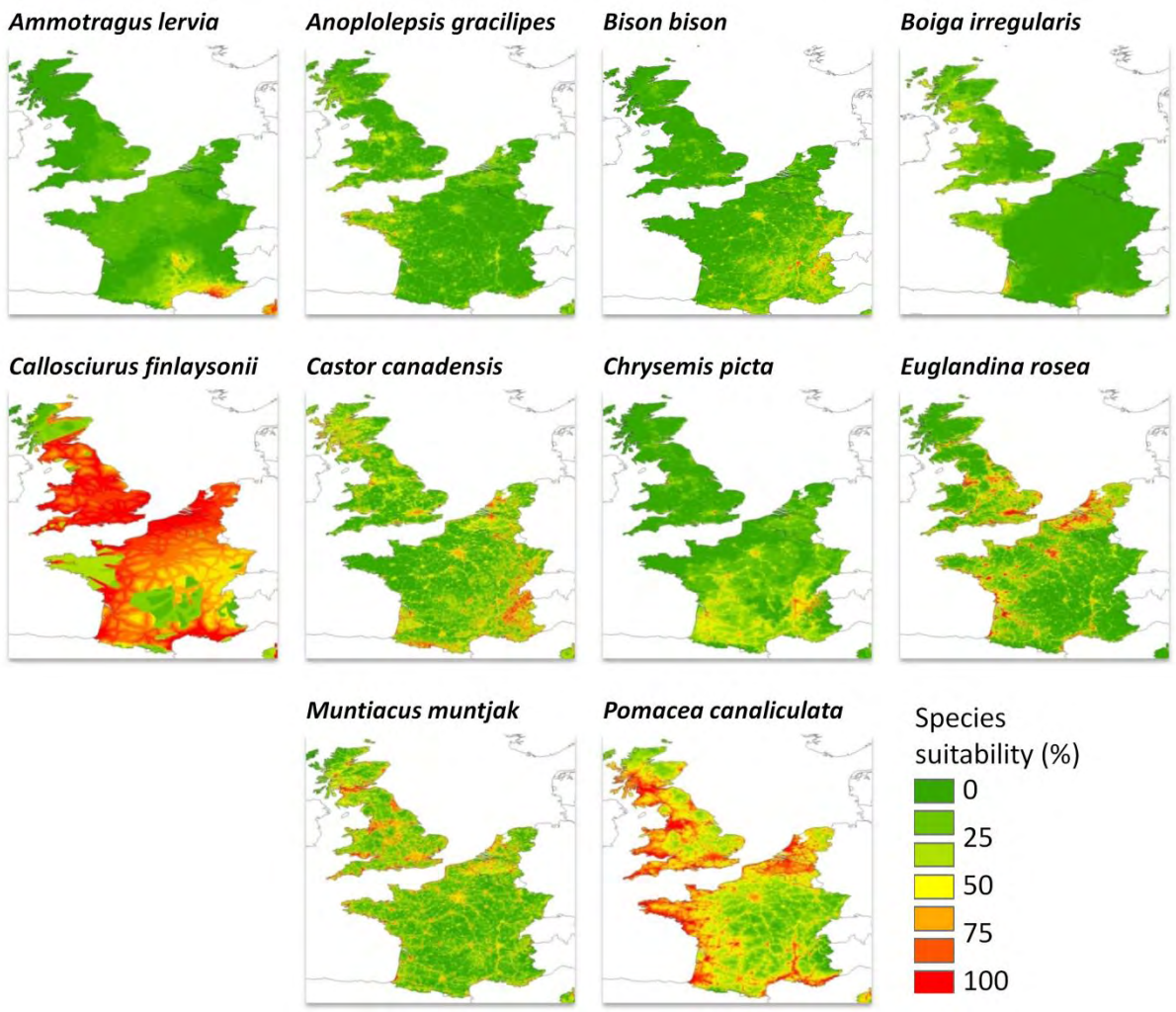


Figure 27. Predicted distribution of 10 Alert terrestrial animals in the RINSE region. Likelihood of establishment ranges from 0% when conditions are completely different from the current range of the species to 100% when conditions match perfectly.

Alert aquatic inland organisms

As for terrestrial animals, minimum temperature was also important to explain the distribution of aquatic inland species, overall Ponto-Caspian species such as the fishhook waterflea (*C. pengoi),* Ponto-Caspian shrimps (*C. warpachowski, O. obesus, P. robustoides),* tubenose goby *(N. gymnotrachelus)* and Danube snail (*T. danubialis)*. Ponto-Caspian species showed optima of 10ºC approximately (Figure 28), whereas species originating from more tropical or subtropical environments showed much higher optima: walking catfish (*C. batrachus)* 20-25ºC, Nile perch (*L. niloticus)* >20ºC. Average temperature was able to explain by itself up to 80% of the global distribution of the latter.

Another important driver of the distribution of aquatic inland INS was closeness to commercial ports, a major vector of aquatic invaders around the world (Figure 28). For instance, port closeness

explained 60% of the global distribution of the American shrimp (*G. fasciatus),* which featured highest suitability within 500km of commercial ports. Population density and closeness to roads were the least significant predictors of aquatic inland models.

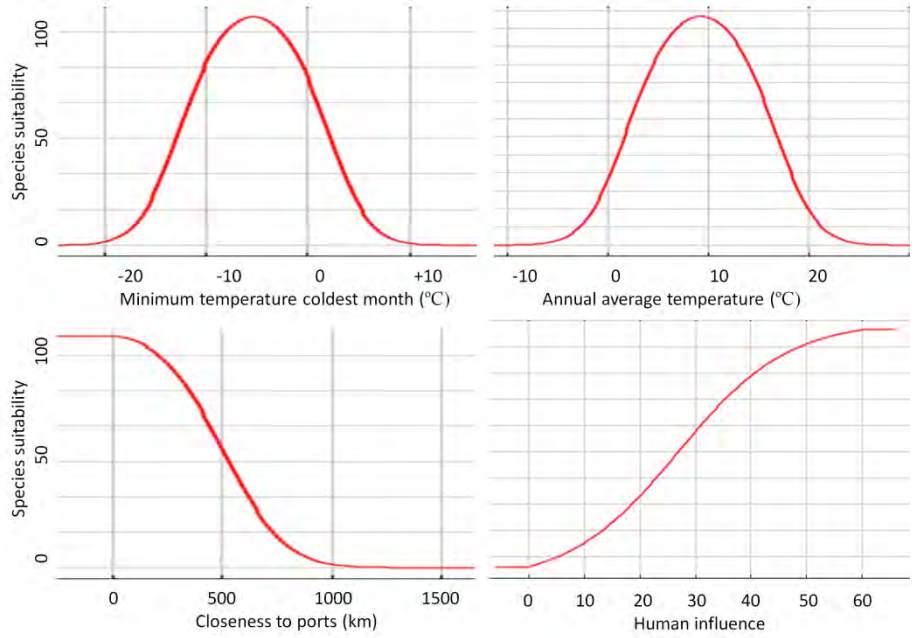


Figure 28. Response of Alert aquatic inland organisms to the most important drivers of their current global distribution. Graphs correspond to *Neogobius gymnotrachelus* as representative example.

Suitability scores for aquatic inland INS were generally highest around the southern part of the North Sea: SE England, The Netherlands, Belgium and NE France (Figure 29). Suitability was particularly high for Ponto-Caspian species such as *C. warpachowski, N. gymnotrachelus* and *P. robustoides*, as well as for *G. fasciatus* and *T. danubialis*. On the other hand, suitability scores were low for *C. batrachus*, *A. dispar* and *L. niloticus,* reflecting their preference for warmer waters.

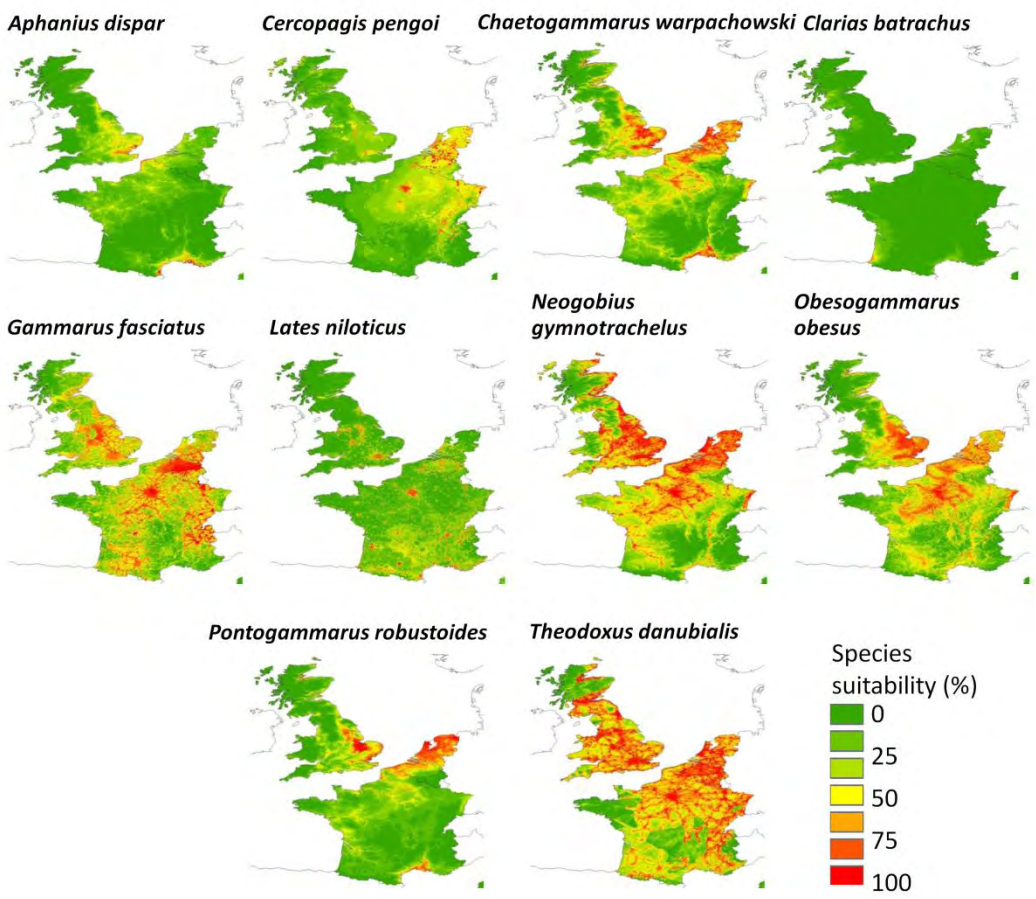


Figure 29. Predicted distribution of 10 Alert aquatic inland species in the RINSE region. Likelihood of establishment ranges from 0% when conditions are completely different from the current range of the species to 100% when conditions match perfectly.

Alert marine organisms

The concentration of nitrate and minimum sea surface temperature were the most important contributors to marine INS models. Most species showed decreasing suitability at nitrate concentration > 0.125 mg/L NO_3 (Figure 30), with the exception of the queen crab (*C. opilio,* optima between 0.31 and 0.62 mg/L NO_3), Amur clam (*P. amurensis,* optima between 0.125 and 0.31 mg/L NO_3) and red king crab (*P. camtschaticus,* optima between 0.182 and 0.62 mg/L NO_3). Responses to minimum water temperature were variable, and reflected the tropical/Mediterranean origin of some of the evaluated marine species like the Limu hoku (*A. taxiformis*), blue swimming crab (*P. pelagicus*), lesser amberjack (*S. fasciata)* and dusky spinefoot (*S. rivulatus*), which showed high suitability at minimum temperatures between 15 and 25ºC. In contrast, species originating from northern seas showed much lower temperature optimum: A. *amurensis* (-2 to 4ºC), *C. opilio* (0-4ºC), *P. amurensis* (0-15ºC) and *P. camtschaticus* (0-3ºC). Contrary to our expectations, marine influence contributed very little to distribution models (< 1% contribution on average). Nonetheless it is

interesting to note the logistic hump-shaped response that all marine species showed towards increasing marine degradation (Figure 30).

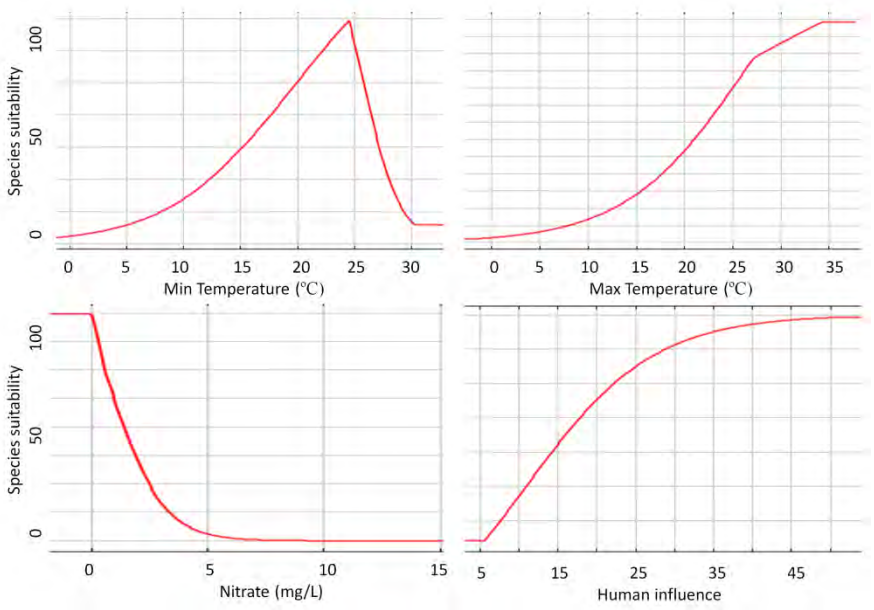


Figure 30. Response of Alert aquatic organisms to the most important drivers of their current global distribution. Graphs correspond to *Seriola fasciata* as representative example.

Risk scores were almost negligible in the RINSE region, which might be related to the predominant tropical/Mediterranean origin of species and hence preference for warmer waters. Some species showed moderate suitability scores in The Netherlands delta between the ports of Antwerp and Rotterdam, including: the queen crab (*C. opilio*), blue-spotted cornetfish *(F. commersoni),* red king crab (*P. camtschaticus*) and true lizardfish (*S. undosquamis*) (Figure 31). Because most of these species are introduced through commercial activities, their risk of introduction should not be underestimated even if limited to this small geographic region.

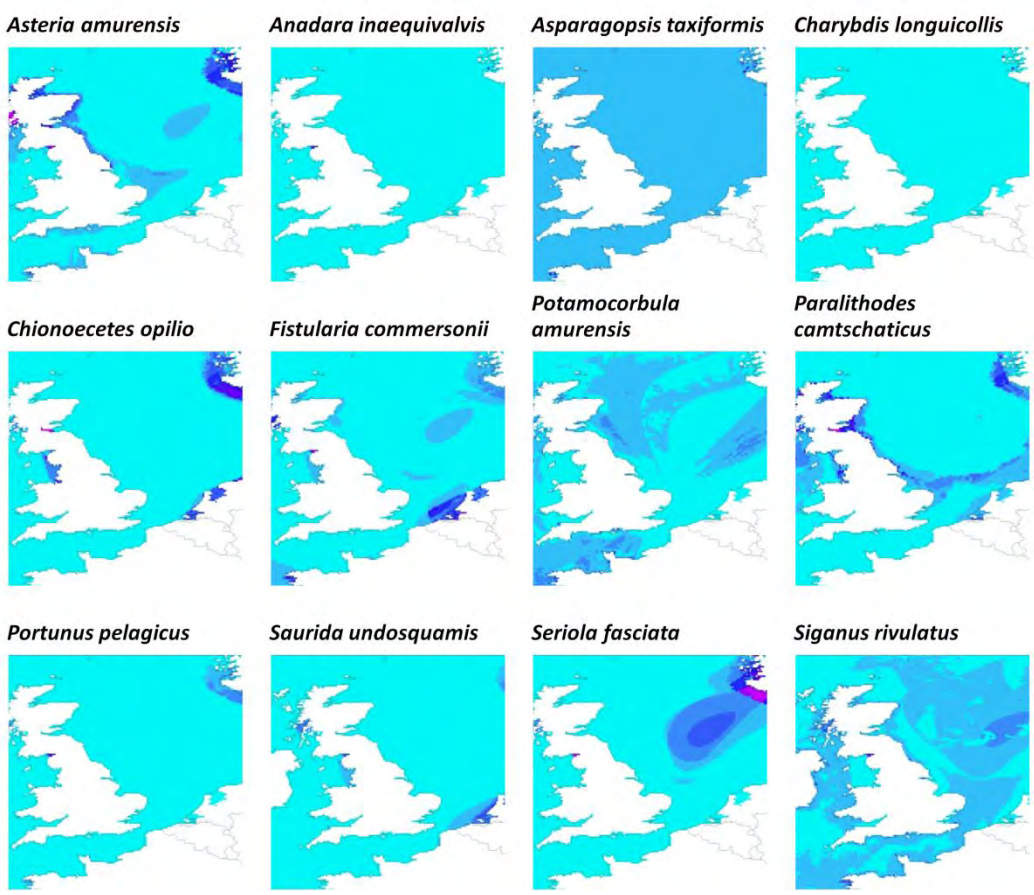


Figure 31. Predicted distribution of 12 Alert marine species in the RINSE region. Likelihood of establishment ranges from 0% when conditions are completely different from the current range of the species to 100% when conditions match perfectly.

Alert INS Heat map

All individual species maps were converted into simpler presence/absence maps using the threshold maximising each species predicted distribution. Maps were subsequently combined to generate 'heat maps' that reflect spatially the total number of species predicted present (Figure 32). The heat map highlighted port and urban areas around the British Channel and southern part of the North Sea as potential hot-spots of invasive species. The surroundings of commercial ports like the Thames, Southampton, Rotterdam, Antwerp and Boulogne-Sur-Mer showed the highest number of potential invaders, with up to 25 different Alert INS predicted present. Major urban areas like London, Liverpool, Paris, Amsterdam, Utrecht, Gent or Brussels can also be important gateways according to our Alert heat map. By countries, most of The Netherlands and Belgium were under threat of multiple invasions. Within England, the risk was highest in the SE (e.g. East Midlands, London and South-East of England), whereas in France it was highest in the NE (e.g. Nord-Pas-de-Calais and Ile-de-France).

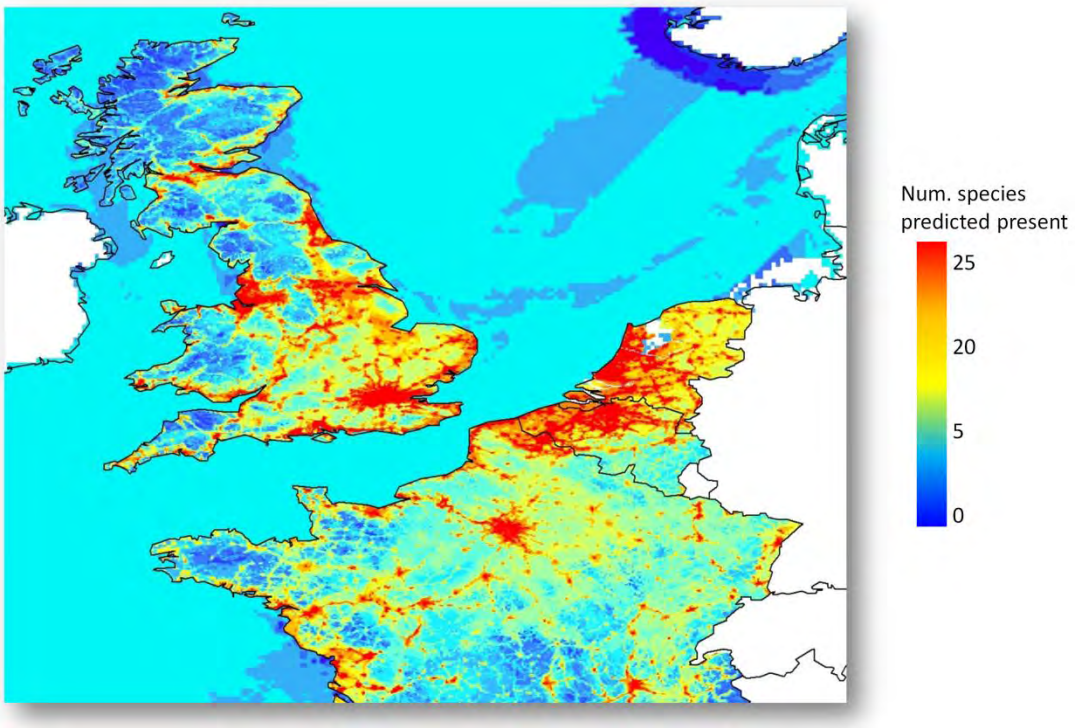


Figure 32. Heat map showing cumulative probability of presence of 42 invasive species included in the Alert List of INS.

3.3.1 Modelling the potential distribution of Black List species

All species modelled from the Black List are present in at least one of the RINSE countries. As opposed to the mostly preventive nature of Alert INS maps, in this case suitability maps can serve a) to prevent the introduction of INS into RINSE countries where a Black List INS is not yet present, b) to evaluate INS potential distribution under a 'worst case' scenario, and c) evaluate the most important drivers of their distribution.

Black terrestrial plants

Temperature was the most important driver of Black terrestrial plants. For instance, minimum temperature of the coldest month was able to explain more than 60% of the distribution of the Hottentot fig (*C. edulis*) and prickly-pear cacti (*O. ficus-indica*). *C. edulis* is already present in England, France and Belgium but not yet in The Netherlands, where according to our models coastal areas could provide suitable areas for its expansion. Likewise, the Pampa grass (*C. selloana*) has not been reported from The Netherlands yet, although our models suggest vast parts of the country might be susceptible to its invasion (Figure 33). The silver wattle (*A. dealbata*), wild cucumber (*E. lobata*), prickly-pear cacti (*O. ficus-indicai)* and Bermuda buttercup (*O. pres caprae*) are ornamental plants

present in France that might pose a threat to urban and coastal areas and whose prevention towards other RINSE countries is fundamental (Figure 33).

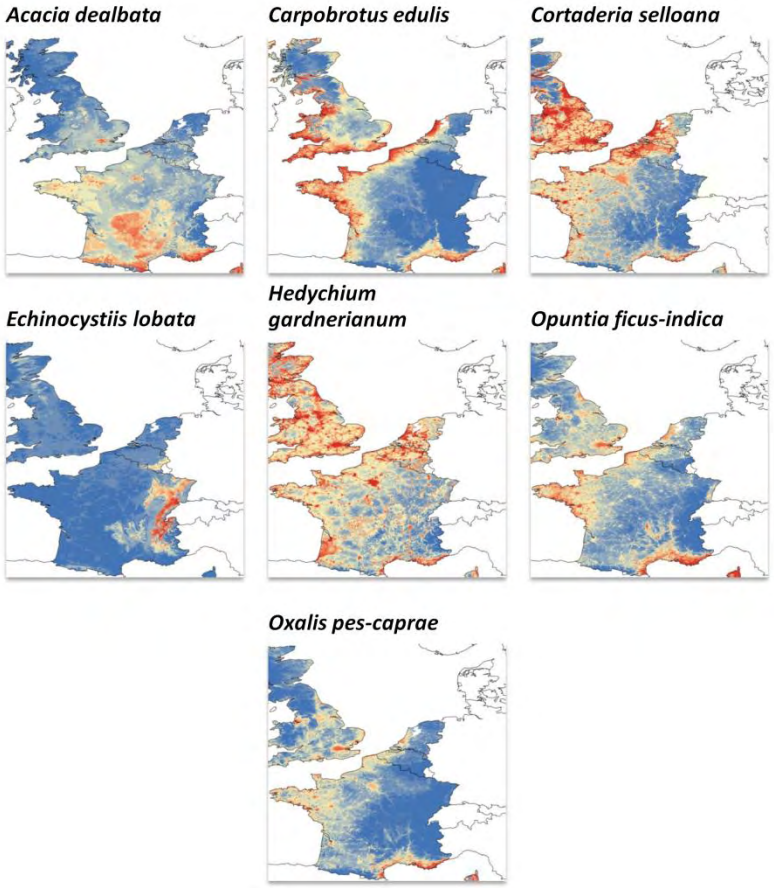


Figure 33. Predicted distribution of 7 Black terrestrial plants in the RINSE region. Likelihood of establishment ranges from 0% when conditions are completely different from the current range of the species (blue colour) to 100% when conditions match perfectly (red colour).

Black terrestrial animals

Minimum temperature of the coldest month and temperature seasonality were fundamental to explain the distribution of Black terrestrial animals. Socio-economic factors were in this case particularly relevant, overall the human influence index (able to explain more than 20% of the distribution of the Argentine ant, *L. humile*, and the Mediterranean fruit fly, *C. capitata*) and port closeness (relevant for the grey squirrel, *S. carolinensis*, and Asian longhorn beetle, *A. glabripennis*). Spatially, the influence of socio-economic factors can be noted in higher suitability scores in urban areas and along transport routes like roads and ports (red colours of Figure 34). Most of the evaluated INS are ornamental species introduced intentionally and that are eventually released or escape from captivity, which explains the high influence of socio-economic factors.

The potential distribution of the Asian tiger mosquito (*A. albopictus*) seems to be closely related to roads (Figure 34). Actually the tyre market has been often pointed as one of the main spread vectors of this species, which showcases limited flying dispersal (200-400 km). The presence of the tiger mosquito in central and northern Europe is still sporadic, its distribution being rather restricted to the South (e.g. Italy, Greece). Its suitability is nevertheless notable in the southern part of France, and it has been observed in Belgium and The Netherlands (Figure 34). The Asian longhorn beetle is only predicted present in the E of France (Figure 34), although the species has been eventually observed in all four countries (isolated observations quickly eradicated in Belgium and The Netherlands). Reports of tobacco whitefly (*B. tabaci*) were also incidental, and suitability of the area for the species is not notable (Figure 34). The potential distribution of the Mediterranean fruit fly (*C. capitata*) and Argentine ant (*L. humile*) were closely associated to urban, disturbed areas and transport routes (Figure 34). However, we might expect *C. capitata* to present a rather Mediterranean distribution and is not likely to present a serious threat to the four areas within RINSE countries. The Argentine ant on the contrary is already widespread in Europe and likely to keep spreading as contaminant of natural products originating from South America or other infested regions. The oak processionary moth, *T. processionea*, is native to France and has probably spread to other RINSE countries imported as contaminant of oak trees. Since its distribution in England is still limited, its control might be feasible. The Asian hornet, *V. vepulina*, is rapidly spreading in France where it was first detected in 2004. Belgium is the only country showing relatively high risk scores for this species (Figure 34), although its ability to adapt to colder climates should not be disregarded. The grey squirrel (*S. carolinensis*) is widely distributed in Great Britain, where it was introduced in the 19th century, and might represent a threat to the north of France, Belgium and The Netherlands (Figure 34).

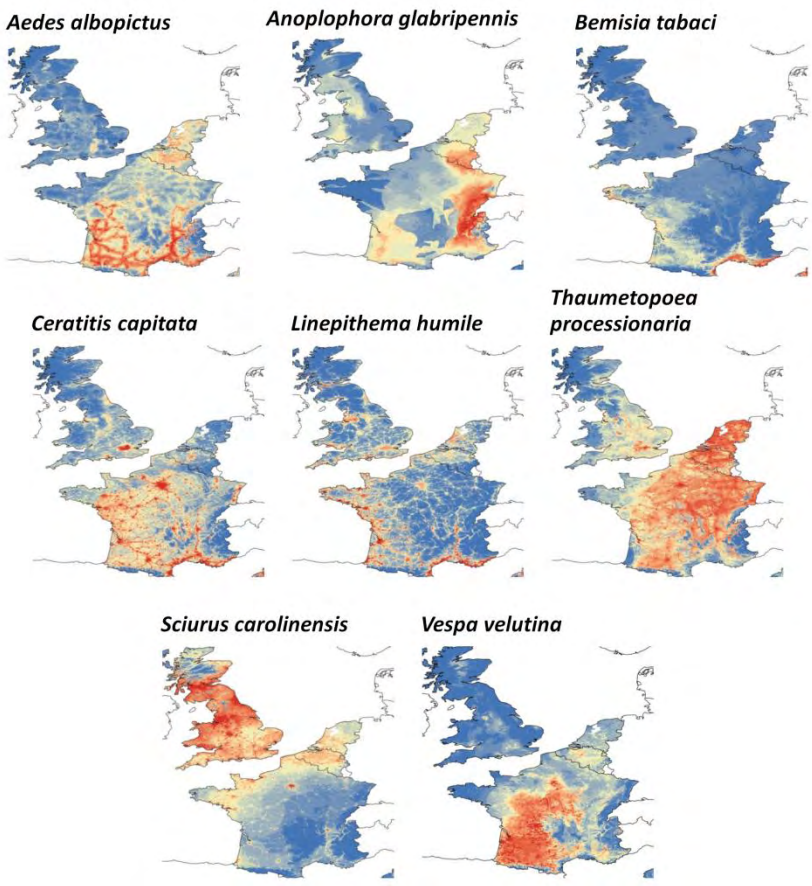


Figure 34. Predicted distribution of 9 Black terrestrial animals in the RINSE region. Likelihood of establishment ranges from 0% when conditions are completely different from the current range of the species (blue colour) to 100% when conditions match perfectly (red colour).

Black aquatic inland organisms

From seven aquatic inland organisms modelled, the water milfoil (*M. heterophyllum*), tubenose goby (*P. marmoratus*), eel swim bladder nematode (*A. crassus*) and quagga mussel (*D. r. bugensis*) showed highest risk scores (Figure 35). The tubenose goby and quagga mussel have been spreading through the Danube corridor in the last decades and have recently arrived to the lower Rhine, from where they might jump to Great Britain as contaminant of ballast water or fouling boat hulls. The quagga mussel is an aggressive invader with similar impacts to the zebra mussel, which is considered one of the worst invasive species worldwide. Its introduction to suitable areas in the SE of England, Belgium and parts of France could be potentially devastating and should be thus prevented (Figure 35). The eel swim bladder nematode is a parasite of eels whose distribution is often associated to aquaculture activities, potentially affecting coastal regions of all four countries (Figure 35). On the contrary, models suggested low risk scores for the Carolina water-shield (*C. caroliniana*), water hyacinth (*E. crassipes*) and round goby (*N. melanostomus*) (Figure 35).

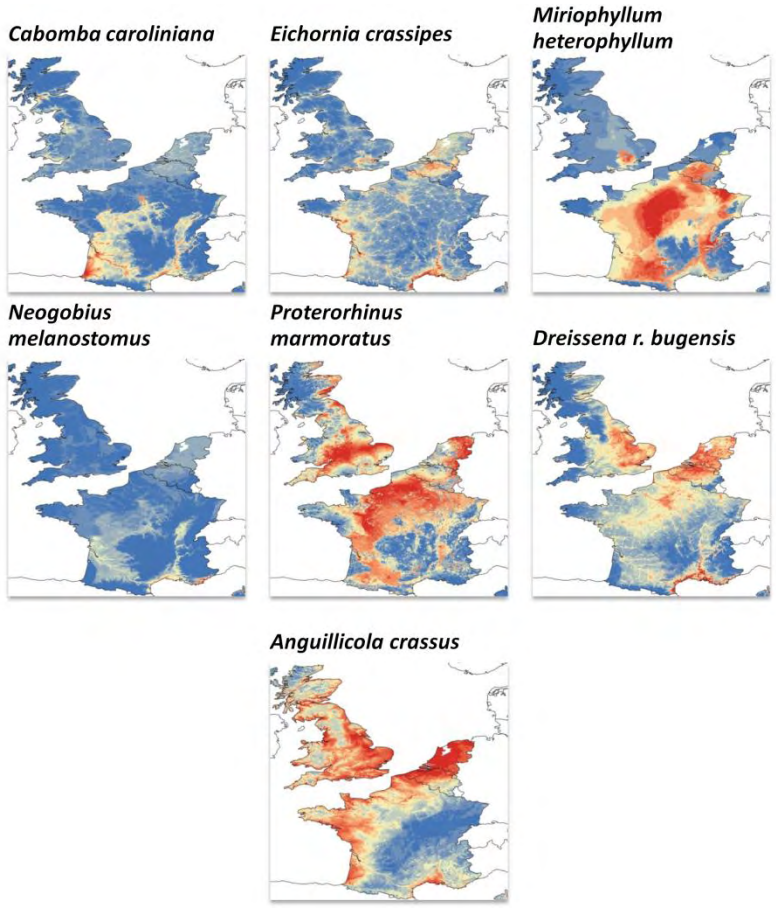


Figure 35. Predicted distribution of 7 Black aquatic inland species in the RINSE region. Likelihood of establishment ranges from 0% when conditions are completely different from the current range of the species (blue colour) to 100% when conditions match perfectly (red colour).

Black marine organisms

In contrast to marine Alert INS, the RINSE region showed high suitability for Black marine INS, overall the Red tide dinoflagellate (*A. catenella),* diatom *C. wailesii* and to a lower extent the green sea fingers (*C. fragile)* and Japanese kelp (*U. pinnatifida*) (Figure 36). Some of these species have a very limited distribution in the RINSE region, thus their spread towards other RINSE countries might be prevented. The risk is especially high for *A. catenella* (Figure 36), a plancktonic dinoflagellate with very high dispersal capabilities with water currents and potentially devastating ecological effects. The Japanese kelp is distributed along the southern part of the study area and models suggest certain potential for expansion northwards, along the British coast (Figure 36). In contrast, *C. wailessi* and *C. fragile* are already widespread in the study area, so management in this case should be rather directed to local eradication of the species where possible, rather than prevention. On the other hand, suitability was relatively low for the acorn barnacle (*B. improvisus*), Asian date mussel (*M. senhousia*) and caulerpa (*C. taxifolia*) (Figure 36).

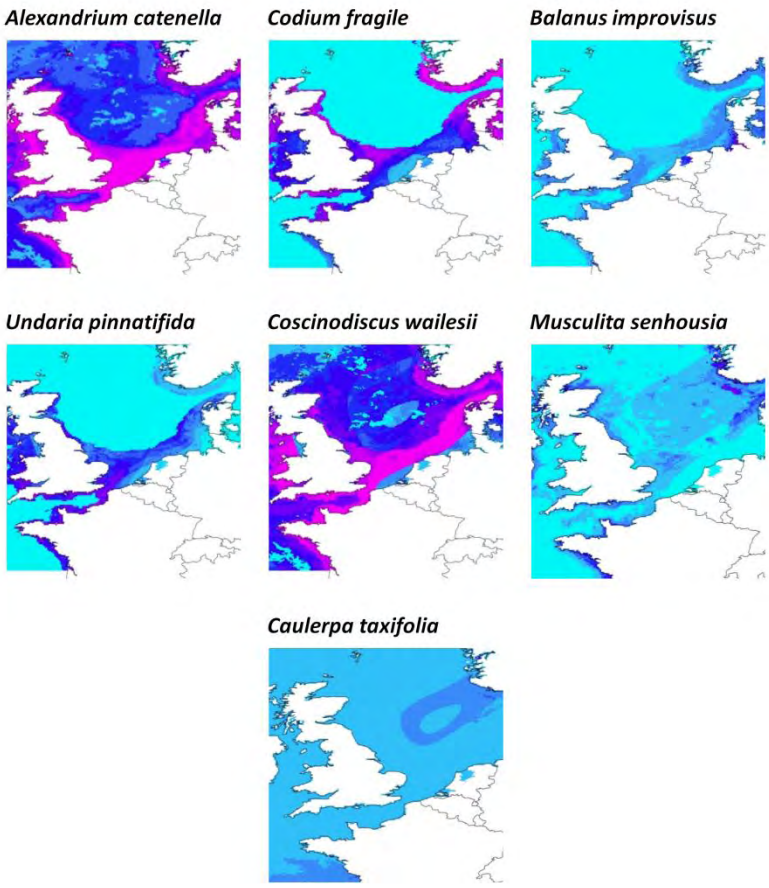


Figure 36. Predicted distribution of 7 Black marine organisms in the RINSE region. Likelihood of establishment ranges from 0% when conditions are completely different from the current range of the species (blue colour) to 100% when conditions match perfectly (red colour).

Black INS Heat map

Cumulative risk scores were in general higher for Black in comparison to Alert INS as might be expected, since the RINSE region has already proved to be suitable for Black INS. Suitability was generally highest around the southern part of the North Sea and decreased towards the NW in Great Britain, and towards the SE in France, Belgium and The Netherlands (Figure 37). By countries, a great proportion of Belgium and The Netherlands was suitable to multiple species, while in France and Great Britain the area affected was more limited (Figure 37). Within countries, disturbed urban and coastal areas and transport hubs like ports and roads seem to be more prone to invasion (Figure 37). In the marine environment, combined suitability was high in the East part of the British Channel and SW of the North Sea, along the coast of RINSE countries, reflecting the preference of most species for coastal waters, usually warm, nutrient rich, with available substrates to settle and potentially high propagule pressure (Figure 37).

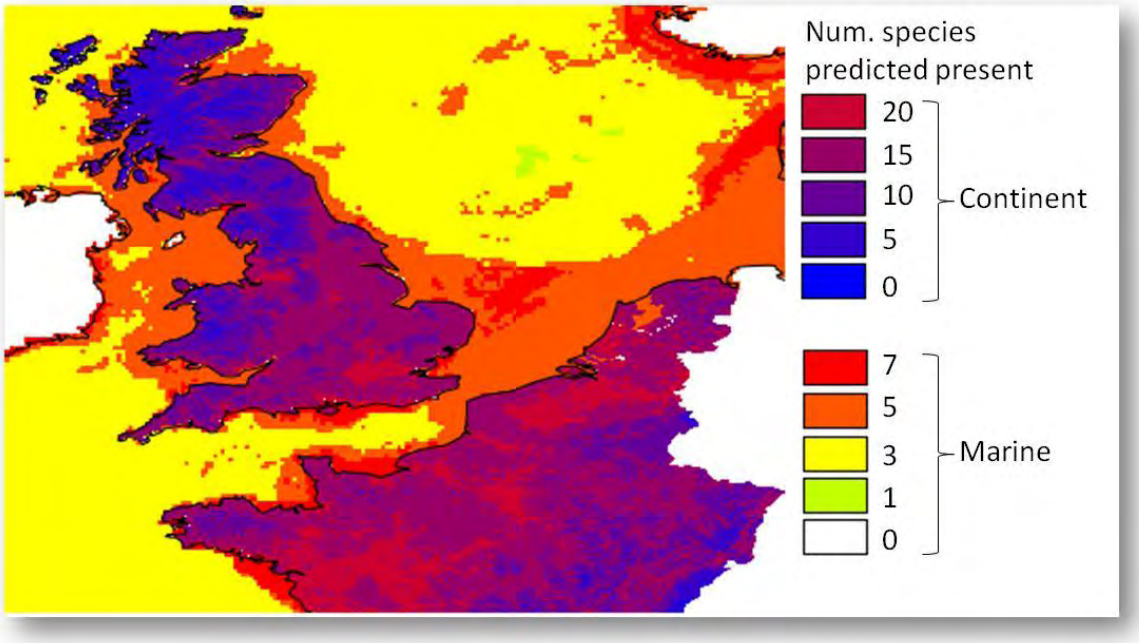


Figure 37. Heat map showing cumulative probability of presence of 31 invasive species included in the Black List of INS.

4. DISCUSSION

4.1 Non-Native Species registry

4.1.1 Distribution of species across countries

Our data indicates that Great Britain features the largest number of non-native species, followed by France, The Netherlands and finally, Belgium. This trend correlates with respective RINSE country areas, with the exception of France, which is by far the biggest country and may thus be expected to lead the list.

A reason for the comparatively high number of NNS registered in Great Britain could be due to the fact that it is an island, characterised by a somewhat different set of native species than continental RINSE countries (Hulme, 2009). Alternatively, the comparatively low number of registered NNS of France could be due to the lack of information from this country at a similar scale and quality as from other countries. Whilst specific databases exist for Great Britain (e.g. Great Britain Non-native Species Information Portal), Belgium (e.g. Harmonia database) and The Netherlands (e.g. Nederlands Soortenregister) that allowed complementing information from more general sources (e.g. DAISIE Delivering Alien Invasive Species Inventories for Europe), nothing similar exists for France.

Poor data availability was also the most likely reason for the low number of NNS we were able to confirm as being present in the French RINSE area. Although the French RINSE area is by no means

the smallest of the four countries (Figure 3), according to our database, it features by far the lowest number of NNS of the four RINSE countries. We believe that this surprising observation is an artefact caused by the poor quality of data on geographic distribution of species in France. For example, the British National Biodiversity Network gateway provides detailed geographic information on species presence in Great Britain, which allowed us to confirm that at least 52% of NNS present in Great Britain are located within the RINSE area. For Belgium and The Netherlands we relied on mainly three web-pages (http://waarnemingen.be, http://waarneming.nl/index.php and http://www.nlbif.nl/) which provide updated information on species distribution and recent sightings. At least 56 and 68% of non-native species present in The Netherlands and Belgium could thereby be positively located within the RINSE area. In contrast, for France no similar data gateway was found. The gateway at Inventaire National du Patrimoine Naturel initially seemed relevant but unfortunately, turned out to contain only limited records which were usually insufficient for our purposes. As a result, data on NNS distribution across France had to be gathered from global gateways such as the Global Biodiversity Information Facility and the Ocean Biogeographic Information System OBIS. The relatively low percentage of non-native species present within the French RINSE area (22%) might therefore be due to the lack of geographic information available for this country.

In general, we should note that determination of which species are present with the RINSE study area not only differed considerably between countries but was also very difficult. As a consequence, we would like to emphasise at this point that we cannot confirm that any of the species present in a particular country is in fact absent from the RINSE area.

Cluster analysis of Jaccard similarity coefficients indicated that France was the country for which the non-native species inventory is most dissimilar from the other RINSE countries. This observation is most easily explained by the fact that France contains Mediterranean areas that differ considerably in eco-climatic conditions from those prevalent in the other study countries. As a consequence, this area is prone to host a rather different set of both native and non-native flora and fauna than the colder and wetter areas characteristics of the remaining RINSE countries (see Introduction section on importance of eco-climatic factors on geographic distribution of species). This argument is further supported by results of cluster analysis of only RINSE area species, which identified Great Britain as the most dissimilar from the four RINSE areas. Given that eco-climatic conditions are rather similar across the whole of the RINSE area, we argue that this could be explained by the fact that Great Britain is an island, which may to some extent inhibit species dispersal and transport to and from continental RINSE countries. Despite intensive trade and transport links between Great Britain and

the continent (Hulme, 2009), dispersal of NNS to and from Great Britain to the RINSE countries is apparently still more restricted than in between continental RINSE countries.

4.1.2 Distribution of species across phyla and environments

By far the largest number of NNS in our database belongs to the phylum of Arthropoda, counting about three times as many NNS as the second largest group, the Chordata, and four times as many as the Angiospermae. Although the enormous number of non-native arthropods seems excessive at first, we in fact regard it as a relative underestimation compared to most other taxa. This is because on the global scale, arthropods make up more than 80% of all described, living species (Mora *et al.*, 2011). In comparison, plants make up only about 10%, and Chordata even less than 1% of species. Against this background, one may expect the real number of non-native arthropods present in RINSE countries to exceed the 1,785 listed in our database by at least another 1,000 species. Some of these arthropods may in fact be listed in databases we decided not to consider for this phylum (e.g. NNSS, see Table 3) for reasons explained in the Results section. Other non-native arthropod species may, however, not have been recorded at all in any of the four countries yet, despite being present there.

Another curiosity of our dataset is that in comparison to other phyla such as chordates, angiosperms and several others, only a small proportion of arthropods listed as present in RINSE countries could be confirmed for the four RINSE areas. We believe that the main reason for this observation is likely to be a difference in quality of distribution data between phyla. Arthropods are rather more difficult to identify and arguably less “attractive” than most chordate species. It is then not particularly surprising that these traits lead to a less complete account of distribution of these and some other less studied invertebrate groups.

Over three quarters of NNS present in the RINSE countries inhabit terrestrial habitats. To some extent, this dominance of terrestrial species may be a by-product of the bias towards chordate and particularly mammal species in the database. That is, an overrepresentation of mammals, which almost exclusively inhabit terrestrial habitats, will automatically result in an overrepresentation of terrestrial species. On the other hand, the aforementioned underrepresentation of Arthropoda – again, almost exclusively including terrestrial species – would be expected to counteract this bias. We thus argue that the vast majority of NNS in RINSE countries indeed inhabit terrestrial rather than marine or freshwater ecosystems. The comparatively large proportions of freshwater and marine species when focusing only on the four RINSE areas within countries, on the other hand, reflect the large proportion of aquatic habitats of RINSE.

4.1.3 Focus lists

Almost all Anseriformes (geese, ducks, swans), mammals, bony fish and flowering plants were deliberately introduced into RINSE countries, and mostly for ornamental reasons or leisure activities such as fishing. For plants, natural secondary dispersal from other introduced populations also played a considerable role. Many of those introduced ended up in the wild by escaping from captivity, though a considerable proportion – particularly of fish – was deliberately released by man. The solution to halt the majority of such introductions thus seems easy: "Don't introduce them in the first place."

Looking at the dates of introduction, however, it seems that the peak of importing such chordate and plant species has long passed and dates back to 30 to 100 years ago. In addition, as shown by our horizon scanning work, introduced mammals do not usually pose a serious ecological or economic threat to RINSE countries (Table 7). This may be due to their relatively slow rates of spread and the fact that most of them are herbivorous. Similar is true for non-native geese and their relatives, though there are exceptions such as the invasive Canada goose (Unckless & Makarewicz, 2007; Rehfisch *et al.*, 2010). Non-native fish, on the other hand, do involve some of the worst invaders, particularly in freshwater environments of RINSE countries (Pinder *et al.*, 2005). Our data indicates that they are spreading fast and most of them are feeding as predators, which could be a cause of their significant effects on native species and ecosystems.

Molluscs showed similarly high dispersal rates as fish, but they are different in one important aspect. In contrast to all other focus groups, most molluscs were unintentionally brought into RINSE countries. This is the case for both aquatic and terrestrial, and both filter-feeding and herbivorous molluscs. Preventing further introductions and spread of non-native molluscs is therefore likely to prove far more challenging than for the other focus group phyla. However, given the enormous impacts they can have (Ricciardi *et al.*, 1998; Hakenkamp *et al.*, 2001; Connelly *et al.*, 2007, Table 7), it seems worth the effort to try.

4.1.4 Further comments on the quality of available databases

- Quality and quantity of data included depends on the quality and quantity of information available from other sources. Our impression is that globally, DAISIE provides the best gateway, which is in accordance to all the experts consulted, but it is still quite limited.

- Discrepancies in the information provided by different sources were frequently identified. Particularly common were differences in distribution maps (i.e. presence/absence in RINSE country and RINSE area of each country) and dates of introductions.

- Some databases simply provide false information. For example, in the waarneming(en)-gateways, exotic and native species are regularly mislabelled. On http://waarnemingen.be, *Potamopyrgus antipodarum* and *Dreissena polymorpha* are incorrectly listed as 'native', whilst *Nucella lapillus*, *Janua pagenstecheri* and various other native species can be found under 'exotic' species.

4.2 Horizon Scanning of Invasive Non-native species

Most of the species identified as the worst invaders by the range of national and international organizations listed in Table 4 were already present in at least one of the RINSE countries (77%) and were therefore assigned to the Black List of INS. The remaining 23% of species formed the Alert List of INS absent from the RINSE region.

4.2.1 The Alert List of INS

In the Alert List, plants generally yielded higher risk scores in comparison to other types of organisms. Plants are certainly able to modify their habitat reducing the space and resources available to other species (e.g. Vilà *et al.*, 2006), alter nutrient cycles and fire regimes (e.g. Ehrenfeld, 2003; Brooks *et al.*, 2004), affect the composition of native communities often producing a net loss of species and/or a change towards a more disturbance adapted ecosystem (e.g. Manchester & Bullock, 2000; Hulme & Bremner, 2006), hybridize with native species (e.g. Vilà *et al.*, 2000), affect the availability of resources to higher trophic levels including key pollinators (e.g. Moragues & Traveset, 2005), change the cultural perception of human landscapes (e.g. Charles & Dukes, 2007), and affect the commercial production of agricultural and forest commodities (DAISIE, 2009). The risk of plant invasion is high in densely populated areas such as RINSE, overall considering that the majority of invasive plants in Europe have been intentionally introduced and cultivated for horticulture and ornamental purposes (58% of invasive plants according to DAISIE, 2009). Once established, the eradication of invasive plants is strategically difficult, quite often un-feasible, extremely costly and may ultimately produce little benefit, as concluded by Mack and Lonsdale (2002) after reviewing eradication campaigns in islands. Plants have therefore far reaching environmental and economic impacts, a high potential propagule pressure and are very difficult to control and eradicate, which altogether explain the high risk scores assigned to them during horizon scanning.

The top 12 Alert INS with highest risk scores included a mix of primary producers (*I. cylindrica, M. quinquenervia* and *P. montana lobata*), herbivores (*A. plannipenis, C. canadensis* and *P. canaliculata*), predators (*A. amurensis, N. gymnotrachelus, P. glenii, R. nomadica* and *S. invicta*) and

filter-feeders (*P. amurensis*). Even though many of these species are currently spread over mostly tropical to subtropical regions (e.g. Asia, Australia and Africa), the risk of invasion should not be underestimated because of their wide environmental tolerance and phenotypic plasticity (Davidson *et al.*, 2011).

Most of the top 12 Alert INS were not only absent from RINSE but they were also not present anywhere in Europe yet, which might reduce their risk of introduction in RINSE. The exceptions were four INS present in countries as close as Germany and Poland: the racer goby (*N. gymnotrachelus*), Amur sleeper (*P. glenii*), Canadian beaver (*C. canadensis*) and blady grass (*I. cylindrica*) (Table 8). With the exception of the racer goby, whose introduction is associated to the construction of canals and shipping, the ornamental/pet trade is one of the most important vectors for Alert INS. Deliberate introduction of INS into RINSE could be controlled by a better enforcement of existing laws and coordination of neighbouring countries. The importance of trade regulation was acknowledged by the European Commission in 2007 by publishing a list of INS prohibited for import in Europe. Trade regulation was strongly recommended for species not yet present in a particular region, which in the case of RINSE concerns at least 30 of the species in the Alert List such as the Kudzu (*P. lobata montana*), Finlayson's squirrel (*C. finlaysonii*), painted turtle (*C. picta*), Lesser amberjack (S*. fasciata*) and Sosnowski's hogweed (*H. sosnowsky*) (see the complete list of Alert INS with indication of their inclusion in the European Black List in Annex D).

A glaring example of lack of law enforcement is provided by the blady grass (*I. cylindrica,* also known as Red Baron, Rubra or Japanese blood). The blady grass affects the habitat structure, nutrient cycles, soil microbiological communities, decomposition rates, displaces native species, poses a serious threat to endangered native species, increases the probability of fire and reduces agricultural yields (see a full description of impacts at www.issg.org). Despite being identified by the IUCN as one of the top 10 world's worst weeds, we confirm that the blady grass can be easily bought online (e.g. in Amazon, www.edenproject.com, www.rhsplants.co.uk, www.ornamentalgrass.co.uk). Internet commerce has greatly facilitated the unregulated sale of garden and aquarium plants that result in the introduction and spread of highly invasive plants. As way of example, a study performed in United States revealed that every aquatic plant listed by the government as noxious was easily found for sale in one or more states (Kay & Hoyle, 2001). Considering the environmental and economic impacts attributed to the blady grass (and reviewed in Table 8), stronger enforcement of existing laws and regulations are needed to prevent further introductions into un-invaded regions like RINSE.

Regarding the racer goby (*N. gymnotrachelus*), a recent study warned about the risk of this species getting into the lower Rhine from where it is likely to be transported to British ports as hull foulants of ships (Gallardo & Aldridge, 2012). Gobies prey on small fish and the eggs of lake trout, displacing native species and causing a significant biodiversity loss (ISSG, www.issg.org). An additional risk factor is the wide spread in RINSE of another invader, the zebra mussel (*Dreissena polymorpha*), which provides habitat and food for the racer goby (Gaygusuz *et al.*, 2007). Ballast water regulation, ship inspection and outreach programs to educate fishermen into the sensible use of live bait and recognition of invasive species are recommended to prevent the introduction of the racer goby.

Another Alert species that requires special mention is the emerald ash borer (EAB, *A. plannipenis*). The EAB is a highly invasive forest pest that has the potential to spread and kill native ash trees (*Fraxinus sp*.), already badly damaged in Europe as a consequence of the ash dieback caused by the fungus *Chalara fraxinea* (Pautasso *et al.*, 2013). The economic costs of EAB-related mortality in Canada were estimated to be approximately CAD$524 million (McKenney *et al.*, 2012); while US$10.7 million was the estimated cost of ash treatment, removal, and replacement in north-east United States (Kovacs *et al.*, 2010). These estimates are conservative because they evaluate only part of the costs associated to the pest and yet their magnitude suggests considerable justification for investments to prevent the introduction of EAB. Efforts to control the ash dieback in Europe were considered late and highly insufficient, resulting in substantial economic loses. This should underline the need to put in place a European strategic plan to prevent the import of EAB infested tress from North America before it is too late to react.

4.2.2 The Black List of INS

Most of the Black List's INS (56%) were present in the four RINSE countries (Great Britain, France, Belgium and The Netherlands), which exemplify the high level of biological interchange resulting from the intensive trade, transport and travel between the regions. The opportunity to prevent the introduction of these species into other RINSE countries has been therefore long since lost. As concluded by Williams et al. (2010), it is important to eradicate INS that are currently having an impact as soon as possible, to limit the further spread of locally or regionally established INS, whilst not ignoring the need to reduce the impact of widespread INS which have the highest costs.

Only 16% of the Black List INS was present in one country only, most frequently France. Some of those French INS were adapted to Mediterranean climate conditions, which would explain their absence in the rest of RINSE countries. For instance, the Siam weed (*C. odorata*) is adapted to tropical/subtropical environments, the black wattle (*A. mearnsii*) grows at an altitude > 600m, the

topminnow (*G. affinis*) prefers warm waters, and the Australian pest pear (*O. stricta*) is cultivated in southern countries for medicinal use.

At least 7 species from the Black List were present only in Great Britain, although their presence in the wild is incidental and might not represent a serious threat to other RINSE countries. For instance, tropical/arid species such as the giant African land snail (*A. fulica*), kahili ginger (*H. gardnerianum*) and Khapra beetle (*T. granarium*) have been likely introduced for ornamental purposes and are not adapted to RINSE's temperate climate. Although the pine wood nematode (*B. xylophilus*) has been occasionally intercepted (hence its inclusion in the Black List), the European Plant Protection Organization (EPPO, www.eppo.int) has so far determined its absence from the EPPO region. According to NOBANIS, the risk of introduction of the New Zealand flatworm (*A. triangulatus*) is greatest from the commercial trade as contaminant of hardy ornamental plants, but domestic garden trade also poses a prominent risk.

From The Netherlands, several aquatic inland species may pose a risk to Great Britain: Chattonella (*C. verruculosa*), two Ponto-Caspian amphipods (*C. robustum, D. bispinosus),* marmokrebs (*P. fallax*) and tubenose goby (*P. marmoratus*). The risk associated to some of these species is extremely high in Great Britain due to their similarity in terms of climate and shipping interchange, as described by Gallardo and Aldridge (2012, 2013a). From Belgium, an amphibian (*B. marinus*) and two insects (*L. geometricus, L. hasselti*) can spread to other RINSE countries.

The 12 species that achieved the highest number of votes in the Black List are well known RINSE invaders with remarkable environmental and economic consequences. The only exception is the marine algae Caulerpa (*C. taxifolia*), currently present in the Mediterranean part of France only. Seven of the top 12 Black INS are primary producers (aquatic or terrestrial plants or algae) with potentially serious consequences on the trophic web. By origin, Asia and North America seem to be major donors of the worst Black INS.

Considering the broad extension of the top 12 Black INS (except *C. taxifolia*) in the RINSE region, efforts should focus on controlling their further spread and impact. RINSE countries have actually implemented management plans for some of them, and cross country collaboration would be of great benefit to share experiences. As way of example, the Canada goose (*B. canadensis*) is controlled in Great Britain through inhibiting the breeding process (e.g. Baxter & Robinson, 2007); a range of mechanical, chemical and biological methods is employed to control the New Zealand pigmyweed (*C. helmsii*), Himalayan balsam (*I. glandulifera*) and Sosnowski's hogweed (*H. mantegazzianum*) (e.g. Dawson, 1996; Wadsworth *et al.*, 2000); insecticides are being used for the harlequin ladybird (*H. axyridis*) (e.g. Kenis *et al.*, 2008); while trapping, hunting and shooting are the

preferred options for terrestrial animals such as the grey squirrel (*S. carolinensis*) and American mink (*M. vison*) (e.g. Bonesi & Palazon, 2007).

4.2.3 Horizon scanning limitations

The prioritisation of the Alert and Black Lists of INS was based on expert consultation, which provided a presumably unbiased, cost-effective evaluation of the risk associated to each species. However, the prioritisation should not be considered closed because i) other invasive species not included in the worst INS lists consulted (listed in Table 4) may pose a relevant risk to RINSE, ii) the perception of risk for a particular region can change depending on the progression of the species and iii) the prioritization is highly dependent on the experts consulted. To minimize the potential bias and uncertainty of risk scores, we would ideally count on at least three sets of risk scores per species. Unfortunately time constrains of this project did not allow obtaining more evaluations, overall for less studied taxonomic groups such as Nematodes or Fungi. In addition, it might be useful to bear in mind that this risk assessment is based on the evidence available at the time, and substantive new scientific evidence should prompt a re-evaluation of the risks.

4.3 Distribution Modelling

4.3.1 Unravelling the environmental and socio-economic drivers of biological invasions

Species distribution models (SDM) displayed high performance for all Alert and Black INS modelled, and allowed investigating the partial influence of environmental and socio-economic drivers on the current global distribution of the worst INS.

The permutation importance of environmental variables ranged between 70 and 82% for inland species, and reached 99% for marine organisms, since we could only include one human influence variable for this group of species (Annex E). In comparison, the relevance of socio-economic factors was far more moderate (18-30% for inland species, with an average importance of 22.42%). The importance of socio-economic factors in SDM can be explained by their relationship with the vectors and pathways of introduction for invasive species. Indeed, invasive species are characterized by their ability to overcome the limits to their dispersal thanks to the development of certain human activities (e.g. trade of horticultural/pet species, transport, hunting, fishing) associated with population density, roads, railroads or navigable rivers, all of which were considered in the present study.

Amongst climate factors, temperature-related variables were the most important drivers of INS distribution, in accordance with previous studies in the area (e.g. Gallardo & Aldridge, 2012, 2013b, a). Temperature affects the body size, reproduction, growth, ecological role and survival of species (Gillooly *et al.*, 2001), and is a key factor determining success in the colonization and establishment stages of invasion (Theoharides & Dukes, 2007). Temperature determines not only the species attributes but also the habitat and resources available to the species as well as the natural communities it will have to interact with. Against this background we may argue that temperature sets the most basic limits to invasive species distribution and may cause them to fail immediately during colonization.

Having said this, phenotypic plasticity and high levels of genetic variability may allow invasive species to adapt to less favourable conditions (Theoharides & Dukes, 2007), overall when propagule pressure is high. This is reflected in the number of tropical and subtropical INS that are already present in temperate RINSE, such as the Egyptian goose (*A. aegyptiacus*), the pampa grass (*C. selloana*), the silverleaf whitefly (*B. tabaci*) or the Caribbean mud crap (*M. japonicas*) (Black List of INS, Annex D). The importance of minimum annual temperature in our models suggests that global warming could expand the distribution of some of the assessed species northwards by increasing minimum winter records (Gallardo & Aldridge, 2013b). The interaction of climate change and invasive species should be thus considered when developing long-term strategies of environmental management.

In the marine environment, water **t**emperature was also a primary driver of biological invasions, followed in importance by nitrate and chlorophyll-a concentration. Differences in thermal tolerance of marine organisms were investigated by Zerebecki and Sorte (2011), who observed invasives tended to inhabit broader habitat temperature ranges and higher maximum temperatures than natives. Nitrate and cholorophyll-*a* concentration indicate the availability of resources, which explain their influence on invasive species distribution. In addition, increased eutrophication levels have been observed after the invasion of certain marine species (the bloom-forming dinoflagellate *Prorocentrum minimum* in the Baltic Sea, Pertola *et al.*, 2005; e.g. the comb jellyfish *Mnemiopsis leidyi* in the southern Caspian Sea, Kideys *et al.*, 2008), thus chlorophyll-*a* can be both cause and consequence of marine invasions.

Notwithstanding the important effect of temperature, socio-economic factors seemed to significantly affect the spatial distribution of INS. In spite of the relative low permutation importance of socio-economic factors (see Annex E), conspicuously higher suitability scores could be observed in densely populated areas, close to the coast and in clear relationship with transport routes. Likewise, in a recent study the addition of socio-economic factors to SDM did not affect the already high

accuracy scores, but resulted in 20% amplification of risk scores in highly developed areas of Great Britain and Ireland (Gallardo & Aldridge, 2013a).

Transport networks (e.g. highways, railways, etc.) promote the dispersal of exotic species by altering habitats, stressing native species, and providing movement corridors (Trombulak & Frissell, 2000; Hulme, 2009). In addition, roads also promote increased hunting, fishing, passive harassment of animals, and landscape modifications (Trombulak & Frissell, 2000). Transport routes therefore enhance immigration rates of new species and the spread of already existing ones (Vila & Pujadas, 2001). Although the role of roads have been mostly studied in plants (e.g. Flory & Clay, 2009; Mortensen *et al.*, 2009; Joly *et al.*, 2011), some studies reveal their relevance to explain the invasion of earthworms (e.g. Cameron & Bayne, 2009), amphibians (e.g. Urban *et al.*, 2008) and insects (e.g. Roques *et al.*, 2009) amongst others. Several of the Alert and Black List INS modelled featured distributions clearly influenced by the location of transport routes, overall invasive plants like the water hyacinth (*E. crassipes*), Kudzu (*P. montana lobata*) and Kahili ginger (*H. gardnerianum*). According to SDM, the probability of invasion was highest within 2 km from roads and sharply decreases farther away. The importance of roads was particularly notable in the case of the Kudzu, whose distribution was largely explained by closeness to roads alone (57% permutation importance, Annex E).

Modelled species showed a consistent logistic response to the Human Influence Index (HII) that suggests the higher the level of human influence, the greater are the probabilities of invasion (Gallardo & Aldridge, 2013a). This is because human activities responsible for the introduction of invasive species such as horticulture, pet trade, hunting or fishing are more frequent in densely populated areas, land-use pressure can decrease the capacity of natural environments to buffer biological invasions, and transport routes provide pathways along which species can disperse, all of them factors comprised within HII. Amongst INS modelled in this study, insects were predominantly affected by HII, overall the silverleaf whitefly (*B. tabaci*), Mediterranean fruitfly (*C. capitata*), Argentine ant (*L. humile*) and oak processionary (*T. processionea*). Most of these insects thrive in disturbed habitats; they can fly over short distances and are also carried by the wind and animals, but their main long-distance dispersal is human-assisted, as contaminants of imported plants, soil, flowers or fruit. Given the importance of HII, future studies of invasive insects' potential distribution should consider using this or other similar indicators of the intensity of human disturbance to improve their predictions.

Closeness to ports was identified as an important predictor for aquatic inland species (e.g. *A. dispar, C. batrachus, G. fasciatus, D. bugensis, M. heterophyllum, P. marmoratus, A. crassus*), but also for

some plants (*S. terebinthifolius, T. ramosissima, H. gardnerianum*), animals (*C. canadensis, C. picta, C. finlaysonii*) and insects (*C. capitata, L. humile, A. glabripennis*). The importance of ports as gateways of invasive species is well known, with at least 10,000 species estimated to be transported around the world in ships (Bax *et al.*, 2003). Invasive species are transported as commodities and deliberately released or escape from captivity, or can be involuntarily transported as contaminants or stowaways (Hulme, 2009; Keller *et al.*, 2009). Port closeness also reflects coastline proximity. Coastal landscapes are being transformed as a consequence of the increasing demand for infrastructures to sustain residential, commercial and tourist activities. Thus, intertidal and shallow marine habitats are largely being replaced by a variety of artificial substrata (e.g. breakwaters, seawalls, jetties) that are very susceptible to invasion (Airoldi & Bulleri, 2011).

Unexpectedly, population density and land-use were rather irrelevant in SDM models, often dropped during variable selection. This is surprising, since both factors are commonly cited in the literature as important determinants of the distribution of birds (e.g. Blair, 1996), amphibians (e.g. Brum *et al.*, 2013), plants (e.g. Vila & Pujadas, 2001; Pauchard & Alaback, 2004) and insects (e.g. Roques *et al.*, 2009). Because we used a stepwise backward elimination of variables, the fact that land-use and population density were discarded in favour of other socio-economic indicators suggest that their effects were already accounted for by factors such as HII, road and port closeness.

4.3.2 Identifying the most worrisome current and future invaders of RINSE

Although Alert plants showed the highest risk scores during horizon scanning, SDM models suggested their risk of invasion might be limited in RINSE. This is the case of the melaleuca (*M. quinquenervia*), or the blady grass (*I. cylindrica*). The easiest explanation of this observation is the predominantly Mediterranean/tropical origin of modelled Alert plants, which would define temperate RINSE as unsuitable. However, invasive plants have high phenotypic plasticity and may eventually colonize climatically novel environments (Schlichting & Levin, 1986), as evidences the presence of the pampa grass (*C. selloana*) or the Cattley guava (*P. cattleianum*), both of them original from subtropical South America. As has been argued before, plants are usually introduced deliberately for ornamental purposes and might therefore have the chance to adapt to the local environmental conditions of RINSE before they disperse into the wild. Consequently, the risk of Alert plant invasion should not be underestimated based solely on SDM models.

At least three Alert plants matched very high risk and high suitability scores across RINSE as indicated by expert evaluation and SDM respectively (Annex D). The three species are at the same time considered amongst the world's worst invasive plants: the Asian wild raspberry (*R. ellipticus*,

Total Risk= 3), South-American Brazilian holly (*S. terebinthifolius,* TR= 2.8) and Asian salt cedar (*T. ramossisima,* TR= 3.3). The three of them are generalists in terms of habitat preference and can be found both in disturbed (e.g. road sides, urban areas, canals, drained wetlands) and natural (e.g. natural forest, grasslands, estuaries) habitats. They are usually introduced as ornamentals and eventually escape from garden environments.

In comparison to plants, terrestrial animals showed much higher suitability scores across RINSE countries. In particular, Finlayson's squirrel (*C. finlaysonii*) and apple snail (*P. canaliculata*) could be suited to colonize most of the RINSE area, and especially urban and coastal locations. However, the risk of invasion of the squirrel was deemed to be relatively low according to horizon scanning (Total Risk= 2.4, Annex D). The apple snail typically colonizes rice fields (Halwart, 1994), but it could potentially spread to natural wetlands and estuaries and feed on aquatic vegetation if provided with the opportunity of invasion (Carlsson *et al.*, 2004).

Three of the modelled Black List terrestrial animals combined high suitability scores across RINSE while at the same time being considered as some of the worst current RINSE invaders (Annex D): the grey squirrel (*S. carolinensis*), Asian hornet (*V. velutina*) and oak processionary (*T. procesionea*). With 71% votes of participating experts in the Black List survey (Annex D), the grey squirrel damages trees by eating the bark and has caused the local extinction of red squirrel (*S. vulgaris*) through competition and disease (Reynolds, 1985; Kenward & Parish, 1986). Considering the ecological and economic damage caused by this species in Great Britain, it is fundamental to prevent its spread towards suitable areas in the continent. In second place with 43% of votes (in the Black List survey, Annex D) we find the Asian hornet, a bee-predator wasp that is spreading in France since 2004 (Villemant *et al.*, 2006; Tan *et al.*, 2007). Not only honey-bees but humans can be threaten by the Asian hornet, which can cause anaphylactic shock when multiple stings are inflicted (de Haro *et al.*, 2010). The ecological niche of the Asian hornet in Europe was recently investigated by Villemant et al. (2011), featuring a potential distribution in France very similar to that obtained here (Figure 34). Climate constrains suggest a relative low risk of invasion in northern France, Belgium, The Netherlands and Great Britain, although the spread of the species northwards should be monitored with caution. The oak processionary is a major defoliator of oak in Europe (Laurent-Hervouet, 1986) that was pinpointed by 14% of experts as one of the worst INS in RINSE. The larvae (caterpillars) feed on the foliage of many species of oaks and are covered in irritating hairs that causes skin irritation and allergic reactions (Lamy *et al.*, 1986). Oak processionary moth is ranging northwards, presumably in response to climate change (Benigni & Battisti, 1999; Battisti *et al.*, 2005). It is now firmly established in northern France and the Netherlands, and has been reported from London. Socio-economic factors explained as much as 23% of its distribution according to SDM (Annex E). In

fact, human activity, including the commercial movements of infested nursery trees, was recently suspected to be responsible of its spread in France (Groenen & Meurisse, 2012).

Alert aquatic inland organisms was the only group combining high risk scores and high suitability scores across RINSE (Figure 29 and 35), which might be related to the predominantly European origin of species chosen for modelling. Amongst INS showing high suitability scores in RINSE, we would highlight the racer goby (*N. gymnotrachelus*), the water milfoil (*M. heterophyllum*) and quagga mussel (*D. r. bugensis*).These three species were included in the top 12 Alert and Black Lists of INS and were also mentioned in a list of the most worrisome potential invaders of British waters (Gallardo & Aldridge, 2013a).

The suitability of the RINSE marine region to Alert marine organisms was very low, which can be explained by their origin, mostly Pacific Ocean and Mediterranean Sea. On the contrary, Black marine organisms showed a high suitability for RINSE waters, showing highest risk scores in the British Channel. It is possible that the type of species has influenced this pattern. Most Alert marine organisms are crustaceans, fish or algae of relatively big body size whose introduction is mostly intentional (for mariculture purposes) and easy to detect. In contrast, the List of marine Black INS includes several small size organisms such as dinoflagellates, algae, snails, worms, barnacles or limpets. These species are much likely to be introduced accidentally as ship foulants or contaminants of mariculture products. It seems therefore that the most plausible marine invaders from the worst lists have already reached RINSE and while newcomers are not expected in the short-term, further secondary spread of species already present can be anticipated.

It is worth mentioning that we could not investigate the potential distribution of one of the terrestrial species that in our view could cause the most serious impacts in RINSE: the emerald Ash borer (EAB, *A. plannipennis*). This species is causing deep economic stress in temperate-climate countries like US and Canada, suggesting that climate would not impose a barrier to its eventual colonization of RINSE. Another three species showing high risk scores but unfortunately not modelled include the Amur sleeper (*P. glenii*), nomad jellyfish (*R. nomadica*) and red fire ant (*S. invicta*). After reviewing the environmental preferences of these three species (at www.issg.org), we concluded that they are adapted to warmer climates and are thus not expected to pose a serious threat to RINSE.

4.3.3 Delimiting RINSE areas most vulnerable to multiple invasions

The individual predicted presence and absence maps were combined together to form two heat maps showing the total number of Alert and Black INS predicted to be present respectively (Figure

32 and 37). Heat maps synthesize information regarding the risk associated with a diverse set of aquatic and terrestrial organisms displaying a wide range of origins, pathways of invasion and habitat preferences. According to heat maps, the SE of England and coastal areas of Belgium and The Netherlands is under the highest risk of multiple invasions, with risk progressively decreasing outwards, i.e. north and westwards in Great Britain, and south and eastwards in the continent. As has been repeatedly argued before, the location of numerous commercial ports of international relevance (i.e. high propagule pressure) together with a well-developed network roads, railways and navigable canals, high population density and intense use of landscapes for industry, urbanization or recreation purposes, further amplifies the potential for invasion. We can therefore consider the north-eastern part of RINSE (and in particular urban areas adjacent to major ports like London, Oostende, Zeebrudge, Rotterdam and Antwerp) as a hot spot of invasion.

Spatial patterns of invasion displayed by the Alert and Black heat maps were coincident, with the latter evidently showing much higher suitability scores for species that are already found in the area. Such resemblance of the Alert and Black heat maps was rather surprising, since they are based on a very different suite of invaders. Altogether, heat maps suggest there is room for expansion of current invaders while at the same time the arrival of newcomers poses a tremendous challenge in terms of prevention and management. This is because species can modify their habitat facilitating subsequent invasions (sensu 'invasional meltdown', Simberloff & Von Holle, 1999). Such invasional meltdown implies an accelerated accumulation of invasive species, whose combined impacts are even greater than their independent effects (Simberloff & Von Holle, 1999). The arrival of new interacting invaders may also affect the efficacy of plans to control the secondary spread of current invasive species.

In the marine environment, the suitability for Black INS was highest around the ports of the British Channel and southern part of the North Sea. On the contrary, RINSE waters were predicted unsuitable for a range of Alert marine species. However striking, this observation agrees with a recent study about the risk of marine invasions caused by global shipping (Seebens *et al.*, 2013). In spite of their substantial maritime traffic volume, no European port was included in the rank of the 20 ports with highest invasion risk, a fact that authors attributed to the lack of match in environmental conditions between donor and host ports. This supports our prediction that the risk of new marine invasions in RINSE waters is relatively low, at least from some of the world's worst invaders listed in Annex D.

4.3.4 Model considerations

There are a number of factors that can affect the output of SDM, including the quality and quantity of species occurrence points (Marmion *et al.*, 2009; Rodriguez-Castaneda *et al.*, 2012), number and ecological meaningfulness of variables used as predictors (Costa *et al.*, 2008), choice of algorithm (Elith *et al.*, 2006), regularization (Phillips & Dudik, 2008), and pseudo-absence selection (Barbet-Massin *et al.*, 2012). In this study we have modelled a wide range of species, displaying very different geographic spread and data quality. For instance, species with a large number of occurrences spread over several continents, some far from the core of the species' distribution, are likely to yield low suitability scores because their environmental envelope is not clearly defined (Marmion et al. 2009). On the contrary, species for which data availability is restricted to a much localized region have a clearly delimited niche, and are likely to yield high suitability scores in similar environments. It is thus important to bear in mind that SDM predictions are a representation of the likelihood of invasion based on our (presumably incomplete) information about the species preferences and consequently there is a substantial level of uncertainty associated to them.

Although it is generally accepted that data quality can substantially change predictions, there are not clear guidelines on best practices and most authors simply use default settings. In this study we tested several modelling alternatives to optimize output predictions. Tuning regularization allowed calibrating a more or less fitted model around the species environmental envelope that optimized the species' correct prediction. Occurrence split into 70% calibration and 30% testing sets contributed to compensate data abnormalities. Backwards selection of variables allowed eliminating redundant or unimportant predictors that may mislead the potential distribution of species. While SDMs were sensitive to different model settings and we cannot guarantee our models are free from bias, spatial projections of selected models correctly predicted the current range of species and were ecologically plausible according to our knowledge on the species, therefore presumably appropriate to represent their potential distribution.

In this study we calculated that socio-economic factors contribute on average 23% of the distribution of inland species. These percentages may be nevertheless affected by the unequal number of environmental (nine variables) and socio-economic (five) factors considered. We might also expect a high level of inter-correlation between factors (e.g. amongst climatic variables, and between population density and human influence) that may affect model predictions in an unknown way. To overcome this limitation, we applied a backward elimination of variables (i.e. stepwise re-evaluation of model statistics eliminating variables that do not significantly increase the fit of the model). This procedure helped to eliminate both variables that were irrelevant to explain the current distribution of species and variables whose effect was redundant. The unbalance of environmental and socio-economic variables was most notable in the marine environment, where we could only

include one socio-economic factor (human impacts to marine ecosystems). Even though this factor summarized the effect of multiple human activities that directly or indirectly have an impact on marine ecosystems (e.g. shipping, fishing, pollution), its permutation importance was rather modest, suggesting the match between physic-chemical characteristics of the donor and receiving waters are most important determinants of marine invasions.

One consequence of the inclusion of socio-economic factors in SDM was the appearance of artificial spatial patterns in output models, as opposed to the smooth gradients typical of climate-based predictions. This is caused by the highly artificial aspect of socio-economic maps such as population density or transport routes (Figure 6), characterized by dense nucleus and bands in urban regions, surrounded by rather sparse extensions. Such artificiality is transferred to the final SDM output, with high suitability scores wrapped around densely populated areas and transport routes.

Although this study provide valuable information on the joint effect of environmental conditions and socio-economic development on invasive species, the inclusion of other predictors more directly related to propagule pressure and species dispersal may further improve the predictability of models. Unfortunately, no global dataset has been yet gathered on water chemistry, the intensity of fishing, hunting or boating although this information has been successfully used before to inform invasive species control and management at local scale (e.g. Copp *et al.*, 2007; Elith *et al.*, 2010). In addition, environmentally suitable areas may never be occupied because of historical, dispersal or biotic limitations (Jiménez-Valverde *et al.*, 2011), particularly in the case of aquatic species for obvious reasons. For the purpose of preventing species invasions, it is nevertheless preferable to overestimate rather than to underestimate their potential distribution (Jiménez-Valverde *et al.*, 2011).

In spite of these various caveats, models correctly predicted the native range of all species and provided an ecologically meaningful prediction, which together with high accuracy scores suggest these models offer a means for a meaningful risk assessment

5. CONCLUSIONS

The horizon scanning together with the species registry suggests the RINSE region is a hot spot of invasive species. At least 30% of all the non-native species registered in Europe by DAISIE (www.europe-aliens.org) are present in the Two Seas region despite representing only 9.7% of its area. Moreover, 77% of the worst INS identified in this study has been already detected in RINSE. To establish some reference, the number of registered non-native species in RINSE is three times higher than that of Mexico (ca. 1,000 species according to www.conabio.gov.mx), seven times the number

of INS in Argentina (652 species, www.inbiar.org.ar) and is twice that of Australia (2,241 species, Pimentel *et al.*, 2001). The number of registered non-native species in RINSE is actually only exceeded by the United States (9,808 species, Pimentel *et al.*, 2000; Pimentel *et al.*, 2001) and South Africa (8,818 species, Pimentel *et al.*, 2001). However, these figures come from a variety of sources and depend to a great extent on whether they include naturalized/invasive species, all/selected taxonomic groups, are based on actual records or estimations etc. and should be therefore taken with caution. In any case, based on the data collected in this study it is evident that the RINSE region hosts a remarkably high number of invasive species, identifying it as a global INS hot spot. Within RINSE, the SE of England, Belgium and The Netherlands (and in particular urban areas adjacent to major ports like London, Oostende, Zeebrudge, Rotterdam and Antwerp) featured very high suitability for a varied range of potential invaders including plants, terrestrial and aquatic animals.

The intensity of trade and travel in the RINSE region, with several ports of international relevance, navigable rivers such as the Thames and Rhine, high population density and intensively used landscapes, explain the historically high propagule pressure of the region (Hulme, 2009; Seebens *et al.*, 2013). In other words, a great number of invasive species may have had the opportunity to be introduced into RINSE countries. Although many of them may not have found optimum environmental conditions, the temperate RINSE climate is likely to be suitable for a wide range of invasive species originating from temperate regions in North America, the south-east of Asia, South America and Australia. Environmental degradation of natural ecosystems may have also contributed to the success of invasive species in RINSE, as weakened native communities are less able to prevent the establishment of newcomers and many invasive species are known to thrive in disturbed environments (MacDougall & Turkington, 2005). Finally, the dense transport network of northern European regions, recreational use of natural habitats and dense population may have facilitated the secondary spread of species within the RINSE region (Hulme, 2009; Leuven *et al.*, 2009; Johnson *et al.*, 2012). Altogether, the environmental and socio-economic characteristics of RINSE suggest a high historical propagule pressure, high vulnerability of degraded ecosystems and opportunity for secondary spread that may explain the current scenario of high richness of INS observed in this study.

In combination, horizon scanning and distribution modelling constitute a powerful tool to design contingency plans to prevent the introduction and establishment of non-native species, thereby reducing the huge costs usually associated with eradication. In this study we identified the top worst current and future INS into the RINSE area, their origin, likely pathways of introduction and impacts. The high percentage of worst INS that is already present in RINSE underlines the urgency of implementing effective strategies to prevent further establishment of INS.

6. REFERENCES

Agence de l'eau Artois Picardie (2005) Les espèces végétales invasives des milieux aquatiques et humides du Bassin Artois Picardie. p. 37. Conservatoire Botanique National de Bailleul

Agence de l'eau Rhin Meuse (2005) Plantes invasives des milieux aquatiques et des zones humides du Nord-est de la France. Une menace pour notre environnement. p. 20

Airoldi, L. & Bulleri, F. (2011) Anthropogenic disturbance can determine the magnitude of opportunistic species responses on marine urban infrastructures. *Plos One*, **6**, e22985.

Banks, A., Wright, L., Maclean, I.M., Hann, C. & Rehfisch, M.M. (2009) *Review of the status of introduced non-native waterbird species in the area of the African-Eurasian Waterbird Agreement: 2007 update*. British Trust for Ornithology.

Barbet-Massin, M., Jiguet, F., Albert, C.H. & Thuiller, W. (2012) Selecting pseudo-absences for species distribution models: how, where and how many? *Methods in Ecology and Evolution*, **3**, 327-338.

Battisti, A., Stastny, M., Netherer, S., Robinet, C., Schopf, A., Roques, A. & Larsson, S. (2005) Expansion of geographic range in the pine processionary moth caused by increased winter temperatures. *Ecological Applications*, **15**, 2084-2096.

Bax, N., Williamson, A., Aguero, M., Gonzalez, E. & Geeves, W. (2003) Marine invasive alien species: a threat to global biodiversity. *Marine Policy*, **27**, 313-323.

Baxter, A.T. & Robinson, A.P. (2007) Monitoring and influencing feral Canada goose (*Branta canadensis*) behaviour to reduce birdstrike risks to aircraft. *International Journal of Pest Management*, **53**, 341-346.

Beaumont, L.J., Gallagher, R.V., Thuiller, W., Downey, P.O., Leishman, M.R. & Hughes, L. (2009) Different climatic envelopes among invasive populations may lead to underestimations of current and future biological invasions. *Diversity and Distributions*, **15**, 409-420.

Benigni, M. & Battisti, A. (1999) Climate change and the pine processionary caterpillar: adaptation of a defoliator to changing environmental conditions. *Italia Forestale e Montana*, **54**, 76-86.

Beran, L. & Horsák, M. (2007) Distribution of the alien freshwater snail *Ferrissia fragilis* (Tryon, 1863)(Gastropoda: Planorbidae) in the Czech Republic. *Aquatic Invasions*, **2**, 45-54.

Blair, R.B. (1996) Land use and avian species diversity along an urban gradient. *Ecological Applications*, **6**, 506-519.

Bonesi, L. & Palazon, S. (2007) The American mink in Europe: status, impacts, and control. *Biological Conservation*, **134**, 470-483.

Bouquerel, J. (2008) Les canaux: des milieux privilégiés pour les macroinvertébrés invasifs. In: *Etude de la région Nord/Pas-de-Calais*, p. 82

Broennimann, O. & Guisan, A. (2008) Predicting current and future biological invasions: both native and invaded ranges matter. *Biology Letters*, **4**, 585-589.

Brooks, M.L., D'ANTONIO, C.M., Richardson, D.M., Grace, J.B., Keeley, J.E., Ditomaso, J.M., Hobbs, R.J., Pellant, M. & Pyke, D. (2004) Effects of invasive alien plants on fire regimes. *Bioscience*, **54**, 677-688.

Brum, F.T., Gonçalves, L.O., Cappelatti, L., Carlucci, M.B., Debastiani, V.J., Salengue, E.V., dos Santos Seger, G.D., Both, C., Bernardo-Silva, J.S. & Loyola, R.D. (2013) Land use explains the distribution of threatened new world amphibians better than climate. *Plos One*, **8**, e60742.

Butler, D.R. (1989) The failure of beaver dams and resulting outburst flooding: a geomorphic hazard of the southeastern Piedmont. *Geographical Bulletin*, **31**, 29-38.

Cameron, E.K. & Bayne, E.M. (2009) Road age and its importance in earthworm invasion of northern boreal forests. *Journal of Applied Ecology*, **46**, 28-36.

Carlsson, N.O., Brönmark, C. & Hansson, L.A. (2004) Invading herbivory: the golden apple snail alters ecosystem functioning in Asian wetlands. *Ecology*, **85**, 1575-1580.

Connelly, N.A., O'Neill Jr, C.R., Knuth, B.A. & Brown, T.L. (2007) Economic impacts of zebra mussels on drinking water treatment and electric power generation facilities. *Environmental Management*, **40**, 105-112.

Conseil General du Finistere (2008) Plantes invasives un danger pour la biodiversité du Finistère. 16.

Copp, G.H., Templeton, M. & Gozlan, R.E. (2007) Propagule pressure and the invasion risks of non-native freshwater fishes: a case study in England. *Journal of Fish Biology*, **71**, 148-159.

Costa, C. (2005) Atlas des espèces invasives présentes sur le périmètre du Parc Naturel Régional de Camargue, p. 217. Parc Naturel Régional de Camargue

Costa, G.C., Wolfe, C., Shepard, D.B., Caldwell, J.P. & Vitt, L.J. (2008) Detecting the influence of climatic variables on species distributions: a test using GIS niche-based models along a steep longitudinal environmental gradient. *Journal of Biogeography*, **35**, 637-646.

Charles, H. & Dukes, J.S. (2007) Impacts of invasive species on ecosystem services. *Biological Invasions*, pp. 217-237. Springer.

DAISIE (2009) *Handbook of alien species in Europe*. Springer, Knoxville, TN (USA).

Davidson, A.M., Jennions, M. & Nicotra, A.B. (2011) Do invasive species show higher phenotypic plasticity than native species and, if so, is it adaptive? A meta-analysis. *Ecology Letters*, **14**, 419-431.

Dawson, F. (1996) *Crassula helmsii*: attempts at elimination using herbicides. *Management and Ecology of Freshwater Plants*, pp. 241-245. Springer.

de Haro, L., Labadie, M., Chanseau, P., Cabot, C., Blanc-Brisset, I. & Penouil, F. (2010) Medical consequences of the Asian black hornet (*Vespa velutina*) invasion in Southwestern France. *Toxicon*, **55**, 650-652.

De Prins, W. (1998) Catalogue of the Lepidoptera of Belgium. *Studiedocumenten Koninklijk Belgisch Instituut voor Natuurwetenschappen*, **92**, 1-236.

Delbart, E. & N. Pieret, M.G. (2007) Guide de reconnaissance des principales plantes invasives le long des cours d'eau et plans d'eau en Région wallonne. In. Directiondes Cours d'Eau

Dewarumez, J.-M., Gévaert, F., Massé, C., Foveau, A., Desroy, N. & Grulois, D. (2011) Les espèces marines animales et végétales introduites dans le bassin Artois-Picardie.

Ehrenfeld, J.G. (2003) Effects of exotic plant invasions on soil nutrient cycling processes. *Ecosystems*, **6**, 503-523.

Elith, J. & Leathwick, J.R. (2009) Species Distribution Models: Ecological Explanation and Prediction Across Space and Time. *Annual Review of Ecology Evolution and Systematics*, pp. 677-697.

Elith, J., Phillips, S.J., Hastie, T., Dudík, M., Chee, Y.E. & Yates, C.J. (2010) A statistical explanation of MaxEnt for ecologists. *Diversity and Distributions*, **17**, 43-57.

Elith, J., Graham, C.H., Anderson, R.P., Dudik, M., Ferrier, S., Guisan, A., Hijmans, R.J., Huettmann, F., Leathwick, J.R., Lehmann, A., Li, J., Lohmann, L.G., Loiselle, B.A., Manion, G., Moritz, C., Nakamura, M., Nakazawa, Y., Overton, J.M., Peterson, A.T., Phillips, S.J., Richardson, K., Scachetti-Pereira, R., Schapire, R.E., Soberon, J., Williams, S., Wisz, M.S. & Zimmermann, N.E. (2006) Novel methods improve prediction of species' distributions from occurrence data. *Ecography*, **29**, 129-151.

FAO (2012) Introduction of species. Database on Introductions of Aquatic Species. In: *Fisheries and Aquaculture topics*. Food and Agriculture Organisation (Fisheries and Aquaculture Department), Rome.

Flory, S.L. & Clay, K. (2009) Effects of roads and forest successional age on experimental plant invasions. *Biological Conservation*, **142**, 2531-2537.

Froese, R. & Pauly, D. (2008) FishBase.

Gallardo, B. & Aldridge, D.C. (2012) Priority setting for invasive species management: integrated risk assessment of multiple Ponto Caspian invasive species into Great Britain. *Ecological Applications*, **23**, 352–364.

Gallardo, B. & Aldridge, D.C. (2013a) The 'dirty dozen': socio-economic factors amplify the invasion potential of 12 high risk aquatic invasive species in Great Britain and Ireland. *Journal of Applied Ecology*, **doi: 10.1111/1365-2664.12079**

Gallardo, B. & Aldridge, D.C. (2013b) Evaluating the combined threat of climate change and biological invasions on endangered species. *Biological Conservation*, **160**, 225-233.

Gallardo, B., Errea, M. & Aldridge, D.C. (2012) Application of bioclimatic models coupled with network analysis for risk assessment of the killer shrimp, *Dikerogammarus villosus*, in Great Britain. *Biological Invasions*, **14**, 1265–1278.

Gaygusuz, O., Gaygusuz, C.G., Tarkan, A.S., Acipinar, H. & Türer, Z. (2007) Preference of zebra mussel, *Dreissena polymorpha,* in the diet and effect on growth of gobiids: a comparative study between two different ecosystems. *Ekoloji* **17**, 1-6.

Gillooly, J.F., Brown, J.H., West, G.B., Savage, V.M. & Charnov, E.L. (2001) Effects of size and temperature on metabolic rate. *Science*, **293**, 2248-2251.

Gollasch, S., Haydar, D., Minchin, D., Wolff, W.J. & Reise, K. (2009) Introduced aquatic species of the North Sea coasts and adjacent brackish waters. *Biological Invasions in Marine Ecosystems*, pp. 507-528. Springer.

Gordon, D.R., Gantz, C.A., Jerde, C.L., Chadderton, W.L., Keller, R.P. & Champion, P.D. (2012) Weed risk assessment for aquatic plants: modification of a New Zealand system for the United States. *Plos One*, **7**, e40031.

Groenen, F. & Meurisse, N. (2012) Historical distribution of the oak processionary moth *Thaumetopoea processionea* in Europe suggests recolonization instead of expansion. *Agricultural and Forest Entomology*, **14**, 147-155.

Guisan, A. & Thuiller, W. (2005) Predicting species distribution: offering more than simple habitat models. *Ecology Letters*, **8**, 993-1009.

Hakenkamp, C.C., Ribblett, S.G., Palmer, M.A., Swan, C.M., Reid, J.W. & Goodison, M.R. (2001) The impact of an introduced bivalve (*Corbicula fluminea*) on the benthos of a sandy stream. *Freshwater Biology*, **46**, 491-501.

Halwart, M. (1994) The golden apple snail *Pomacea canaliculata* in Asian rice farming systems: present impact and future threat. *International Journal of Pest Management*, **40**, 199-206.

Hanley, J.A. & McNeil, B.J. (1982) The meaning and use of the Area Under a Receiver Operating Characteristic (ROC) curve. *Radiology*, **1**, 29-36.

Hijmans, R.J., Cameron, S.E., Parra, J.L., Jones, P.G. & Jarvis, A. (2005) Very high resolution interpolated climate surfaces for global land areas. *International Journal of Climatology*, **25**, 1965-1978.

Hopkin, S.P. (2007) *A key to the Collembola (springtails) of Britain and Ireland*. FSC Publications.

Hudin, S. & Vahrameev, P. (2010) Guide d'identification des plantes exotiques envahissant les milieux aquatiques et les berges du bassin Loire-Bretagne, p. 45. Fédération des Conservatoires d'espaces naturels

Hulme, P.E. (2009) Trade, transport and trouble: managing invasive species pathways in an era of globalization. *Journal of Applied Ecology*, **46**, 10-18.

Hulme, P.E. & Bremner, E.T. (2006) Assessing the impact of Impatiens glandulifera on riparian habitats: partitioning diversity components following species removal. *Journal of Applied Ecology*, **43**, 43-50.

Jeschke, J.M. & Strayer, D.L. (2005) Invasion success of vertebrates in Europe and North America. *Proceedings of the National Academy of Sciences of the United States of America*, **102**, 7198-7202.

Jiménez-Valverde, A., Peterson, A., Soberón, J., Overton, J., Aragón, P. & Lobo, J. (2011) Use of niche models in invasive species risk assessments. *Biological Invasions*, **13**, 2785-2797.

Johnson, L., Brawley, S. & Adey, W. (2012) Secondary spread of invasive species: historic patterns and underlying mechanisms of the continuing invasion of the European rockweed *Fucus serratus* in eastern North America. *Biological Invasions*, **14**, 79-97.

Joly, M., Bertrand, P., Great Britainangou, R.Y., White, M.-C., Dube, J. & Lavoie, C. (2011) Paving the way for invasive species: road type and the spread of common ragweed (*Ambrosia artemisiifolia*). *Environmental Management*, **48**, 514-522.

Kay, S.H. & Hoyle, S.T. (2001) Mail order, the Internet, and invasive aquatic weeds. *Journal of Aquatic Plant Management*, **39**, 88-91.

Keller, R.P., Lodge, D.M. & Finnoff, D.C. (2007) Risk assessment for invasive species produces net bioeconomic benefits. *Proceedings of the National Academy of Sciences of the United States of America*, **104**, 203-207.

Keller, R.P., Ermgassen, P. & Aldridge, D.C. (2009) Vectors and timing of freshwater invasions in Great Britain. *Conservation Biology*, **23**, 1526-1534.

Kenis, M., Roy, H.E., Zindel, R. & Majerus, M.E. (2008) Current and potential management strategies against *Harmonia axyridis*. *From Biological Control to Invasion: the Ladybird Harmonia axyridis as a Model Species*, pp. 235-252. Springer.

Kenward, R. & Parish, T. (1986) Bark-stripping by Grey squirrels (*Sciurus carolinensis*). *Journal of Zoology*, **210**, 473-481.

Kideys, A.E., Roohi, A., Eker-Develi, E. & Beare, D. (2008) Increased chlorophyll levels in the southern Caspian Sea following an invasion of jellyfish. *International Journal of Ecology*, **2008**

Kovacs, K.F., Haight, R.G., McCullough, D.G., Mercader, R.J., Siegert, N.W. & Liebhold, A.M. (2010) Cost of potential emerald ash borer damage in US communities, 2009–2019. *Ecological Economics*, **69**, 569-578.

Kumschick, S. & Nentwig, W. (2010) Some alien birds have as severe an impact as the most effectual alien mammals in Europe. *Biological Conservation*, **143**, 2757-2762.

Lacroix, P., Le Bail, J., Geslin, J. & Hunault, G. (2008) Liste des plantes vasculaires invasives, potentiellement invasives et à surveiller en région Pays de la Loire. *Conservatoire National Botanique de Brest, Antenne régionale des Pays-de-Loire*, **55**

Lamy, M., Pastureaud, M.-H., Novak, F., Ducombs, G., Vincedeau, P., Maleville, J. & Texier, L. (1986) Thaumetopoein: An urticating protein from the hairs and integument of the pine processionary caterpillar (*Thaumetopoea pityocampa*, Lepidoptera, Thaumetopoeidae). *Toxicon*, **24**, 347-356.

Laurent-Hervouet, N. (1986) Measurement of radial growth losses in some Pinus species caused by two forest defoliators. Part 1: The pine processionary caterpillar in the Mediterranean region. *Annales des Sciences Forestieres* (ed by, pp. 239-262.

Leen, V., Vanhoorne, B., Decock, W., Trias-Verbeek, A., Dekeyzer, S., Colpaert, S. & Hernandez, F. (2013) World Register of Marine Species.

Leuven, R., van der Velde, G., Baijens, I., Snijders, J., van der Zwart, C., Lenders, H.J.R. & de Vaate, A.B. (2009) The River Rhine: a global highway for dispersal of aquatic invasive species. *Biological Invasions*, **11**, 1989-2008.

Lever, C. (1985) *Naturalized mammals of the world*. Longman.

Liu, C.R., Berry, P.M., Dawson, T.P. & Pearson, R.G. (2005) Selecting thresholds of occurrence in the prediction of species distributions. *Ecography*, **28**, 385-393.

Long, J. (2003) *Introduced mammals of the world: their history, distribution and influence*. CSIRO Publishing.

Lützen, J., Faasse, M., Gittenberger, A., Glenner, H. & Hoffmann, E. (2012) The Japanese oyster drill *Ocinebrellus inornatus* (Récluz, 1851)(Mollusca, Gastropoda, Muricidae), introduced to the Limfjord, Denmark. *Aquatic Invasions*, **7**, 181-191.

MacDougall, A.S. & Turkington, R. (2005) Are invasive species the drivers or passengers of change in degraded ecosystems? *Ecology*, **86**, 42-55.

MacIsaac, H.J., Herborg, L.M. & Murhead, J.R. (2007) Modeling biological invasions of inland waters. *Biological invaders in inland waters: profiles, distrribution and threats* (ed. by F. Gherardi), p. 733. Springer, Knoxville, Tennessee.

Mack, R. & Lonsdale, W. (2002) Eradicating invasive plants: hard-won lessons for islands. *Turning the tide: the eradication of invasive species*, 164-172.

Manchester, S.J. & Bullock, J.M. (2000) The impacts of non-native species on UK biodiversity and the effectiveness of control. *Journal of Applied Ecology*, **37**, 845-864.

Marmion, M., Luoto, M., Heikkinen, R.K. & Thuiller, W. (2009) The performance of state-of-the-art modelling techniques depends on geographical distribution of species. *Ecological Modelling*, **220**, 3512-3520.

McKenney, D.W., Pedlar, J.H., Yemshanov, D., Barry Lyons, D., Campbell, K.L. & Lawrence, K. (2012) Estimates of the potential cost of emerald ash borer (*Agrilus planipennis,* Fairmaire) in Canadian municipalities. *Arboriculture and Urban Forestry*, **38**, 81.

Mokany, K. & Ferrier, S. (2010) Predicting impacts of climate change on biodiversity: a role for semi-mechanistic community-level modelling. *Diversity and Distributions*, **17**, 374-380.

Molnar, J.L., Gamboa, R.L., Revenga, C. & Spalding, M.D. (2008) Assessing the global threat of invasive species to marine biodiversity. *Frontiers in Ecology and the Environment*, **6**, 485-492.

Mora, C., Tittensor, D.P., Adl, S., Simpson, A.G. & Worm, B. (2011) How many species are there on Earth and in the ocean? *Plos Biology*, **9**, e1001127.

Moragues, E. & Traveset, A. (2005) Effect of *Carpobrotus* spp. on the pollination success of native plant species of the Balearic Islands. *Biological Conservation*, **122**, 611-619.

Mortensen, D.A., Rauschert, E.S.J., Nord, A.N. & Jones, B.P. (2009) Forest roads facilitate the spread of invasive plants. *Invasive Plant Science and Management*, **2**, 191-199.

Nentwig, W., Kuhnel, E. & Bacher, S. (2010) A generic impact-scoring system applied to alien mammals in Europe. *Conservation Biology*, **24**, 302-311.

Nummi, P. & Hahtola, A. (2008) The beaver as an ecosystem engineer facilitates teal breeding. *Ecography*, **31**, 519-524.

Observatoire de la Biodiversité et du Patrimoine Naturel en Bretagne (2010) Les espèces marines invasives en Bretagne. 44 pp.

Oreska, M. & Aldridge, D. (2011) Estimating the financial costs of freshwater invasive species in Great Britain: a standardized approach to invasive species costing. *Biological Invasions*, **13**, 305-319.

Panov, V.E., Alexandrov, B., Arbačiauskas, K., Binimelis, R., Copp, G.H., Grabowski, M., Lucy, F., Leuven, R.S.E.W., Nehring, S., Paunović, M., Semenchenko, V. & Son, M.O. (2009) Assessing the risks of aquatic species invasions via european inland waterways: from concepts to environmental indicators. *Integrated Environmental Assessment and Management*, **5**, 110-126.

Paradis, G., Hugo, L. & Spinosi, P. (2008) Les plantes envahissantes: une menace pour la biodiversité. *Stantari*, **13**, 18-26.

Parrot, D., Roy, S., Baker, R., Cannon, R., Eyre, D., Hill, M., Wagner, M., Roy, H., Preston, C., Beckmann, B., Copp, G.H., Edmonds, N., Ellis, J., Laing, I., Britton, J.R. & Gozlan, R.E. (2009) Horizon scanning for new invasive non-native animal species in England, p. 121pp. Natural England Commissioned Report NECR009

Pauchard, A. & Alaback, P.B. (2004) Influence of elevation, land use, and landscape context on patterns of alien plant invasions along roadsides in protected areas of South-Central Chile. *Conservation Biology*, **18**, 238-248.

Pautasso, M., Aas, G., Queloz, V. & Holdenrieder, O. (2013) European ash (*Fraxinus excelsior*) dieback–A conservation biology challenge. *Biological Conservation*, **158**, 37-49.

Pertola, S., Kuosa, H. & Olsonen, R. (2005) Is the invasion of *Prorocentrum minimum* (Dinophyceae) related to the nitrogen enrichment of the Baltic Sea? *Harmful Algae*, **4**, 481-492.

Phillips, S.J. & Dudik, M. (2008) Modeling of species distributions with Maxent: new extensions and a comprehensive evaluation. *Ecography*, **31**, 161-175.

Phillips, S.J., Anderson, R.P. & Schapire, R.E. (2006) Maximum entropy modeling of species geographic distributions. *Ecological Modelling*, **190**, 231-259.

Pimentel, D., Lach, L., Zuniga, R. & Morrison, D. (2000) Environmental and economic costs of nonindigenous species in the United States. *Bioscience*, **50**, 53-65.

Pimentel, D., McNair, S., Janecka, J., Wightman, J., Simmonds, C., O'connell, C., Wong, E., Russel, L., Zern, J. & Aquino, T. (2001) Economic and environmental threats of alien plant, animal, and microbe invasions. *Agriculture, Ecosystems & Environment*, **84**, 1-20.

Pinder, A.C., Gozlan, R.E. & Britton, J. (2005) Dispersal of the invasive topmouth gudgeon, Pseudorasbora parva in the UK: a vector for an emergent infectious disease. *Fisheries Management and Ecology*, **12**, 411-414.

Plantlife (2010) Here today, here tomorrow? Horizon scanning for invasive non-native plants. 19 pp.

Preisler, R.K., Wasson, K., Wolff, W.J. & Tyrrell, M.C. (2009) Invasions of estuaries vs the adjacent open coast: a global perspective. *Biological invasions in marine ecosystems*, pp. 587-617. Springer.

Rabitsch, W. (2008) Alien true bugs of Europe (Insecta: Hemiptera: Heteroptera). *Zootaxa*, **1827**, 1-44.

Rehfisch, M., Allan, J. & Austin, G. (2010) The effect on the environment of Great Britain's naturalized greater Canada *Branta canadensis* and Egyptian geese *Alopochen aegyptiacu*s. *BOU Proceedings–The Impacts of Non-native Species*,

Reseau regional des Gestionnaires des Milieux Aquatiques (2009) Plantes Envahissantes. Guide d'identification des principales espèces aquatiques et de berges en Provence et Languedoc. In, p. 112 pp

Reynolds, J. (1985) Details of the geographic replacement of the red squirrel (*Sciurus vulgaris*) by the grey squirrel (*Sciurus carolinensis*) in eastern England. *The Journal of Animal Ecology*, 149-162.

Ricciardi, A., Neves, R.J. & Rasmussen, J.B. (1998) Impending extinctions of North American freshwater mussels (Unionoida) following the zebra mussel (*Dreissena polymorpha*) invasion. *Journal of Animal Ecology*, **67**, 613-619.

Rodriguez-Castaneda, G., Hof, A.R., Jansson, R. & Harding, L.E. (2012) Predicting the fate of biodiversity using species' distribution models: enhancing model comparability and repeatability. *Plos One*, **7**

Roques, A., Rabitsch, W., Rasplus, J.-Y., Lopez-Vaamonde, C., Nentwig, W. & Kenis, M. (2009) Alien terrestrial invertebrates of Europe. *Handbook of alien species in Europe*, pp. 63-79. Springer.

Roy, H.E., Bacon, J., Beckmann, B., Harrower, C.A., Hill, M.O., Isaac, N.J.B., Preston, C.D., Rathod, B., Rorke, S.L., Marchant, J.H., Musgrove, A., Noble, D., Sewell, J., Seeley, B., Sweet, N., Adams, L., Bishop, J., Jukes, A.R., Walker, K.J. & Pearman, D. (2012) Non-native species in Great Britain: establishment, detection and reporting to inform effective decision making. In, p. 110. Centre for Ecology & Hydrology and others

Salminen, R., Batista, M.J., Bidovec, M., Demetriades, A., De Vivo, B., De Vos, W., Duris, M., Gilucis, A., Gregorauskiene, V., Halamic, J., Heitzmann, P., Lima, A., Jordan, G., Klaver, G., Klein, P., Lis, J., Locutura, J., Marsina, K., Mazreku, A., O'Connor, P.J., Olsson, S.Å., Ottesen, R.-T., Petersell, V., Plant, J.A., Reeder, S., Salpeteur, I., Sandström, H., Siewers, U., Steenfelt, A. & Tarvainen, T. (2005) The geochemical baseline of Europe. Background Information, methodology and maps. *Geochemical Atlas of Europe*. Geological Survey of Finland, Espoo, Finland.

Schlichting, C.D. & Levin, D.A. (1986) Phenotypic plasticity: an evolving plant character. *Biological Journal of the Linnean Society*, **29**, 37-47.

Seebens, H., Gastner, M.T. & Blasius, B. (2013a) The risk of marine bioinvasion caused by global shipping. *Ecology Letters*, **16**, 782-790.

Simberloff, D. & Von Holle, B. (1999) Positive interactions of nonindigenous species: invasional meltdown? *Biological Invasions*, **1**, 21-32.

Simon-Bouhet, B., Garcia-Meunier, P. & Viard, F. (2006) Multiple introductions promote range expansion of the mollusc *Cyclope neritea* (Nassariidae) in France: evidence from mitochondrial sequence data. *Molecular Ecology*, **15**, 1699-1711.

Soes, D.M., Glöer, P. & de Winter, A.J. (2009) *Viviparus acerosus* (Bourguignat, 1862)(Gastropoda: Viviparidae), a new exotic snail species for the Dutch fauna. *Aquatic Invasions*, **4**, 373-375.

SprinGreat Britainorn, M., Romagosa, C.M. & Keller, R.P. (2011) The value of nonindigenous species risk assessment in international trade. *Ecological Economics*, **70**, 2145-2153.

Tan, K., Radloff, S., Li, J., Hepburn, H., Yang, M.-X., Zhang, L. & Neumann, P. (2007) Bee-hawking by the wasp, *Vespa velutina*, on the honeybees *Apis cerana* and *A. mellifera*. *Naturwissenschaften*, **94**, 469-472.

Theoharides, K.A. & Dukes, J.S. (2007) Plant invasion across space and time: factors affecting nonindigenous species success during four stages of invasion. *New Phytologist*, **176**, 256-273.

Trombulak, S.C. & Frissell, C.A. (2000) Review of ecological effects of roads on terrestrial and aquatic communities. *Conservation Biology*, **14**, 18-30.

Tyberghein, L., Verbruggen, H., Pauly, K., Troupin, C., Mineur, F. & De Clerck, O. (2012) Bio-ORACLE: a global environmental dataset for marine species distribution modelling. *Global Ecology and Biogeography*, **21**, 272-281.

Unckless, R.L. & Makarewicz, J.C. (2007) The impact of nutrient loading from Canada geese (*Branta canadensis*) on water quality, a mesocosm approach. *Hydrobiologia*, **586**, 393-401.

Urban, M.C., Phillips, B.L., Skelly, D.K. & Shine, R. (2008) A toad more traveled: the heterogeneous invasion dynamics of cane toads in Australia. *The American naturalist*, **171**, E134-E148.

Verlaque, M., Ruitton, S., Mineur, F. & Boudouresque, C.F. (2007) CIESM Atlas of exotic macrophytes in the Mediterranean Sea. *Rapp. Comm. int. Mer Médit*, **38**, 14.

Verloove, F. (2006) *Catalogue of neophytes in Belgium (1800-2005)*.

Vila, M. & Pujadas, J. (2001) Land-use and socio-economic correlates of plant invasions in European and North African countries. *Biological Conservation*, **100**, 397-401.

Vilà, M., Weber, E. & Antonio, C.M. (2000) Conservation implications of invasion by plant hybridization. *Biological Invasions*, **2**, 207-217.

Vilà, M., Tessier, M., Suehs, C.M., Brundu, G., Carta, L., Galanidis, A., Lambdon, P., Manca, M., Médail, F. & Moragues, E. (2006) Local and regional assessments of the impacts of plant invaders on vegetation structure and soil properties of Mediterranean islands. *Journal of Biogeography*, **33**, 853-861.

Villemant, C., Haxaire, J. & Streito, J.-C. (2006) Premier bilan de l'invasion de Vespa velutina Lepeletier en France (Hymenoptera, Vespidae). *Bulletin de la Société entomologique de France*, **111**, 535-538.

Villemant, C., Barbet-Massin, M., Perrard, A., Muller, F., Gargominy, O., Jiguet, F. & Rome, Q. (2011) Predicting the invasion risk by the alien bee-hawking Yellow-legged hornet *Vespa velutina nigrithorax* across Europe and other continents with niche models. *Biological Conservation*, **144**, 2142-2150.

von Holle, B. & Simberloff, D. (2005) Ecological resistance to biological invasion overwhelmed by propagule pressure. *Ecology*, **86**, 3212-3218.

Wadsworth, R., Collingham, Y., Willis, S., Huntley, B. & Hulme, P. (2000) Simulating the spread and management of alien riparian weeds: are they out of control? *Journal of Applied Ecology*, **37**, 28-38.

Warren, D.L., Glor, R.E. & Turelli, M. (2010) ENMTools: a toolbox for comparative studies of environmental niche models. *Ecography,* 33, 607-611.

Welter-Schultes, F. (2005) AnimalBase: early zoological literature online.

Williams, F., Eschen, R., Harris, A., Djeddour, D., Pratt, C., Shaw, R. S., Murphy, S. T. (2010) *The economic cost of invasive non-native species on Great Britain*. CABI report, 198pp.

Williamson, M.H. (1996) *Biological invasions*. Chapman & Hall, London, UK.

Wolff, W.J. (2005) *Non-indigenous marine and estuarine species in The Netherlands*. Nationaal Natuurhistorisch Museum.

Zambettakis, C. & Magnanon, S. (2008) Identification des plantes vasculaires invasives de Basse-Normandie. 25 pp. Conservatoire Botanique National de Brest, Conseil régional Basse-Normandie, DIREN Basse-Normandie.

Zerebecki, R.A. & Sorte, C.J. (2011) Temperature tolerance and stress proteins as mechanisms of invasive species success. *Plos One*, **6**, e14806.

7. ANNEXES

List of Annexes:

ANNEX A. References used to complete the known native and invasive distribution of species selected for modelling (the complete list of species can be consulted in **Table 6**).

ANNEX B. RINSE Registry of Non-Native Species (NNS). Excel file containing a list of all NNS registered during the present project. The file includes taxonomic (scientific and English name, phylum and class), geographic (confirmed presence in RINSE countries and areas) and environmental (main habitat preference) information.

ANNEX C. Focus lists of non-native species in the RINSE region.

Annex C.1. Focus list of the worst non-native Angiospermae in the RINSE countries.

Annex C.2. Focus list of non-native Mollusca in the RINSE countries.

Annex C.3. Focus list of non-native Osteichthyes in the RINSE countries.

Annex C.4. Focus list of non-native Anseriformes in the RINSE countries.

ANNEX D. RINSE Horizon scanning lists of INS. The Excel file contains two sheets: the Alert List of INS and the Black List of INS. The Alert List contains information on 79 invasive absent from RINSE, including: information on each species' taxonomy, risk scores assigned by experts, species characteristics, worst INS's lists consulted and inclusion in the Alert top 12 list. The Black List covers 361 species already present in at least one of the RINSE countries, with information on: the species taxonomy, confirmed presence in RINSE countries, species characteristics, worst INS's lists consulted, percentage of votes received during expert consultation and inclusion in the Black top 12 list.

ANNEX E. Species Distribution Model (SDM) output statistics. The Excel file includes five sheets corresponding to definition of terms, terrestrial plants, terrestrial animals, aquatic inland and marine organisms. Each sheet includes modelling statistics for all Alert and Black INS modelled, as well as averaged scores.

ANNEX F. Folder containing GIS output maps of all modeled species. Two files are provided for each species, coded as following:

ScienctificName_RINSE.tif: map including continuous suitability scores (0-100% match with the species current distribution)

ScienctificName_RINSE_thresholded.tif: predicted presence/absence (coded as 0/1). This map is calculated applying to the continuous map the threshold maximizing the sensitivity and specificity of the model.

In addition, heat maps are also included in this folder, named:

ALERT_heatmap_marine.tif

ALERT_heatmap_continental.tif

BLACK_heatmap_marine.tif

BLACK_heatmap_continental.tif

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Authors of this report:

Alexandra Zieritz
Aquatic Ecology Group
Department of Zoology
University of Cambridge
Downing St. CB2 3EJ, Cambridge (UK)
e-mail: Alexandra.zieritz@cantab.net

Belinda Gallardo
Aquatic Ecology Group
Department of Zoology
University of Cambridge
Downing St. CB2 3EJ, Cambridge (UK)
e-mail: galla82@hotmail.com

David C. Aldridge
Aquatic Ecology Group
Department of Zoology
University of Cambridge
Downing St. CB2 3EJ, Cambridge (UK)
e-mail: da113@cam.ac.uk / d.aldridge@zoo.cam.ac.uk

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ANNEX A
References

ANNEX A. References used to complete the known native and invasive distribution of species.

Species	Reference
Aedes albopictus	Toto J.C., S. Abaga, P. Carnevale, F. Simard. 2003. First report of the oriental mosquito *Aedes albopictus* on the West African island of Bioko, Equatorial Guinea. Medical and Veterinary Entomology, 17(3): 343–346
	Simard F., Nchoutpouen E., Toto J.C., D. Fontenille. 2005. Geographic Distribution and Breeding Site Preference of *Aedes albopictus* and *Aedes aegypti* (Diptera: Culicidae) in Cameroon, Central Africa. Journal of Medical Entomology, 42(5): 726-731
	Medley K.A. 2010. Niche shifts during the global invasion of the Asian tiger mosquito, *Aedes albopictus* Skuse (Culicidae), revealed by reciprocal distribution models. Global Ecology and Biogeography, 19(1): 122–133
Ageratina adenophora	Wang R., Wang Y-Z. 2006. Invasion dynamics and potential spread of the invasive alien plant species Ageratina adenophora (Asteraceae) in China. Diversity and Distribution, 12(4): 1472-4642
Agrilus planipennis	United States Government Accountability Office Report. 2006. Lessons Learned from Three Recent Infestations May Aid in Managing Future Efforts. 118pp.
	Smitley D., McCullough D. How Homeowners Can Protect Ash Trees From the Emerald Ash Borer in Southeastern Michigan. Michigan State University.
	http://www.in.gov/dnr/entomolo/5349.htm
Alexandrium catenella	Hallegraeff, G. M., Bolch, C. J., Blackburn, S. I., Oshima, Y. 1991. Species of the Toxigenic Dinoflagellate Genus *Alexandrium* in Southeastern Australian Waters. Botanica Marina, 34 (6): 575–588
Ammotragus lervia	Cassinello J., Cuzin F., Jdeidi T., Masseti M., Nader I., de Smet K. 2008. *Ammotragus lervia*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. www.iucnredlist.org. Downloaded on 06 February 2013.
Anguillicola crassus	Wickström H., P. Clevestam and J. Höglund. 1998. The spreading of *Anguillicola crassus* in freshwater lakes in Sweden. Bull. Fr. Pêche Piscic. 349 : 215-221
	Kirk R. S. 2003. The impact of *Anguillicola crassus* on European eels. Fisheries Management and Ecology, 10(6): 385–394
Anoplolepis gracilipes	http://www.hear.org/species/anoplolepis_gracilipes/
Anoplophora chinensis	Van Der Gaag, D. J., G. Sinatra, P. F. Roversi, A. Loomans, F. Hérard, A. Vukadin. Evaluation of eradication measures against *Anoplophora chinensis* in early stage infestations in Europe. EPPO Bulletin, 40(2): 176–187
	Hérard, F., M. Ciampitti, M. Maspero, H. Krehan, U. Benker, C. Boegel, R. Schrage, L. Bouhot-Delduc, P. Bialooki. 2006. *Anoplophora* species in Europe: infestations and management processes. EPPO Bulletin, 36(3): 470–474
Anoplophora glabripennis	Townsend A. and R. Scachetti-Pereira. 2004. Potential geographic distribution of *Anoplophora glabripennis* (Coleoptera: Cerambycidae) in North America. The American Midland Naturalist, 151(1): 170-178
	Hu J., S. Angeli, S. Schuetz, Y. Luo, A. E. Hajek. 2009. Ecology and management of exotic and endemic Asian longhorned beetle *Anoplophora glabripennis.* Agricultural and Forest Entomology, 11(4): 359–375
Aphanius dispar	Keivany Y., M. Ghorbani. 2012. Distribution of *Aphanius dispar dispar* (Rüppell, 1829) populations in Iran, with a new record from western Iran (Actinopterygii: Cyprinodontidae). Turk J Zool, 36 (6): 824-827
Bemisia tabaci	Lima L.H.C., L. Campos, M.C. Moretzsohn, D. Návia and M.R.V. de Oliveira. 2002. Genetic diversity of *Bemisia tabaci* (Genn.) Populations in Brazil revealed by RAPD markers. Genet. Mol. Biol. 25 (2)
	Skaljac M., K. Zanic, S. G Ban, S. Kontsedalov and M. Ghanim. 2010. Co-infection and localization of secondary symbionts in two whitefly species. BMC Microbiology, 10: 142
	Kairo M.T.K., S.T. Murphy. 2005. Comparative studies on populations of *Pauesia juniperorum* (Hymenoptera: Braconidae), a biological control agent for *Cinara cupressivora* (Hemiptera: Aphididae). Bulletin of Entomological Research, 95(6): 597-603

	Tahiri A., A. Sekkat, A. Bennani, M. Granier, G. Delvare, M. Peterschmitt. 2006. Distribution of tomato-infecting begomoviruses and *Bemisia tabaci* biotypes in Morocco. Annals of Applied Biology, 149 (2): 175–186
	Chia-Hung Hsieh, Chung-Hsiung Wang, and Chiun-Cheng Ko. 2006. Analysis of *Bemisia tabaci* (Hemiptera: Aleyrodidae) Species complex and distribution in Eastern Asia based on mitochondrial DNA Markers. Annals of the Entomological Society of America, 99 (5): 768-775
	Xi Teng, Fang-Hao Wan, Dong Chu. 2010. Bemisia tabaci Biotype Q Dominates Other Biotypes Across China. Florida Entomologist, 93(3):363-368
	Bayhan E., Ulusoy M.R., Brown J.K. 2006. Host range, distribution, and natural enemies of Bemisia tabaci 'B biotype' (Hemiptera: Aleyrodidae) in Turkey. Journal of Pest Science, 79(4): 233-240
	Fujiie A., Abdul Mohsen Said Omar, Bahij Sawas A., Abbas A., Abdul Hadi M., Alden Sawas E., Barakat A., Ueda S. Natsuaki K.T. 2009. Geographic distribution of *Bemisia tabaci* biotypes Collected from autumn-cultured potato fields in Syria. J. ISSAAS 15(2): 12-20
Boiga irregularis	Rödder D., Lötters S. 2010. Potential Distribution of the Alien Invasive Brown Tree Snake, *Boiga irregularis* (Reptilia: Colubridae) 1. Pacific Science, 64(1), 11-22 www.herpnet2.org
Cabomba caroliniana	Jacobs M.J., Macisaac H.J. 2009. Modelling spread of the invasive macrophyte *Cabomba caroliniana*. Freshwater Biology 54: 296–305
Callosciurus finlaysonii	Bertolino S., Genovesi P. 2005. The application of the European strategy on invasive alien species: an example with introduced squirrels. Hystrix, the Italian Journal of Mammalogy, 16(1): 59-69
	Bertolino S., Lurz P.W.W. 2013. *Callosciurus* squirrels: worldwide introductions, ecological impacts and recommendations to prevent the establishment of new invasive populations. Mammal Review, 43: 22-33
Castor canadensis	Skewes O., Gonzalez F., Olave R., Ávila A., Vargas V., Paulsen P., König H. 2006. Abundance and distribution of American beaver, *Castor canadensis* (Kuhl 1820), in Tierra del Fuego and Navarino islands, Chile. European Journal of Wildlife Research, 52: 292-296
Ceratitis capitata	Meyer M. De, M. P. Robertson, A. T. Peterson, M. W. Mansell. 2008. Ecological niches and potential geographical distributions of Mediterranean fruit fly (*Ceratitis capitata*) and Natal fruit fly (*Ceratitis rosa*). Journal of Biogeography, 35(2): 270–281
	Vera M.T., Rodriguez R., Segura D.F., Cladera J.L., Sutherst R.W. 2002. Potential Geographical Distribution of the Mediterranean Fruit Fly, Ceratitis capitata (Diptera: Tephritidae), with Emphasis on Argentina and Australia. Environ. Entomol. 31(6): 1009-1022
	Oroño, L. E., Albornoz-Medina, P., Núñez-Campero, S., Van Nieuwenhove, G. A., Bezdjian, L. P., Martin, C. B., Ovruski, S. M. 2006. Update of host plant list of Anastrepha fraterculus and Ceratitis capitata in Argentina. In R. L. Sugayama, R. A. Zucchi, S. M. Ovruski, & J. Sivinski (Eds.), Proceedings of the 7th International Symposium on Fruit Flies of Economic Importance (pp. 10-15).
Charybdis longicollis	Innocenti G., Bella S. G. 2007. Modus vivendi: Invasive host/parasite relations—*Charybdis longicollis* Leene, 1938 (Brachyura: Portunidae) and *Heterosaccus dollfusi* Boschma, 1960 (Rhizocephala: Sacculinidae). Hydrobiologia, 590: 95-101
	Lewinsohn C., Lipke B.H. 1964. New records of decapod Crustacea from the Mediterranean coast of Israel and the eastern Mediterranean. Zoologische Mededelingen 40(8): 45-63
	Ozcan T., Katagan T., Kocatas A. 2005. Brachyuran crabs from Iskenderun Bay (southeastern Turkey). Crustaceana, 237-243
Euglandina rosea	South Pacific Regional Environment Programme. 2000. Invasive species in the Pacific: A technical review and draft regional strategy. 197 pp
	Meyer III, W. M., & Cowie, R. H. 2011. Distribution, movement, and microhabitat use of the introduced predatory snail Euglandina rosea in Hawaii: implications for management. Invertebrate Biology, 130(4): 325–333

Linepithema humile	Holway D.A. 1995. Distribution of the Argentine Ant (*Linepithema humile*) in Northern California. Conservation Biology, 9(6): 1634-1637
	Roura-Pascual N., A. V. Suarez, C. Gómez, P. Pons, Y. Touyama, A.L. Wild, and A.T. Peterson. 2004. Geographical potential of Argentine ants (*Linepithema humile* Mayr) in the face of global climate change. Proc. R. Soc. Lond. B 271(1557): 2527-2535
Liriomyza huidobrensis	He, L., Zhang, Y., Xiao, N., Wei, J., & Kuang, R. 2003. Liriomyza huidobrensis in Yunnan, China: current distribution and genetic structure of a recently established population. Entomologia experimentalis et applicata, 102(3): 213-219
Marmokrebs	D.M. Holdich, J.D. Reynolds, C. Souty-Grosset and P.J. Sibley. 2009. A review of the ever increasing threat to European crayfish from non-indigenous crayfish species. Knowl. Managt. Aquatic Ecosyst. 11: 394-395
	Martin P., Nathan J. Dorn, Tadashi Kawai, Craig van der Heiden, Gerhard Scholtz. 2010. The enigmatic Marmorkrebs (marbled crayfish) is the parthenogenetic form of Procambarus fallax (Hagen, 1870). Contributions to Zoology, 79 (3)
	Nonnis Marzano F., M. Scalici, S. Chiesa, F. Gherardi, A. Piccinini and G. Gibertini. 2009. The first record of the marbled crayfish adds further threats to fresh waters in Italy. Aquatic Invasions, 4(2): 401-404
	Hendrix, A. N., & Loftus, W. F. (2000). Distribution and relative abundance of the crayfishes Procambarus alleni (Faxon) and P. fallax (Hagen) in southern Florida. Wetlands, 20(1), 194-199.
	Feria, T. P., & Faulkes, Z. (2011). Forecasting the distribution of Marmorkrebs, a parthenogenetic crayfish with high invasive potential, in Madagascar, Europe, and North America. Aquatic Invasions, 6(1), 55-67.
Miconia calvescens	Department of primary industries and Fisheries. Queensland Government. 2006. Pest plant risk assessment. 14 pp.
Musculista senhousia	Eun Jung Choya, Soonmo Anb, Chang-Keun Kang. 2007. Pathways of organic matter through food webs of diverse habitats in the regulated Nakdong River estuary (Korea). Estuarine, Coastal and Shelf Science, 78(1): 215–226
	Bacheleta G., H. Blancheta, M. Cotteta, C. Danga, X. de Montaudouina, A. de Moura Queirósa, B. Gouillieuxa and N. Lavesque. 2009. A round-the-world tour almost completed: first records of the invasive mussel *Musculista senhousia* in the north-east Atlantic (southern Bay of Biscay). Marine Biodiversity Records, 2, e119
	Zhoua H., Z.N. Zhanga, X.S. Liua, L.H. Tuc, Z.S. Yua. 2007. Changes in the shelf macrobenthic community over large temporal and spatial scales in the Bohai Sea, China. Journal of Marine Systems, 67(3–4) 312–321
Nyctereudes procynoides	http://www.canids.org/species/Nyctereutes_procyonoides.htm
Phytophthora cinnamomi	Robin C., M.L. Desprez-Loustau, G. Capron and C. Delatour. 1998. First record of *Phytophthora cinnamomi* on cork and holm oaks in France and evidence of pathogenicity. Ann. For. Sci. 55 (8) 869-883
	http://www.scientificsocieties.org/aps/proceedings/sod/Papers/Brasier/default.htm
Pomacea canaliculata	Lv S., Zhang Y., Liu H.X., Hu L., Yang K., Steinmann P., Chen Z., Wang L.Y., Utzinger J., Zhou X.N. 2009. Invasive Snails and an Emerging Infectious Disease: Results from the First National Survey on *Angiostrongylus cantonensis* in China. PLoS Neglected Tropical Disease, 3(2): e368
	Seuffert, M. E., & Martín, P. R. (2012). Distribution of the apple snail< i> Pomacea canaliculata</i> in Pampean streams (Argentina) at different spatial scales. Limnologica-Ecology and Management of Inland Waters.
	Kenji, I. (2003). Expansion of the golden apple snail, Pomacea canaliculata, and features of its habitat. National Agricultural Research Center". Department of Entomology and Nematology. National Agricultural Research Center Kannondai, 3-1.
Rhopilema nomadica	Deidun A., S. Arrigo and S. Piraino. 2011. The westernmost record of *Rhopilema nomadica* (Galil, 1990) in the Mediterranean – off the Maltese Islands. Aquatic Invasions, Suppl. 99-103
	Gülşahin, N., & Tarkan, A. N. (2011). The first confirmed record of the alien jellyfish

	Rhopilema nomadica Galil, 1990 from the southern Aegean coast of Turkey. Aquatic Invasions, 6(1), S95-S97.
	Siokou-Frangou, I., Sarantakos, K., & Christou, E. D. (2006). First record of the scyphomedusa Rhopilema nomadica Galil, 1990 (Cnidaria: Scyphozoa: Rhizostomeae) in Greece. Aquatic Invasions, 1(3), 194-195.
Seiridium cardinale	Xenopoulos S., S. Diamandis. 1985. A distribution map for *Seiridium cardinale* causing the cypress canker disease in Greece. European Journal of Forest Pathology, 15(4): 223–226
	Tsopelas P., I. Barnes, M. J. Wingfield, S. Xenopoulos. 2007. *Seiridium cardinale* on Juniperus species in Greece. Forest Pathology, 37 (5): 338–347
	Zoccaa A., C. Zaninia, A. Aimia, G. Frigimelicaa, N. La Porta, A. Battistia. 2008. Spread of plant pathogens and insect vectors at the northern range margin of cypress in Italy. Acta Oecologica, 33 (3): 307–313
	Moricca S., I. Børja, G. G. Vendramin, P. Raddi. 2000. Differentiation of *Seiridium* species associated with virulent cankers on cypress in the Mediterranean region by PCR-SSCP. Plant Pathology, 49(6): 774–781
Seriola fasciata	Andaloro F., Falautano, M., Sinopoli, M., Passarelli, F. M., Pipitone, C., Addis, Castriota, L. 2005. The lesser amberjack *Seriola fasciata* (Perciformes: Carangidae) in the Mediterranean: A recent colonist. Cybium 29(2): 141-145
Thaumetopoea processionaria	Groenen F., Meurisse N. 2011. Historical distribution of the oak processionary moth *Thaumetopoea processionea* in Europe suggests recolonization instead of expansion. Agricultural and Forest Entomology, 14(2): 147-155
Undaria pinnatifida	Zabin C. J., Ashton G. V., Brown C. W., Ruiz G. M. 2009. Northern range expansion of the Asian kelp *Undaria pinnatifida* (Harvey) Suringar (Laminariales, Phaeophyceae) in western North America. Aquatic Invasions 4(3): 429-434
	Meretta P. E., Matula C. V., Casas G. 2012. Occurrence of the alien kelp *Undaria pinnatifida* (Laminariales, Phaeophyceae) in Mar del Plata, Argentina. BioInvasions Records 1: 59-63
	Russell L. K., Hepburn C. D., Hurd C. L., Stuart M. D. 2008. The expanding range of *Undaria pinnatifida* in southern New Zealand: distribution, dispersal mechanisms and the invasion of wave-exposed environments. Biological Invasions 10(1): 103-115

ANNEX B

Registry of Non-native Species (inc abbreviations

Abbreviations	Definition
Countries and RINSE area	
Er	eradicated, i.e. this non-native species has been seen in the wild and some deliberate management action got rid of the populatio
Ex	extinct, i.e. this non-native species was present in the wild at some time (albeit briefly from an escape) but is no longer present in
N	not present, i.e. this non-native species has never been seen in the wild in the area in question
nat	native
Y	yes (present), i.e. this non-native species has been seen in the wild and a population of the species (however small) is likely to exis
Y, Er	one source says present in the wild, other source says eradicated
Y, Ex	one source says present in the wild, other source says extinct
Y, Indoors	this non-native species is present but has only been seen indoors
Y, N	one source says present in the wild, the other source says it is not present in the wild
Y, nat	one source says non-native and observed in the wild, other source says native
Environment	
F	Freshwater
M	Marine
T	Terrestrial

n from the area in question
the area in question

t at this time

Phylum	Class	Genus	Species	Subspecies	English name	GB	FRANCE	BELGIUM	NETHERLANDS	RINSE GB	RINSE FRANCE	RINSE BELGIUM	RINSE NETHERLANDS	Environment
Angiospermae	Eudicotyledoneae	Acacia	dealbata		Silver wattle		Y				?			T
Chordata	Actinopterygii	Acipenser	gueldenstaedtii		Russian sturgeon	Y		Y	Y	Y		Y	N	M+F
Chordata	Aves	Acridotheres	tristis		Common Myna	Y	Y	Y	Y			Y	Y	T
Arthropoda	Insecta	Aedes	albopictus		Asian Tiger Mosquito	N	Y	Y	Y	N	N	N	Y	T
Angiospermae	Eudicotyledoneae	Aeonium	cuneatum		Aeonium	Y								T
Angiospermae	Magnoliopsida	Akebia	quinata		Five-leaf	Y	Y	Y	Y	?	?	N	N	T
Chordata	Actinopterygii	Ambloplites	rupestris		Rock Bass	Y, Ex	Y	Y, Ex		Y, Ex	Y	N		F
Dinoflagellata	Dinophyceae	Alexandrium	catenella			Y	Y		Y	N	?		Y	M
Chordata	Mammalia	Alopex	lagopus		Arctic Fox	Ex	Y	Y		N	N	N		T
Nematoda	Secernentea	Anguillicola	crassus		Eel swim bladder nematode	Y	Y	Y	Y	Y	Y	Y		M+F
Nemertea	Enopla	Antiponemertes	pantini			Y				?				T
Arthropoda	Insecta	Anoplophora	chinensis		Citrus longhorn beetle	N	Y, Er	Y	Y	N		Y	?	T
Arthropoda	Insecta	Anoplophora	glabripennis		Asian longhorn beetle	Y	Y	Y, Er	Y, Er	?	?	Y	?	T
Angiospermae	Monocotyledoneae	Arundo	donax		Giant Reed	N	Y	Y	N	N	N	Y	N	F+T
Platyhelminthes	Turbellaria	Arthurdendyus	triangulata		New Zealand Flatworm	Y	N	N	N	Y	N	N	N	T
Rhodophyta	not assigned	Asparagopsis	armata		Harpoon weed	Y	Y		Y	Y				M
Arthropoda	Maxillopoda	Balanus	improvisus		Acorn barnacle	Y		Y	Y	Y		Y	N	M
Arthropoda	Insecta	Bemisia	tabaci		Tobacco Whitefly	N	Y	Y	Y	N	?	?	?	T
Rhodophyta	not assigned	Bonnemaisonia	hamifera		Pink cotton wool	Y	Y		Y	Y	Y		Y	M
Mollusca	Bivalvia	Brachidontes	pharaonis				Y				N			M
Chordata	Aves	Branta	canadensis		Canada Goose	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Chordata	Amphibia	Bufo	marinus		Cane Toad	Y		Y		?		Y		F+T
Nematoda	Secernentea	Bursaphelenchus	xylophilus		Pine Wood Nematode	Y				?				T
Angiospermae	Magnoliopsida	Cabomba	caroliniana		Carolina Water-shield	Y	Y	Y	Y	Y	?	Y	Y	F
Chordata	Aves	Cairina	moschata		Muscovy Duck	Y	Y	Y	Y	Y	?	Y	Y	F+T
Cnidaria	Hydrozoa	Clavopsella	navis			Y			Y	Y			Y	M
Cnidaria	Hydrozoa	Clytia	linearis				Y				N			M
Chordata	Mammalia	Callosciurus	prevostii		Prevost's Squirrel	N		Y		N		Y		T
Angiospermae	Eudicotyledoneae	Carpobrotus	edulis		Hottentot-Fig	Y	Y	Y	Y, Ex	Y	N	?	Y, Ex	T
Mollusca	Gastropoda	Corambe	obscura				Y		Y, Ex		N		Y, Ex	M
Chordata	Actinopterygii	Coregonus	albula		Vendace	Y	Y	N	Y	N	Y	N		F
Chordata	Ascidiacea	Corella	eumyota			Y	Y		Y	Y	N		Y	M
Chordata	Mammalia	Castor	canadensis		Canadian beaver	Er	Er	Y		N	N	N		F+T
Chlorophyta	Bryopsidophyceae	Caulerpa	racemosa		Grape Alga	N	Y		Y	N	N			M
Chlorophyta	Bryopsidophyceae	Caulerpa	taxifolia		Caulerpa	Y	Y		Y	N	N			M
Arthropoda	Insecta	Ceratitis	capitata		Mediterranean Fruit Fly or Medfly	Y	Y	Y	Y	N	?	?	Y	T
Chordata	Mammalia	Cervus	canadensis		Wapiti	Y				Y				T
Annelida	Polychaeta	Desdemona	ornata			Y				Y				M
Chordata	Reptilia	Chelydra	serpentina		Common Snapping Turtle	Y			Y	N			Y	F+T
Chlorophyta	Bryopsidophyceae	Codium	fragile	Atlanticum	Green sea fingers (atlanticum)	Y				N				M
Chlorophyta	Bryopsidophyceae	Codium	fragile	fragile	Green sea-fingers (tomentosoides)	Y	Y	Y	Y	Y	Y			M
Angiospermae	Monocotyledoneae	Cortaderia	selloana		Pampas Grass	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Corvus	splendens		Indian house crow	Y	Y	Y	Y				Y	T
Arthropoda	Insecta	Corythucha	arcuata				Y				N			T
Heterokontophyta	Bacillariophyceae	Coscinodiscus	wailesii			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Malacostraca	Hemigrapsus	takanoi		brush clawed shore crab,	N	Y	Y	Y	N	Y	Y	Y	M+F
Angiospermae	Eudicotyledoneae	Cotoneaster	horizontalis		Wall Cotoneaster	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Mammalia	Cynomys	ludovicianus		Black-tailed Prairie Dog	Y, Ex			Y	Y, Ex			Y	T
Mollusca	Bivalvia	Dreissena	bugensis		Quagga Mussel	N		Y	Y	N		Y	Y	F
Angiospermae	Eudicotyledoneae	Echinocystis	lobata		Wild Cucumber	N	Y		N	N	?		N	T
Arthropoda	Insecta	Locusta	migratoria				Y	Y	Y					T
Arthropoda	Insecta	Frankliniella	occidentalis		Western flower thrips	Y	Y	Y	Y	?	?	?	?	T
Chordata	Reptilia	Macrochelys	temminckii		Alligator Snapping Turtle	Y				?				F+T
Arthropoda	Insecta	Grapholita	molesta		Oriental Fruit Moth	Y	Y	Y	N	N	N	N	N	T
Platyhelminthes	Trematoda	Gyrodactylus	salaris		Salmon fluke	N	Y	Y		N				F
Angiospermae	Monocotyledoneae	Hedychium	gardnerianum		Kahili ginger	Y			N	?			N	T
Chordata	Actinopterygii	Misgurnus	mizolepis		Chinese Weatherfish	Y, Er		N	Y	N		N	?	F
Angiospermae	Eudicotyledoneae	Heracleum	mantegazzianum		Giant Hogweed	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Malacostraca	Homarus	americanus		American Lobster	Y	Y			Y	Y			M
Arthropoda	Insecta	Nesidiocoloris	tenuis				Y							T
Chordata	Mammalia	Hydrochaeris	hydrochaeris		Capybara	Ex		Y	Y	Ex		Y	Y	T
Angiospermae	Eudicotyledoneae	Hydrocotyle	ranunculoides		Floating Pennywort	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Arachnida	Latrodectus	geometricus		Brown widow			Y				Y		T
Arthropoda	Arachnida	Latrodectus	hasselti		Redback spider			Y				Y		T
Arthropoda	Insecta	Linepithema	humile		Argentine ant	Y	Y	Y	Y	?	?	Y	?	T

Arthropoda	Insecta	Liriomyza	huidobrensis		Pea leaf miner	N	Y	Y	Y	N	?	?	?	T
Arthropoda	Malacostraca	Pachygrapsus	marmoratus		Marbled crab	Y	Y			Y	N			M
Angiospermae	Eudicotyledoneae	Lonicera	japonica		Japanese Honeysuckle	Y	Y	Y		Y	?	Y		T
Angiospermae	Eudicotyledoneae	Ludwigia	grandiflora		Creeping Water-primrose	Y	Y	Y	Y	Y	Y	Y	Y	F
Annelida	Polychaeta	Marenzelleria	neglecta		Red-gilled Mud Worm	N		Y	Y	N		Y	Y	M
Arthropoda	Malacostraca	Marsupenaeus	japonicus		Caribbean mud crab, Kuruma prawn	Y	Y			Y	Y			M
Chordata	Ascidiacea	Microcosmus	squamiger				Y							M
Ctenophora	Tentaculata	Mnemiopsis	leidyi		Sea walnut, American comb jelly	N	Y	Y	Y	N	Y	Y	Y	M
Chordata	Mammalia	Muntiacus	reevesi		Reeves's Muntjac	Y	Ex	Y	Y	Y	N	Y	Y	T
Mollusca	Bivalvia	Musculista	senhousia		Asian date mussel		Y				N			M
Chordata	Mammalia	Mustela	furo		Feral Ferret	Y			Y	Y			Y	T
Chordata	Mammalia	Mustela	vison		American Mink	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Arthropoda	Malacostraca	Rhithropanopeus	harrisii		Dwarf crab	Y	Y	Y	Y	N	Y	Y	Y	M
Chordata	Aves	Myiopsitta	monachus		Monk Parakeet	Y	Y	Y	Y	Y		Y	Y	T
Angiospermae	Eudicotyledoneae	Myriophyllum	aquaticum		Parrot's Feather	Y	Y	Y	Y	Y	Y	Y	Y	F
Chordata	Actinopterygii	Salvelinus	malma		Dolly Varden Charr	Y, Er		N		N		N		F
Chordata	Actinopterygii	Salvelinus	namaycush		American Lake Charr	Y	Y	N		N	Y	N		F
Angiospermae	Eudicotyledoneae	Myriophyllum	heterophyllum		Twoleaf Watermilfoil	Y	Y	Y	Y	N	?	Y	Y	F
Chordata	Actinopterygii	Neogobius	melanostomus		Round Goby	N		Y	Y	N		Y	Y	M+F
Chordata	Mammalia	Nyctereutes	procyonoides		Raccoon Dog	Y, Ex	Y	Y	Y	Y, Ex	N	Y	Y	T
Chlorophyta	Ulvophyceae	Ulva	pertusa		sea lettuce		Y		Y		N		Y	M
Chordata	Actinopterygii	Umbra	krameri		European Mudminnow	Y		N		N		N		F
Heterokontophyta	Bacillariophyceae	Odontella	sinensis		Chinese diatom	Y	Y	Y	Y	Y	Y	Y	Y	M
Ascomycota	Sordariomycetes	Ophiostoma	novo-ulmi		Dutch elm disease	Y	Y	Y	Y	Y			Y	T
Angiospermae	Eudicotyledoneae	Opuntia	ficus-indica		Prickly-pear cacti	N	Y	N	N		?			T
Arthropoda	Malacostraca	Orconectes	juvenilis		Kentucky River Crayfish		Y				N			F
Angiospermae	Eudicotyledoneae	Oxalis	pes-caprae		Bermuda-buttercup	Y	Y		N	Y	N		N	T
Angiospermae	Monocotyledoneae	Paspalum	distichum		Water Finger-grass	Y	Y	Y		Y	N	Y		F+T
Arthropoda	Insecta	Abax	parallelus			Y	Y	Y	Y	Y	N	N	Y	T
Arthropoda	Insecta	Abgrallapspis	cyanophylli				Y				?			T
Pinophyta	Pinopsida	Abies	alba			Y	nat	nat	nat	Y				T
Pinophyta	Pinopsida	Abies	grandis			Y	Y	Y	Y	Y	Y	Y	Y	T
Pinophyta	Pinopsida	Abies	nordmanniana			Y	Y	Y	Y	Y	N	N	Y	T
Pinophyta	Pinopsida	Abies	pinsapo			Y	Y		Y	Y	N		N	T
Pinophyta	Pinopsida	Abies	procera			Y	Y			Y	N			T
Arthropoda	Insecta	Ablerus	clisiocampae				Y							T
Arthropoda	Insecta	Ablerus	perspeciosus				Y							T
Angiospermae	Eudicotyledoneae	Abutilon	theophrasti		Velvetleaf	Y	Y	Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Acacia	melanoxylon		Australian Blackwood	Y	Y	Y						T
Angiospermae	Eudicotyledoneae	Acaena	anserinifolia		Bronze Pirri-Pirri-Bur	Y								T
Angiospermae	Eudicotyledoneae	Acaena	inermis		Spineless Acaena	Y								T
Angiospermae	Eudicotyledoneae	Acaena	novae-zelandiae		Pirri-Pirri-Bur	Y								T
Angiospermae	Eudicotyledoneae	Acaena	ovalifolia		Two-spined Acaena	Y								T
Arthropoda	Insecta	Acalyptris	platani				Y							T
Arthropoda	Insecta	Acanthocinus	aedilis		Timberman beetle	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Acanthocnemus	nigricans				Y				?			T
Arthropoda	Insecta	Acantholyda	erythrocephala			Y								T
Arthropoda	Insecta	Acantholyda	laricis					Y	Y					T
Arthropoda	Insecta	Acanthoscelides	obtectus		American Seed Beetle	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Acanthoxyla	geisovii			Y								T
Arthropoda	Insecta	Acanthoxyla	inermis			Y								T
Angiospermae	Eudicotyledoneae	Acanthus	mollis		Bear's-Breech	Y	Y	Y						T
Angiospermae	Eudicotyledoneae	Acanthus	spinosus		Spiny Bear's-Breech	Y	Y							T
Arthropoda	Maxillopoda	Acartia	erinea						Y					F
Arthropoda	Maxillopoda	Acartia	margalefi			Y				Y				M
Arthropoda	Maxillopoda	Acartia	tonsa			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Maxillopoda	Acartua	omorii				Y				Y			M
Angiospermae	Eudicotyledoneae	Acer	cappadocicum		Cappadocian Maple	Y	Y	Y						T
Angiospermae	Eudicotyledoneae	Acer	negundo		Ashleaf Maple	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Acer	platanoides		Norway Maple	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Acer	pseudoplatanus		Sycamore	Y	Y	Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Acer	rufinerve					Y				Y		T
Angiospermae	Eudicotyledoneae	Acer	saccharinum		Silver Maple	Y	Y	Y	Y					T
Arthropoda	Insecta	Aceratoneuromyia	indica			Y								T
Arthropoda	Arachnida	Aceria	erinea			Y		Y	Y	Y		Y	Y	T
Arthropoda	Arachnida	Aceria	tristriata			Y								T

Arthropoda	Insecta	Acericerus	heydenii			Y		Y	Y	Y		N	Y	T
Arthropoda	Insecta	Acericerus	ribauti			Y		Y	Y	Y		N	Y	T
Arthropoda	Arachnida	Achaearanea	acoreensis					Y				Y		T
Arthropoda	Arachnida	Achaearanea	tepidariorum		Common House Spider	Y	Y	Y	Y	Y			Y	T
Arthropoda	Arachnida	Achaearanea	veruculata		Diamond Comb-footed Spider	Y		Y		N		Y		T
Arthropoda	Insecta	Acheta	domesticus						Y					T
Angiospermae	Eudicotyledoneae	Achillea	distans		Tall Yarrow	Y								T
Angiospermae	Eudicotyledoneae	Achillea	filipendulina						Y					T
Angiospermae	Eudicotyledoneae	Achillea	ligustica		Southern Yarrow	Y								T
Chordata	Actinopterygii	Acipenser	baerii		Siberian Sturgeon	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Chordata	Actinopterygii	Acipenser	ruthenus		Sterlet	Y	Y	Y	Y	Y	Y	Y	N	M+F
Arthropoda	Insecta	Acizzia	acaciaebaileyanae				Y				?			T
Arthropoda	Insecta	Acizzia	jamatonica				Y				?			T
Arthropoda	Insecta	Acizzia	uncatoides				Y				?			T
Arthropoda	Insecta	Acleris	undulana				Y							T
Angiospermae	Eudicotyledoneae	Aconitum	lycoctonumvulparia		Wolf's-bane	Y								T
Angiospermae	Eudicotyledoneae	Aconitum	napellusXvariegatum		Hybrid Monk's-hood	Y		Y	Y			Y		T
Arthropoda	Insecta	Acontia	candefacta			Y								T
Arthropoda	Insecta	Acontia	crocata				Y							T
Angiospermae	Monocotyledoneae	Acorus	calamus		Sweet-flag	Y		Y	Y	?		?	?	F
Angiospermae	Monocotyledoneae	Acorus	gramineus		Slender Sweet-flag	Y				?				F
Chordata	Aves	Acridotheres	cristatellus		Crested Myna	Y		Y	Y			Y	Y	T
Rhodophyta	not assigned	Acrochaetium	catenulatum						Y					M
Rhodophyta	not assigned	Acrochaetium	densum						Y					M+F
Arthropoda	Insecta	Acrocrypta	purpurea						Y					T
Arthropoda	Insecta	Acronicta	aceris		Sycamore moth	Y	Y	Y	Y	Y		Y	Y	T
Angiospermae	Eudicotyledoneae	Acrophyllum	dentatum			Y								T
Angiospermae	Eudicotyledoneae	Acroptilon	repens		Russian Knapweed	Y	Y	Y				Y		T
Arthropoda	Insecta	Acrotelsa	collaris						Y					T
Rhodophyta	not assigned	Acrothamnion	preisii				Y							M
Arthropoda	Insecta	Acrotrichis	cognata			Y			Y					T
Arthropoda	Insecta	Acrotrichis	henrici			Y			Y					T
Arthropoda	Insecta	Acrotrichis	insularis			Y	Y		Y		?			T
Arthropoda	Insecta	Acrotrichis	josephi			Y				N				T
Arthropoda	Insecta	Acrotrichis	sanctahelenae			Y	Y		Y		?			T
Arthropoda	Maxillopoda	Actheres	percarum			Y				Y				F
Arthropoda	Arachnida	Aculops	fuchsiae			Y	Y							T
Arthropoda	Arachnida	Aculpos	lycopersici						Y				Y	T
Arthropoda	Insecta	Acyrthosiphon	auriculae			Y, Er	Y		Y	?				T
Arthropoda	Insecta	Acyrthosiphon	caraganae			Y	Y		Y	?				T
Arthropoda	Insecta	Acyrthosiphon	primulae			Y	Y		Y	?				T
Arthropoda	Insecta	Adelencyrtus	aulacaspidis			Y	Y							T
Arthropoda	Insecta	Adelges	abietis		Pineapple Gall Woolly Aphid	Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Adelges	cooleyi		Douglas Fir Woolly Aphid	Y	Y		Y	Y	?		?	T
Arthropoda	Insecta	Adelges	laricis		Larch Woolly Aphid	Y		Y		Y		N		T
Arthropoda	Insecta	Adelges	nordmannianae		Silver Fir Woolly Aphid	Y	Y		Y	?				T
Arthropoda	Insecta	Adelges	piceae		Balsam Woolly Aphid	Y	Y		Y	?				T
Arthropoda	Insecta	Adelges	viridana			Y				?				T
Arthropoda	Insecta	Adelges	viridis			Y				Y				T
Pteridophyta	Pteridopsida	Adiantum	capillus-veneris			Y	Y	Y		Y	Y	Y		T
Pteridophyta	Pteridopsida	Adiantum	diaphanum						Y					T
Pteridophyta	Pteridopsida	Adiantum	raddianum					Y	Y			Y	Y	T
Angiospermae	Magnoliopsida	Adonis	annua		Pheasant's-eye	Y	Y	Y	Y		Y	Y		T
Arthropoda	Insecta	Adota	maritima			Y				N				T
Arthropoda	Insecta	Adoxophyes	orana		Summer Fruit Tortrix	Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Adrisa	sepulchralis			Y				?				T
Basidiomycota	Pucciniomycetes	Aecidium	trifolii-repentis			Y		Y	Y	N		Y		T
Arthropoda	Insecta	Aedes	aegypti			N	N	N	Y	N	N	N	Y	T
Arthropoda	Insecta	Aedes	astropalpus			N	N	N	Y	N	N	N	Y	T
Arthropoda	Insecta	Aedes	japonicus			N	Y	Y	N	N	N	Y	N	T
Arthropoda	Insecta	Aedes	koreicus			N	N	Y	N	N	N	Y	N	T
Arthropoda	Insecta	Aedes	vexans			Y				?				F+T
Mollusca	Gastropoda	Aegopinella	nitens			N	nat	Y, nat	Y, nat	N	nat	Y, nat	Y, nat	T
Angiospermae	Eudicotyledoneae	Aegopodium	podagraria		Bishopweed	Y	Y	Y	Y		Y	Y	Y	T
Chordata	Aves	Aegypius	monachus		Monk Vulture	N	Y		Y				Y	T
Firmicutes	Bacilli	Aerococcus	viridans			Y				?				M

Angiospermae	Eudicotyledoneae	Aesculus	hippocastanum		Horse-Chestnut	Y	Y	Y	Y			Y	Y	T
Arthropoda	Malacostraca	Agabiformius	lentus				Y				Y			T
Arthropoda	Insecta	Aganaspis	daci				Y							T
Chordata	Aves	Agapornis	personatus		Yellow-collared Lovebird		Y		Y				Y	T
Chordata	Aves	Agapornis	pullarius		Red-faced Lovebird	Y				Y				T
Chordata	Aves	Agapornis	roseicollis		Peach-faced Lovebird	Y		Y	Y			Y	Y	T
Rhodophyta	not assigned	Agardhiella	subulata			Y	Y		Y	?				M
Basidiomycota	Agaricomycetes	Agaricus	bernardii			Y		Y	Y	Y		Y	N	T
Arthropoda	Insecta	Agassiziella	angulipennis		Notched China-mark	Y, Indoors			Y	N	N	N	N	F
Arthropoda	Insecta	Agathomyia	wankowiczii		A Flat-footed Fly [	Y				Y				T
Chordata	Aves	Agelaius	icterocephalus		Yellow-hooded Blackbird	Y								T
Chordata	Aves	Agelaius	phoeniceus		Red-winged Blackbird	Y								T
Arthropoda	Insecta	Ageniaspis	citricola				Y							T
Arthropoda	Insecta	Ageniaspis	fuscicollis			Y		Y	Y					T
Ascomycota	incertae sedis	Aglaospora	profusa			Y			Y	Y				T
Arthropoda	Insecta	Aglossa	caprealis			Y		Y	Y					T
Arthropoda	Insecta	Aglossa	pinguinalis		Large Tabby	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Aglyptinus	agathidioides			Y				Y				T
Basidiomycota	Agaricomycetes	Agrocybe	putaminum			Y		Y	Y	Y		Y	Y	T
Angiospermae	Eudicotyledoneae	Ailanthus	altissima		Tree-Of-Heaven	Y	Y	Y	Y	Y	Y	Y	Y	T
Cnidaria	Anthozoa	Aiptasia	pulchella				Y							M
Chordata	Aves	Aix	galericulata		Mandarin (Duck)	Y	Y	Y	Y	Y	N	Y	Y	F+T
Chordata	Aves	Aix	sponsa		Carolina Wood Duck	Y	Y	Y	Y	Y	N	?	Y	F+T
Angiospermae	Eudicotyledoneae	Alcea	rosea			Y	Y	Y	Y	Y			Y	T
Angiospermae	Eudicotyledoneae	Alchemilla	mollis			Y	Y	Y	Y	Y			Y	T
Chordata	Aves	Alcippe	brunnea		Brown-capped Fulvetta	Y								T
Chordata	Aves	Alectoris	chukar		Chukar	Y			Y	N			Y	T
Chordata	Aves	Alectoris	graeca		Rock Partridge	Y	Y	Y				Y		T
Chordata	Aves	Alectoris	rufa		French Partridge	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Aleurodicus	destructor aleyrodoidae			Y				?				T
Arthropoda	Insecta	Aleuropteridis	filicicola			Y				?				T
Arthropoda	Insecta	Aleuropteryx	juniperi			Y								T
Arthropoda	Insecta	Aleurothrixus	floccosus			Y	Y			?	?			T
Arthropoda	Insecta	Aleurotrachelus	atratus				Y				?			T
Arthropoda	Insecta	Aleurotrachelus	trachoides			Y				?				T
Arthropoda	Insecta	Aleurotulus	nephrolepidis			Y			Y	Y			Y	T
Dinoflagellata	Dinophyceae	Alexandrium	leei				Y		Y		N		Y	M
Dinoflagellata	Dinophyceae	Alexandrium	minutum				Y	Y			Y	Y		M
Dinoflagellata	Dinophyceae	Alexandrium	tamarense			Y	Y	Y	Y	N	N	Y	Y	M
Dinoflagellata	Dinophyceae	Alexandrium	taylori				Y				N			M
Annelida	Polychaeta	Alitta	succinea		Pile worm	Y	Y	Y	Y	Y	Y	Y	Y	M
Annelida	Polychaeta	Alkmaria	romijni		Tentacled lagoon worm	Y			Y	Y			Y	M
Angiospermae	Monocotyledoneae	Allium	carinatum						Y					T
Angiospermae	Monocotyledoneae	Allium	cepa						Y					T
Angiospermae	Monocotyledoneae	Allium	paradoxum		Few-flowered Garlic	Y		Y	Y			Y	Y	T
Angiospermae	Monocotyledoneae	Allium	porrum						Y					T
Angiospermae	Monocotyledoneae	Allium	triquetrum		Three-Cornered Garlic	Y	Y		Y					T
Angiospermae	Monocotyledoneae	Allium	zebdanense						Y					T
Angiospermae	Eudicotyledoneae	Alnus	incana			Y			Y	Y			Y	T
Arthropoda	Insecta	Aloephagus	myersi			Y	Y			?				T
Arthropoda	Branchiopoda	Alona	protzi						Y				Y	F
Arthropoda	Branchiopoda	Alona	rustica			Y			Y	Y			Y	F
Chordata	Aves	Alopochen	aegyptiacus		Egyptian Goose	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Arthropoda	Insecta	Alphitobius	diaperinus		Lesser Mealworm Beetle	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Alphitobius	laevigatus		Black Fungus Beetle	Y	Y	Y	Y	Y	?	?	?	T
Ascomycota	Dothideomycetes	Alternaria	gaisen				Y		Y					T
Ascomycota	Dothideomycetes	Alternaria	radicina			Y			Y	N				T
Ascomycota	Dothideomycetes	Alternaria	saponariae			Y			Y	N				T
Arthropoda	Insecta	Altica	carduorum				Y				?			T
Arthropoda	Insecta	Altica	carinthiaca			Y								T
Angiospermae	Eudicotyledoneae	Alyssum	saxatile			Y	Y	Y	Y	Y			Y	T
Chordata	Amphibia	Alytes	obstetricans			Y	Y	Y	Y	Y	Y	Y	N	F+T
Chordata	Aves	Amandava	amandava		Red Munia	Y	Y	Y		Y		Y		T
Basidiomycota	Agaricomycetes	Amanita	inopinata			Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Amara	anthobia			Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Amara	cursitans			Y	Y			Y	?			T

Angiospermae	Eudicotyledoneae	Amaranthus	albus		White Pigweed	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Amaranthus	blitoides		Prostrate Pigweed	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Amaranthus	blitum		Guernsey Pigweed	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Amaranthus	hybridus		Green Amaranth	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Amaranthus	retroflexus		Common Amaranth	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Arachnida	Amaurobius	similis		Lace Weaver Spider	Y	Y	Y	Y	Y			Y	T
Chordata	Aves	Amazona	aestiva		Blue-fronted Amazon	Y			Y	Y			Y	T
Arthropoda	Insecta	Amblypsilopus	exul					Y	Y			Y	?	T
Arthropoda	Arachnida	Amblyseius	californicus			Y								T
Angiospermae	Eudicotyledoneae	Ambrosia	artemisiifolia		Ragweed	Y	Y	Y	Y	Y	Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Ambrosia	psilostachya		Perennial Ragweed	Y	Y	Y	Y				Y	T
Angiospermae	Eudicotyledoneae	Ambrosia	trifida		Giant Ragweed	Y	Y	Y	Y			Y		T
Chordata	Actinopterygii	Ameiurus	melas		Black Bullhead	Y	Y	Y, Ex	Y	Y	Y	Y, Ex	Y	F
Chordata	Actinopterygii	Ameiurus	nebulosus		Brown bullhead	Y, Ex	Y	Y	Y	N	?	Y	Y	F
Angiospermae	Eudicotyledoneae	Amelanchier	lamarckii		Juneberry	Y	Y	Y	Y	Y	Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Amelanchier	spicata			Y	Y	Y	Y		N	Y		T
Arthropoda	Insecta	Ametastegia	pallipes			Y								T
Arthropoda	Insecta	Ametropus	fragilis						Y					F+T
Arthropoda	Insecta	Amitus	spiniferus				Y							T
Angiospermae	Eudicotyledoneae	Ammi	majus			Y		Y	Y	Y			Y	T
Angiospermae	Eudicotyledoneae	Ammi	visnaga			Y		Y	Y	Y			Y	T
Arthropoda	Pycnogonida	Ammothea	hilgendorfi		sea spider	Y				Y				M
Angiospermae	Eudicotyledoneae	Amorpha	fruticosa				Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Amphiareus	obscuriceps				Y	Y	Y				Y	T
Arthropoda	Insecta	Amphiareus	constrictus					Y	Y				Y	T
Arthropoda	Diplopoda	Amphitomeus	attemsi			Y			Y					T
Arthropoda	Insecta	Amphorophora	tuberculata			Y				Y				T
Angiospermae	Eudicotyledoneae	Amsinckia	micrantha			Y	Y	Y	Y	Y			Y	T
Arthropoda	Insecta	Anagyrus	fusciventris				Y		Y					T
Arthropoda	Insecta	Anagyrus	pseudococci				Y		Y					T
Angiospermae	Eudicotyledoneae	Anaphalis	margaritacea			Y	Y	Y	Y	Y			N	T
Arthropoda	Insecta	Anaphes	nitens				Y							T
Arthropoda	Insecta	Anarsia	lineatella		Peach Twig Borer	Y	Y		Y	N	N		Y	T
Chordata	Aves	Anas	acuta		Northern Pintail	Y, nat	nat	nat	nat	Y, nat	nat	nat	nat	F+T+M
Chordata	Aves	Anas	americana		American Wigeon	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	?	?	Y, nat	F+T+M
Chordata	Aves	Anas	bahamensis		White-cheeked Pintail	Y	Y	Y	Y	Y	?	Y	Y	F+T+M
Chordata	Aves	Anas	capensis		Cape Teal	Y		Y	Y	Y		Y	Y	F+T+M
Chordata	Aves	Anas	castanea		Chestnut Teal	Y		Y		Y		Y		F+T+M
Chordata	Aves	Anas	cyanoptera		Cinnamon Teal	Y		Y	Y	Y		Y	Y	F+T
Chordata	Aves	Anas	discors		Blue-winged Teal	Y, Ex	Y	Y, nat	Y, nat	Y, Ex	N	?	?	F+T+M
Chordata	Aves	Anas	erythrorhyncha		Red-billed Duck	Y				Y				F+T
Chordata	Aves	Anas	falcata		Falcated Teal	Y	Y			Y	?			F+T+M
Chordata	Aves	Anas	flavirostris		Speckled Teal	Y	Y	Y	Y	Y	?	Y	Y	F+T
Chordata	Aves	Anas	formosa		Baikal Teal	Y	Y	Y		Y	N	Y		F+T
Chordata	Aves	Anas	georgica		Yellow-billed Pintail	Y			Y	Y			N	F+T+M
Chordata	Aves	Anas	hottentota		Hottentot Teal	Y		Y	Y	Y		Y	Y	F+T
Chordata	Aves	Anas	luzonica		Philippine Duck	Y			Y	Y			Y	F+T+M
Chordata	Aves	Anas	penelope		Eurasian Wigeon	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F+T+M
Chordata	Aves	Anas	platalea		Red Shoveler	Y				Y				F+T+M
Chordata	Aves	Anas	rhynchotis		Australian Shoveler	Y		Y	Y	Y		Y	Y	F+T+M
Chordata	Aves	Anas	sibilatrix		Chiloe Wigeon	Y		Y	Y	Y		Y	Y	F+T
Chordata	Aves	Anas	strepera		Gadwall	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F+T
Chordata	Aves	Anas	undulata		African Yellowbill	Y				Y				F+T+M
Chordata	Aves	Anas	versicolor		Silver Teal	Y		Y	Y	Y		Y	Y	F+T
Arthropoda	Insecta	Anastrepha	obliqua		A Fruit Fly [		Y		Y	N	N	N	N	T
Arthropoda	Insecta	Anastrepha			A Fruit Fly [	Y				Y				T
Arthropoda	Insecta	Anatis	ocellata		Eyed Ladybird	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Anatrachyntis	simplex			Y								T
Arthropoda	Malacostraca	Anchiphiloscia	balssi						Y				Y	T
Angiospermae	Eudicotyledoneae	Anchusa	ochroleuca			Y		Y	Y	Y			Y	T
Arthropoda	Insecta	Andricus	corruptrix			Y								T
Arthropoda	Insecta	Andricus	grossulariae			Y								T
Arthropoda	Insecta	Andricus	kollari		Marble Gall	Y								T
Arthropoda	Insecta	Andricus	lignicola		Cola-Nut Gall	Y								T
Arthropoda	Insecta	Andricus	quercuscalicis		Knopper Gall	Y	Y	Y	Y	Y	?	Y	Y	T
Angiospermae	Eudicotyledoneae	Anemone	apennina			Y	Y	Y	Y	Y			Y	T

Chordata	Actinopterygii	Anguilla	japonica		Japanese eel		Y	N			?	N		M+F
Angiospermae	Monocotyledoneae	Anisantha	diandra			Y		Y	Y	Y			Y	T
Angiospermae	Monocotyledoneae	Anisantha	madritensis			Y		Y	Y	Y			Y	T
Arthropoda	Insecta	Anisodactylus	binotatus			Y	Y	Y	Y	Y	N	Y	Y	T
Ascomycota	Eurotiomycetes	Anisomeridium	polypori			Y		Y	Y	Y		Y	Y	T
Mollusca	Bivalvia	Anodonta	woodiana		Chinese pond mussel	N	Y	Y		N	Y	Y		F
Mollusca	Bivalvia	Anomia	chinensis		Chinese jingle		Y				N			M
Arthropoda	Insecta	Anoplonyx	destructor			Y								T
Arthropoda	Insecta	Anoterostemma	ivanhofi			Y				?				T
Rhodophyta	not assigned	Anotrichium	furcellatum			Y	Y		Y	Y				M
Chordata	Aves	Anser	albifrons		Greater White-fronted Goose	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F+T+M
Chordata	Aves	Anser	anser		Greylag Goose	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F+T
Chordata	Aves	Anser	brachyrhynchus		Pink-footed Goose	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F+T+M
Chordata	Aves	Anser	caerulescens		Snow Goose	Y	Y	Y	Y	Y	Y	Y	N	F+T+M
Chordata	Aves	Anser	canagica		Emperor Goose	Y		Y	Y	Y		Y	Y	F+T+M
Chordata	Aves	Anser	cygnoides		Swan Goose	Y	Y	Y	Y	Y	N	Y	Y	F+T+M
Chordata	Aves	Anser	erythropus		Lesser White-fronted Goose	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	?	F+T
Chordata	Aves	Anser	fabalis		Bean Goose	Y, nat	nat	Y, nat	Y, nat	Y, nat	nat	Y, nat	Y, nat	F+T
Chordata	Aves	Anser	indicus		Bar-Headed Goose	Y	Y	Y	Y	Y	N	Y	Y	F+T
Chordata	Aves	Anser	rossii		Ross's Goose	Y		Y	Y	Y		Y	Y	F+T
Chordata	Aves	Anseranas	semipalmata		Magpie Goose	Y				Y				F+T
Arthropoda	Insecta	Antaxius	spinibrachius				Y							T
Angiospermae	Eudicotyledoneae	Anthemis	tinctoria			Y		Y	Y	Y			Y	T
Arthropoda	Insecta	Anthocoris	butleri			Y	Y	Y	Y	Y			Y	T
Arthropoda	Insecta	Anthonomus	rectirostris		Bird-Cherry Weevil	Y	Y	Y	Y	Y	N	Y	Y	T
Angiospermae	Monocotyledoneae	Anthoxanthum	aristatum			Y		Y	Y	Y			N	T
Arthropoda	Insecta	Anthrenocerus	australis		Australian Carpet Beetle	Y	Y	Y	Y	Y	?	?	Y	T
Arthropoda	Insecta	Anthrenus	coloratus			Y				?				T
Arthropoda	Insecta	Anthrenus	flavipes		Furniture Carpet Beetle	Y				?				T
Arthropoda	Insecta	Anthrenus	oceanicus			Y				?				T
Arthropoda	Insecta	Anthrenus	olgae			Y				?				T
Arthropoda	Insecta	Anthrenus	scrophulariae		Common Carpet Beetle	Y	Y	Y	Y	Y	?	Y	Y	T
Chordata	Aves	Anthropoides	virgo		Demoiselle Crane	Y	Y	Y	Y	Y				T
Basidiomycota	Agaricomycetes	Anthurus	muellerianus	aseroëformis					Y					T
Rhodophyta	not assigned	Antithamnion	nipponicum			N	Y			N				M
Rhodophyta	not assigned	Antithamnionella	spirographidis			Y	Y	Y	Y	Y	Y	Y	Y	M
Rhodophyta	not assigned	Antithamnionella	ternifolia			Y	Y	Y	Y	Y	Y	Y		M
Arthropoda	Insecta	Antonina	crawi			Y	Y			?	?			T
Arthropoda	Insecta	Antonina	graminis				Y				?			T
Arthropoda	Insecta	Aonidia	lauri		Laurel Scale	Y				?				T
Arthropoda	Insecta	Aonidiella	aurantii				Y				?			T
Arthropoda	Insecta	Aonidiella	citrina				Y				?			T
Arthropoda	Insecta	Aonidiella	taxus				Y				?			T
Arthropoda	Insecta	Apate	monachus				Y				?			T
Heterokontophyta	Oomycetes	Aphanomyces	astaci		Crayfish plague	Y	Y	Y	Y	Y	Y	Y	Y	F
Platyhelminthes	Trematoda	Apharyngostrigea	cornu			Y				?				F+T
Arthropoda	Insecta	Aphelinus	mali				Y		Y		?		?	T
Annelida	Polychaeta	Aphelochaeta	marioni		bristleworm	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Aphelonyx	cerricola			Y								T
Arthropoda	Insecta	Aphidecta	obliterata		Larch Ladybird	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Aphidius	colemani			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Aphidius	smithi						Y				?	T
Arthropoda	Insecta	Aphidoletes	abietis		A Predatory Gall Midge	Y	Y			N	N			T
Arthropoda	Insecta	Aphis	balloticola			Y				?				T
Arthropoda	Insecta	Aphis	craccivora		Black legume aphid	Y	Y	Y	Y	?	?	Y	Y	T
Arthropoda	Insecta	Aphis	cytisorum			Y	Y	Y	Y	N		Y	Y	T
Arthropoda	Insecta	Aphis	forbesi				Y	Y			?	?		T
Arthropoda	Insecta	Aphis	gossypii		Cotton aphid	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Aphis	nerii						Y				Y	T
Arthropoda	Insecta	Aphis	oenotherae			Y	Y			?				T
Arthropoda	Insecta	Aphis	salicariae			Y	Y	Y		Y	?	Y		T
Arthropoda	Insecta	Aphis	spiraecola		Spiraea aphid	Y	Y		Y	?				T
Arthropoda	Insecta	Aphis	spiraephaga				Y				?			T
Arthropoda	Insecta	Aphis	thalictri			Y			Y	?			Y	T
Arthropoda	Insecta	Aphodius	scrofa			Y				?				T
Arthropoda	Insecta	Aphytis	abnormis				Y							T

Arthropoda	Insecta	Aphytis	chilensis				Y							T
Arthropoda	Insecta	Aphytis	coheni				Y							T
Arthropoda	Insecta	Aphytis	diaspidis				Y		Y					T
Arthropoda	Insecta	Aphytis	holoxanthus				Y		Y					T
Arthropoda	Insecta	Aphytis	lepidosaphes				Y							T
Arthropoda	Insecta	Aphytis	melinus				Y							T
Arthropoda	Insecta	Aphytis	mytilaspidis			Y	Y		Y					T
Arthropoda	Insecta	Aphytis	yanonensis				Y							T
Arthropoda	Insecta	Apion	longirostre		Hollyhock Weevil		Y	Y	Y			Y	Y	T
Chordata	Ascidiacea	Aplidium	glabrum			Y			Y	Y			Y	M
Arthropoda	Insecta	Apomyelois	ceratoniae		Locust Bean Moth	Y	Y	Y	Y					T
Angiospermae	Monocotyledoneae	Aponogeton	distachyos		Cape Pondweed	Y	Y	Y		?	?	?		F
Arthropoda	Insecta	Appendiseta	robiniae			Y	Y	Y	Y	?				T
Arthropoda	Insecta	Aprostocetus	ceroplastae				Y							T
Chordata	Aves	Aquila	pennata		Booted Eagle	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Aquila	rapax		Tawny Eagle	Y				Y				T
Chordata	Aves	Ara	ararauna		Blue-and-yellow Macaw	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Ara	macao		Scarlet Macaw	Y	Y	Y	Y	Y		Y	N	T
Bryozoa	Gymnolaemata	Arachnidium	lacourti						Y				Y	M
Arthropoda	Insecta	Araecerus	coffeae			Y	Y			Y	N			T
Arthropoda	Insecta	Araecerus	fasciculatus		Cacao Weevil	Y		Y	Y	N		Y	Y	T
Arthropoda	Insecta	Araeopteron	ecphaea				Y							T
Arthropoda	Insecta	Araschnia	levana		European Map	Y				N				T
Chordata	Aves	Aratinga	acuticaudata		Blue-crowned Parakeet	Y				Y				T
Chordata	Aves	Aratinga	erythrogenys		Red-headed Conure	Y			Y				N	T
Pinophyta	Pinopsida	Araucaria	araucana			Y	Y			Y	N			T
Arthropoda	Malacostraca	Arcitalitrus	dorrieni			Y			Y	Y				T
Angiospermae	Eudicotyledoneae	Arctium	nemorosum			Y			Y	Y			N	T
Chordata	Aves	Ardea	herodias		Great Blue Heron	Y								T
Arthropoda	Insecta	Arenipses	sabella				Y							T
Arthropoda	Diplopoda	Arenophilus	peregrinus			Y								T
Arthropoda	Insecta	Arge	berberidis		Berberis Sawfly	Y	Y		Y	Y	Y		Y	T
Arthropoda	Arachnida	Argiope	bruennichi		Wasp Spider [	Y	Y	Y	Y	Y			Y	T
Nemertea	Enopla	Argonemertes	dendyi			Y				N				T
Arthropoda	Maxillopoda	Argulus	japonicus		Carp Louse, Fish Louse	Y				Y				F
Arthropoda	Insecta	Argyresthia	cupressella		Cypress Tip Moth	Y				Y				T
Arthropoda	Insecta	Argyresthia	curvella		Brindled Argent	Y		Y	Y	Y			Y	T
Arthropoda	Insecta	Argyresthia	laevigatella		Larch-boring Argent	Y			Y, Er	Y			N	T
Arthropoda	Insecta	Argyresthia	trifasciata		Triple-barred Argent	Y		Y	Y	Y			Y	T
Arthropoda	Insecta	Argyresthia	thuiella					Y	Y					T
Mollusca	Gastropoda	Arion	flagellus		Durham Slug	Y				Y				T
Mollusca	Gastropoda	Arion	lusitanicus		Lusitanian Slug	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Actinopterygii	Hypophthalmichthys	nobilis		Bighead Carp	Y	Y	Y	Y	N	?	Y	Y	F
Arthropoda	Malacostraca	Armadillo	officinalis						Y				Y	T
Angiospermae	Eudicotyledoneae	Armoracia	rusticana			Y	Y	Y	Y	Y			Y	T
Arthropoda	Insecta	Arocatus	longiceps			Y	Y	Y	Y	?		Y	Y	T
Angiospermae	Eudicotyledoneae	Aronia	prunifolia					Y	Y					T
Arthropoda	Arachnida	Artema	atlanta		Giant Daddy-longlegs	Y		Y				Y		T
Arthropoda	Branchiopoda	Artemia	(salina)		Brine shrimp	Y	Y		Y	Y				M
Angiospermae	Eudicotyledoneae	Artemisia	ampestris	maritima		Y			Y					T
Angiospermae	Eudicotyledoneae	Artemisia	biennis			Y	Y	Y	Y	Y			Y	T
Angiospermae	Eudicotyledoneae	Artemisia	verlotiorum			Y	Y	Y	Y	Y			Y	T
Arthropoda	Insecta	Arthrolips	fasciata				Y				?			T
Platyhelminthes	Turbellaria	Artioposthia	triangulata			Y				Y				T
Angiospermae	Monocotyledoneae	Arum	italicum			Y		Y	Y	Y			Y	T
Angiospermae	Eudicotyledoneae	Asclepias	syriaca		common milkweed	Y	Y	Y	Y				Y	T
Ascomycota	Dothideomycetes	Ascochyta	aquilegiae			Y		Y	Y	N		Y		T
Ascomycota	Dothideomycetes	Ascochyta	dianthi			Y	Y		Y	Y				T
Ascomycota	Dothideomycetes	Ascochyta	pisi			Y			Y	Y				T
Ascomycota	Dothideomycetes	Ascochyta	sorghi			Y			Y	N				T
Ascomycota	Dothideomycetes	Ascochyta	syringae			Y	Y		Y	N				T
Arthropoda	Malacostraca	Asellus	communis			Y				N				F
Heterokontophyta	Phaeophyceae	Asperococcus	scaber						Y				Y	M
Arthropoda	Insecta	Asperogronops	inaequalis			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Asphondylia	borzi		A Gall Midge	Y	Y	N	N	?	?			T
Arthropoda	Insecta	Asphondylia	buddleia				Y				?			T

Arthropoda	Insecta	Aspidapion	validum				Y				?			T
Arthropoda	Insecta	Aspidimorpha	nigropunctata						Y					T
Arthropoda	Insecta	Aspidiotus	destructor			Y	Y			?	?			T
Arthropoda	Insecta	Aspidiotus	nerii		Oleander scale	Y	Y			?				T
Chordata	Actinopterygii	Aspius	aspius		Asp	N	Y	Y	Y	N	?	N	Y	F
Arthropoda	Malacostraca	Astacus	astacus		Noble Crayfish	Y	nat	nat	nat	Y	nat	nat	nat	F
Arthropoda	Malacostraca	Astacus	leptodactylus		Turkish Crayfish	Y	Y	Y	Y	Y	Y	Y	Y	F
Angiospermae	Eudicotyledoneae	Aster	lanceolatus		Narrow-Leaved Michaelmas-Daisy	Y	Y	Y	Y	Y	Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Aster	novi-belgii		Confused Michaelmas-Daisy	Y	Y	Y				Y		T
Angiospermae	Eudicotyledoneae	Aster	Xsalignus		Common michaelmas daisy	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Asynonychus	godmani				Y				?			T
Arthropoda	Insecta	Athalia	rosae			Y								T
Basidiomycota	Agaricomycetes	Athelia	rolfsii				Y	Y	Y					T
Chordata	Aves	Athene	noctua		Little Owl	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Atherigona	varia		A Shoot Fly			Y				?		T
Chordata	Actinopterygii	Atherina	boyeri		Big-eyed Sand-smelt	Y	Y	Y	Y	Y	Y	?	Y	M+F
Arthropoda	Insecta	Atheta	harwoodi			Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Athrips	rancidella		Cotoneaster Webworm	Y				N				T
Arthropoda	Malacostraca	Athyaephyra	desmaresti			Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Insecta	Atomaria	bella			Y				N				T
Arthropoda	Insecta	Atomaria	fuscata			Y				Y				T
Arthropoda	Insecta	Atomaria	fuscipes			Y				Y				T
Arthropoda	Insecta	Atomaria	hislopi			Y				N				T
Arthropoda	Insecta	Atomaria	lewisi			Y	Y	Y	Y	Y	N		Y	T
Arthropoda	Insecta	Atomaria	lohsei			Y				Y				T
Arthropoda	Insecta	Atomaria	munda			Y				Y				T
Arthropoda	Insecta	Atomaria	nitidula			Y				Y				T
Arthropoda	Insecta	Atomaria	punctithorax			Y				Y				T
Arthropoda	Insecta	Atomaria	pusilla			Y				Y				T
Arthropoda	Insecta	Atomaria	strandi			Y				Y				T
Arthropoda	Insecta	Atomaria	testacea			Y				Y				T
Arthropoda	Insecta	Atomaria	turgida			Y				?				T
Platyhelminthes	Cestoda	Atractolytocestus	huronensis			Y				Y				M
Arthropoda	Insecta	Attagenus	brunneus			Y	Y			?	?			T
Arthropoda	Insecta	Attagenus	cyphonoides			Y	Y		N	?	?		N	T
Arthropoda	Insecta	Attagenus	fasciatus		Wardrobe Beetle [	Y	Y			Y	N			T
Arthropoda	Insecta	Attagenus	pellio		Two-spotted Carpet Beetle	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Attagenus	smirnovi		Brown Carpet Beetle	Y	Y			?	?			T
Arthropoda	Insecta	Attagenus	trifasciatus			Y	Y		Y	?	Y		?	T
Arthropoda	Insecta	Attagenus	unicolor		Black Carpet Beetle	Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Auberteterus	alternecoloratus				Y							T
Arthropoda	Insecta	Aulacaspis	rosae			Y			Y	?				T
Mollusca	Gastropoda	Aulacomya	atra		Japanese whelk	Y				N				M
Arthropoda	Insecta	Aulacorthum	circumflexus		Mottled Arum aphid	Y	Y	Y	Y	?	?	?	?	T
Arthropoda	Insecta	Aulonium	ruficorne			Y				N				T
Arthropoda	Diplopoda	Aulonopygus	aculeatus						Y					T
Arthropoda	Insecta	Aurantothrips	orchidaceus			Y	Y							T
Platyhelminthes	Turbellaria	Australopacifica	coxii			Y				Y				M
Platyhelminthes	Turbellaria	Australoplana	sanguinea		Australian Flatworm	Y	N	N	N	N	N	N	N	T
Arthropoda	Insecta	Axinotarsus	marginalis			Y				Y				T
Chordata	Aves	Aythya	americana		Redhead	Y				N				F+T+M
Chordata	Aves	Aythya	baeri		Baer's Pochard	Y				Y				F+T
Chordata	Aves	Aythya	ferina		Common Pochard	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F+T+M
Chordata	Aves	Aythya	novaeseelandiae		New Zealand Scaup	Y				Y				F+T+M
Chordata	Aves	Aythya	nyroca		Ferruginous Duck	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F+T+M
Chordata	Aves	Aythya	valisineria		Canvasback	Y				Y				F+T+M
Pteridophyta	Pteridopsida	Azolla	caroliniana		Carolina Mosquito Fern	Y	Y			Y	?			F
Pteridophyta	Pteridopsida	Azolla	filiculoides		Water Fern	Y	Y	Y	Y	Y	Y	Y	?	F
Angiospermae	Eudicotyledoneae	Baccharis	halimifolia		Salt Bush	Y	Y	Y	Ex	Y	N	Y	Ex	T
Arthropoda	Insecta	Bacillius	rossius		Corsican Stick-insect	Y								T
Arthropoda	Insecta	Bactrocera	cucurbitae		Melon Fly	Y				?				T
Arthropoda	Insecta	Baetis	tracheatus						Y					F+T
Arthropoda	Insecta	Bagnalliella	yuccae				Y							T
Arthropoda	Insecta	Balanococcus	diminutus		Lax mealybug	Y	Y			?				T
Arthropoda	Insecta	Balanococcus	kwoni			Y				?				T
Arthropoda	Maxillopoda	Balanus	albicostatus				Y				N			M

Arthropoda	Maxillopoda	Balanus	amphitrite			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Maxillopoda	Balanus	balanus			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Maxillopoda	Balanus	eburneus		Ivory barnacle		Y		Y		?		Y	M
Arthropoda	Maxillopoda	Balanus	trigonus		acorn barnacle	Y		Y	Y	N		Y	N	M
Arthropoda	Maxillopoda	Balanus	variegatus				Y	Y			Y	Y		M
Mollusca	Gastropoda	Balea	biplicata		Two lipped door snail	Y	nat	nat	Y, nat	Y	nat	nat	Y, nat	T
Chordata	Aves	Balearica	regulorum		Crowned Crane	Y		Y	Y	Y		Y	Y	T
Arthropoda	Collembola	Ballistura	filifera			Y			Y	Y				T
Arthropoda	Insecta	Bambusaspis	bambusae			Y	Y			?	?			T
Annelida	Clitellata	Barbronia	weberi				Y				?			F
Arthropoda	Insecta	Bardistus	cibarius				Y				?			T
Entoprocta	not assigned	Barentsia	matsushimana			Y			Y	N			?	M
Arthropoda	Arachnida	Barylestis	variatus			Y								T
Arthropoda	Insecta	Batracomorphus	allionii			Y		Y		?		N		T
Platyhelminthes	Turbellaria	Bdellocephala	punctata			Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Belonochilus	numenius				Y				?			T
Arthropoda	Insecta	Bemisia	afer			Y	Y			?				T
Ctenophora	Nuda	Beroe	cucumi			Y		Y	Y	Y		Y	Y	M
Angiospermae	Eudicotyledoneae	Berteroa	incana		Hoary Alison	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Bidens	connata		London Bur-marigold	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Bidens	frondosa		Beggarticks	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Bisnius	parcus			Y	Y		Y	Y				T
Cnidaria	Hydrozoa	Blackfordia	virginica				Y				N			M
Arthropoda	Insecta	Blaps	lethifera		Blunt-tailed Blaps	Y		Y	Y	Y			N	T
Arthropoda	Insecta	Blaps	mortisaga			Y		Y	Y	Y		Y		T
Arthropoda	Insecta	Blaps	mucronata		Cellar Beetle	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Blasticotoma	filiceti			Y								T
Arthropoda	Insecta	Blastobasis	adustella			Y	Y		Y					T
Arthropoda	Insecta	Blastobasis	lacticolella			Y			Y	Y			Y	T
Arthropoda	Insecta	Blastobasis	phycidella		Hampshire Dowd	Y	Y	Y	Y	N			Y	T
Arthropoda	Insecta	Blastobasis	rebeli			Y								T
Arthropoda	Insecta	Blastobasis	vittata			Y			Y	Y				T
Arthropoda	Insecta	Blastodiplosis	cocciferae		A Gall Midge	Y				?				T
Arthropoda	Insecta	Blatta	orientalis		Common Cockroach	Y	Y	Y	Y	Y	N	Y	N	T
Arthropoda	Insecta	Blattella	germanica		German Cockroach	Y	Y	Y	Y	Y	N	Y	Y	T
Pteridophyta	Polypodiopsida	Blechnum	cordatum		Chilean Hard-fern	Y				Y				T
Arthropoda	Insecta	Blepharipa	schineri		A Tachinid Fly	Y		Y	Y	Y		?	?	T
Ascomycota	Leotiomycetes	Blumeria	graminis			Y	Y	Y	Y	Y		Y	Y	T
Ascomycota	Ascomycetes	Blumeriella	jaapii			Y	Y	Y	Y	Y	N	N	Y	T
Annelida	Polychaeta	Boccardia	ligerica				Y	Y	Y		N	Y	Y	M
Annelida	Polychaeta	Boccardia	polybranchia			Y	Y				N			M
Annelida	Polychaeta	Boccardia	semibranchiata				Y				N			M
Mollusca	Gastropoda	Boettgerilla	pallens		Worm Slug	Y	Y	Y	Y	Y	N	Y	Y	T
Basidiomycota	Agaricomycotina	Bolbitius	coprophilus			Y	Y		Y	Y				T
Arthropoda	Arachnida	Bolyphantes	alticeps			Y				N				T
Chordata	Amphibia	Bombina	orientalis						Y				Y	F+T
Chordata	Amphibia	Bombina	variegata		Yellow-bellied Toad	Y, Er				N				F+T
Chordata	Aves	Bombycilla	cedrorum		Cedar Waxwing	Y								T
Chordata	Aves	Bombycilla	japonica		Japanese Waxwing	N		Y	Y			Y	Y	T
Cercozoa	Ascetosporea	Bonamia	ostreae			Y	Y	Y	Y	?		Y		M
Arthropoda	Insecta	Borkhausenia	nefrax				Y		Y					T
Arthropoda	Branchiopoda	Bosmina	longispina					Y	Y			Y	Y	M
Platyhelminthes	Cestoda	Bothriocephalus	acheilognathi			Y				Y				F
Chordata	Ascidiacea	Botrylloides	diegense			Y	Y		Y	Y	Y		Y	M
Chordata	Ascidiacea	Botrylloides	violaceus			Y	Y	Y	Y	Y	Y	Y	Y	M
Chordata	Ascidiacea	Botryllus	schlosseri			Y	Y	Y	Y	Y	Y	Y	Y	M
Ascomycota	Leotiomycetes	Botryotinia	draytonii			Y			Y	N				T
Ascomycota	Leotiomycetes	Botryotinia	squamosa			Y	Y	Y	Y	N				T
Heterokontophyta	Phaeophyceae	Botrytella				Y			Y	N				M
Ascomycota	Leotiomycetes	Botrytis	galanthina			Y			Y	Y				T
Arthropoda	Insecta	Bovicola	ovis						Y					T
Bryozoa	Gymnolaemata	Bowerbankia	gracilis			Y	Y	Y	Y	Y	Y	Y	Y	M
Bryozoa	Gymnolaemata	Bowerbankia	imbricata			Y	Y	Y	Y	Y	Y	Y	N	M
Rotifera	Monogononta	Brachionus	plicatilis					Y	Y			Y	Y	M+F
Arthropoda	Insecta	Brachycaudus	rumexicolens			Y	Y	Y	Y	?				T
Arthropoda	Insecta	Brachycorynella	asparagi				Y				?			T

Arthropoda	Insecta	Brachymyrmex	heeri				Y							T
Arthropoda	Insecta	Brachynotocoris	punctipennis			Y				?				T
Arthropoda	Malacostraca	Brachynotus	sexdentatus			Y	Y			N	N			M
Arthropoda	Arachnida	Brachypelma	albopilosum					Y				Y		T
Arthropoda	Insecta	Brachypeplus	deyrollei				Y				?			T
Arthropoda	Insecta	Brachypterolus	antirrhini			Y		Y	Y	?		?	?	T
Arthropoda	Insecta	Brachypterolus	vestitus		Antirrhinum Beetle	Y		Y		Y				T
Arthropoda	Insecta	Bradysia	difformis		A Black Fungus Gnat [	Y		Y	Y	N		?	?	T
Annelida	Clitellata	Branchiodrilus	hortensis			Y		Y	Y	Y		Y		F
Annelida	Polychaeta	Branchiomma	bombyx			Y	Y		Y	Y	Y		Y	M
Annelida	Clitellata	Branchiura	sowerbyi			Y	Y	Y	Y	Y	Y	Y	Y	F
Chordata	Aves	Branta	bernicla		Brant Goose	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F+T+M
Heterokontophyta	Oomycetes	Phytophthora	cinnamomi		Phytophthora crown	Y	Y	Y	Y	N				T
Chordata	Aves	Branta	hutchinsii		Lesser Canada Goose	Y		Y	Y	Y		Y	Y	F+T
Chordata	Aves	Branta	leucopsis		Barnacle Goose	Y	Y	Y	Y	Y	Y	Y	Y	F+T+M
Chordata	Aves	Branta	ruficollis		Red-breasted Goose	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	N	?	?	F+T+M
Chordata	Aves	Branta	sandvicensis		Hawaiian Goose	Y		Y	Y	Y		N	Y	F+T
Annelida	Clitellata	Bratislavia	dadayi					Y				Y		F
Arthropoda	Insecta	Braula	schmitzi		A Bee Louse [	Y	Y		N	?	?		N	T
Arthropoda	Arachnida	Brevipalpus	californicus				Y							T
Arthropoda	Arachnida	Brevipalpus	lewisi				Y							T
Arthropoda	Arachnida	Brevipalpus	phoenicis						Y					T
Arthropoda	Arachnida	Brevipalpus	russulus			Y	Y	Y	Y					T
Arthropoda	Arachnida	Brevipalpus	obovatus				Y	Y	Y					T
Arthropoda	Insecta	Bruchela	rufipes			Y				Y				T
Arthropoda	Insecta	Bruchidius	siliquastri				Y				?			T
Arthropoda	Insecta	Bruchidius	varius			Y								T
Arthropoda	Insecta	Bruchus	ervi		Lentil Seed Beetle	Y	Y	Y	Y	?	?	?	?	T
Arthropoda	Insecta	Bruchus	pisorum		Pea Beetle	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Bruchus	rufimanus		Bean Seed Beetle	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Bruchus	signaticornis		Lentil Bruchid	Y		Y	Y				Y	T
Chordata	Aves	Bubo	bubo		Eagle Owl	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Bubo	virginianus		Great Horned Owl	Y			Y	Y			Y	T
Chordata	Aves	Bubulcus	ibis		Cattle Egret	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Bucanetes	githagineus		Trumpeter Finch	Y			Y				Y	T
Arthropoda	Insecta	Bucculatrix	chrysanthemella				Y							T
Chordata	Aves	Bucephala	albeola		Bufflehead	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F+T+M
Chordata	Aves	Bucephala	islandica		Barrow's Goldeneye	Y, nat	Y, nat			N	?			F+T+M
Arthropoda	Insecta	Buchananiella	continua			Y	Y	Y	Y	Y				T
Angiospermae	Eudicotyledoneae	Buddleja	davidii		Buddleia	Y	Y	Y	Y		Y	Y	Y	T
Mollusca	Bivalvia	Pinctada	radiata		Gulf pearl oyster		Y				N			M
Bryozoa	Gymnolaemata	Bugula	neritina		Brown bryozoan	Y	Y	Y	Y	Y	Y	Y	Y	M
Bryozoa	Gymnolaemata	Bugula	simplex			Y	Y	Y	Y	Y	Y	Y	Y	M
Bryozoa	Gymnolaemata	Bugula	stolonifera			Y	Y	Y	Y	Y	Y	Y	Y	M
Angiospermae	Eudicotyledoneae	Bunias	orientalis		Warty Cabbage	Y	Y	Y	Y		Y	Y	Y	T
Chordata	Aves	Burhinus	superciliaris		Peruvian Thick-knee	Y								T
Chordata	Aves	Buteo	jamaicensis		Red-tailed Hawk	Y		Y	Y			Y	Y	T
Chordata	Aves	Buteo	lineatus		Red-shouldered Hawk	Y								T
Arthropoda	Malacostraca	Bythocaris	cosmetops				Y				?			F
Chordata	Aves	Cacatua	galerita		Sulphur-crested Cockatoo	Y			Y	Y			Y	T
Arthropoda	Insecta	Cacoecimorpha	pronubana		Carnation Tortrix	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Cacopsylla	fulguralis		Elaeagnus Sucker	Y	Y	Y	Y	?			Y	T
Arthropoda	Insecta	Cacopsylla	pulchella			Y	Y			Y				T
Arthropoda	Insecta	Cacyreus	marshalli		Geranium Bronze	Y	Y	Y	Y	?	Y	Y	Y	T
Arthropoda	Insecta	Cadra	calidella		Dried fruit moth	Y		Y	Y	Y				T
Arthropoda	Insecta	Cadra	cautella		Dried currant moth	Y	Y	Y	Y	Y			Y	T
Arthropoda	Insecta	Cadra	figulilella		Raisin moth	Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Caenoscelis	subdeplanata			Y	Y	Y	Y	Y	?	N	?	T
Arthropoda	Insecta	Cales	noacki				Y							T
Arthropoda	Insecta	Caliothrips	fasciatus			Y								T
Angiospermae	Monocotyledoneae	Calla	palustris		Bog Arum	Y				?				F
Arthropoda	Insecta	Callidiellum	rufipenne			Y	Y				?			T
Arthropoda	Malacostraca	Callinectes	sapidus		Blue crab	Y, Er	Y	Y	Y	N	Y	Y	Y	M
Arthropoda	Insecta	Callistus	lunatus			Y	Y	Y	Y	Y		Y	Y	T
Chordata	Aves	Callonetta	leucophrys		Ringed Teal	Y	Y	Y	Y	Y	?	Y	Y	F+T
Arthropoda	Insecta	Callosobruchus	chinensis		Adzuki Beanseed Beetle	Y	Y	Y	Y	Y	?	Y	Y	T

Arthropoda	Insecta	Callosobruchus	maculatus			Y	Y			Y	?			T
Arthropoda	Insecta	Callosobruchus	phaseoli				Y				?			T
Arthropoda	Insecta	Calophya	rhois			Y	Y			?	N			T
Arthropoda	Insecta	Caloptilia	azaleella		Azalea Leaf Miner	Y	Y		Y	Y			Y	T
Mollusca	Gastropoda	Calyptraea	chinensis		Chinamans hat	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Cameraria	ohridella		Horse chestnut leaf miner	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Camponotus	vagus						Y					T
Bryophyta	Bryopsida	Campylopus	introflexus		Heath star moss	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Mammalia	Capra	hircus		Feral Goat	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Malacostraca	Caprella	mutica		Japanese skeleton shrimp	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Carabus	auratus		The Goldsmith	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Carabus	cancellatus		Immigrant Sausage Ground Beetle	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Carabus	convexus		Winstanley Ground Beetle [	Y	Y	Y	Y		N	Y	N	T
Chordata	Actinopterygii	Carassius	auratus		Goldfish or Gibel (Prussian) Carp	Y	Y	Y	Y	Y	Y	Y	Y	F
Chordata	Actinopterygii	Carassius	carassius		Crucian Carp	Y, nat	Y, nat	Y, Er, nat	Y, nat	Y, nat	Y, nat	Y, Er, nat	Y, nat	F
Chordata	Actinopterygii	Carassius	gibelio		Prussian carp	N	Y	Y	Y	N	Y	Y	Y	F
Arthropoda	Insecta	Carausius	morosus		Indian Stick-insect	Y								T
Chordata	Aves	Cardinalis	cardinalis		Northern Cardinal	Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Carduelis	tristis		American Goldfinch	Y								T
Arthropoda	Insecta	Carpelimus	zealandicus			Y		Y	Y	Y				T
Chordata	Aves	Carpodacus	roseus		Pallas's Rosefinch	Y		Y				Y		T
Arthropoda	Insecta	Carpophilus	bifenestratus				Y				?			T
Arthropoda	Insecta	Carpophilus	dimidiatus				Y	Y	Y		?	Y	Y	T
Arthropoda	Insecta	Carpophilus	mutilatus				Y							T
Arthropoda	Insecta	Carpophilus	nepos				Y				?			T
Arthropoda	Insecta	Carpophilus	obsoletus				Y				?			T
Arthropoda	Insecta	Carpophilus	pilosellus				Y							T
Arthropoda	Insecta	Carpophilus	zeaphilus				Y							T
Arthropoda	Insecta	Carpophilus	hemipterus			Y	Y		Y	Y			N	T
Arthropoda	Insecta	Carpophilus	ligneus			Y	Y		Y	Y				T
Arthropoda	Insecta	Carpophilus	marginellus			Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Cartodere	bifasciata		Plaster beetle	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Cartodere	delamarei				Y				?			T
Arthropoda	Insecta	Cartodere	nodifer			Y	Y	Y	Y	Y		Y	Y	T
Annelida	Clitellata	Caspiobdella	fadejewi		Caspian leech		Y		Y		?			M+F
Arthropoda	Insecta	Catharosia	pygmaea		A Tachinid Fly	Y		Y	Y	Y				T
Chordata	Aves	Cathartes	aura		Turkey Vulture	Y			Y	Y			Y	T
Rhodophyta	not assigned	Caulacanthus	ustulatus				Y	Y				Y		M
Arthropoda	Insecta	Caulophilus	oryzae		Broad-Nosed Grain Weevil	Y								T
Mollusca	Gastropoda	Cecilioides	acicula		Blind (or Agate) Snail	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	N	Y, nat	Y, nat	T
Pinophyta	Pinopsida	Cedrus	atlantica			Y	Y			Y	N			T
Pinophyta	Pinopsida	Cedrus	deodara			Y	Y			Y	N			T
Pinophyta	Pinopsida	Cedrus	libani			Y	Y			Y	N			T
Porifera	Demospongiae	Celtodoryx	girardae				Y		Y		N		Y	M
Angiospermae	Monocotyledoneae	Cenchrus	longispinus			Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Cephalcia	abietis						Y					T
Arthropoda	Insecta	Cephalcia	alpina					Y						T
Arthropoda	Insecta	Cephalcia	erythrogaster					Y	Y					T
Arthropoda	Insecta	Cephalcia	lariciphila			Y		Y	Y					T
Arthropoda	Insecta	Cephalcia	alashanica						Y					T
Arthropoda	Insecta	Cerambyx	cerdo		Great capricorn beetle	Y	Y	Y	Y	N	N	Y	N	T
Arthropoda	Insecta	Ceranisus	americensis						Y					T
Arthropoda	Insecta	Ceranisus	russelli			Y								T
Arthropoda	Insecta	Cerataphis	brasiliensis				Y							T
Arthropoda	Insecta	Cerataphis	lataniae			Y	Y			?				T
Arthropoda	Insecta	Cerataphis	orchidearum			Y	Y	Y		?	?	?		T
Arthropoda	Insecta	Ceratitis	cosyra		Mango Fruit Fly			Y	N			?	N	T
Dinoflagellata	Dinophyceae	Ceratium	candelabrum			Y	Y			N	N			M
Ascomycota	Sordariomycetes	Ceratocystis	platani				Y	Y						T
Arthropoda	Insecta	Ceratophyllus	columbae			Y		Y	Y					T
Arthropoda	Arachnida	Cerbalus						Y				Y		T
Arthropoda	Insecta	Cercyon	laminatus			Y	Y	Y	Y	Y			Y	T
Arthropoda	Branchiopoda	Ceriodaphnia	rotunda						Y				Y	F
Mollusca	Gastropoda	Cernuella	aginnica			Y, nat	nat?	nat?	Y, nat	Y, nat		nat?	Y, nat	T
Mollusca	Gastropoda	Cernuella	cisalpina				nat	Y	Y			Y	Y	T
Mollusca	Gastropoda	Cernuella	neglecta		Dune Snail	Y, Ex	Y	Y	Y	Y, Ex	N	Y	Y	T

Mollusca	Gastropoda	Cernuella	virgata		Vineyard Snail	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	T
Arthropoda	Insecta	Cerobasis	annulata			Y		Y	Y					T
Arthropoda	Insecta	Ceroplastes	ceriferus			Y				?				T
Arthropoda	Insecta	Ceroplastes	floridensis				Y				?			T
Arthropoda	Insecta	Ceroplastes	japonicus				Y				?			T
Arthropoda	Insecta	Ceroplastes	sinensis				Y				?			T
Arthropoda	Malacostraca	Procambarus	("Marmorkrebs")		Marbled Crayfish	N			Y	N			Y	F
Chordata	Mammalia	Cervus	nippon		Sika Deer	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Malacostraca	Cestopagurus	timidus			Y	Y			Y	N			M
Arthropoda	Insecta	Chaetanaphothrips				Y	Y		Y					T
Annelida	Clitellata	Chaetogaster	orchidii						Y					F
Arthropoda	Insecta	Chaetosiphon	limnaei	fragaefolii		Y	Y	Y	Y	Y	?	?	?	T
Arthropoda	Insecta	Chalcionellus	decemstriatus				Y				?			T
Pinophyta	Pinopsida	Chamaecyparis	lawsoniana			Y	Y	Y	Y	Y	Y	Y	Y	T
Pinophyta	Pinopsida	Chamaecyparis	nootkatensis			Y	Y		Y				N	T
Pinophyta	Pinopsida	Chamaecyparis	pisifera			Y	Y	Y	Y	Y	N	Y		T
Arthropoda	Insecta	Chamaesyrphus	caledonicus		A Hoverfly	Y		Y	Y	N		?	?	T
Arthropoda	Insecta	Chartocerus	niger				Y							T
Heterokontophyta	Raphidophyceae	Chattonella	antiqua						Y					M
Heterokontophyta	Raphidophyceae	Chattonella	marina						Y					M
Arthropoda	Insecta	Cheilomenes	lunata		Lunate ladybird	Y				Y				T
Arthropoda	Insecta	Cheilosia	caerulescens		A Hoverfly		Y	Y	Y		?	?	Y	T
Arthropoda	Malacostraca	Chelicorophium	curvispinum			Y	Y	Y	Y	Y	Y	Y	Y	M+F
Arthropoda	Insecta	Chelopistes	meleagridis				Y							T
Chordata	Actinopterygii	Proterorhinus	marmoratus		Tubenose Goby	N		N	Y	N		N	?	F
Chordata	Aves	Chenonetta	jubata		Maned Duck	Y		Y	Y	Y		Y	Y	F+T
Arthropoda	Insecta	Chetostoma	curvinerve		A Fruit Fly [	Y				Y				T
Arthropoda	Insecta	Chilo	suppressalis				Y							T
Chordata	Aves	Chionis	alba		Snowy Sheathbill	Y				Y				T+M
Chordata	Aves	Chloephaga	picta		Magellan	Y		Y	Y	Y		Y	Y	F+T
Chordata	Actinopterygii	Chondrostoma	nasus		Common nase		Y	Y, nat	Y		Y	Y, nat	Y	F
Arthropoda	Insecta	Chonocephalus	heymonsi		A Scuttle Fly	Y				?				T
Arthropoda	Insecta	Chorizococcus	rostellum				Y				?			T
Mollusca	Bivalvia	Choromytilus	chilensis		Chilean mussel	Y				Y				M
Arthropoda	Insecta	Chromaphis	juglandicola			Y	Y	Y		?	N			T
Arthropoda	Insecta	Chrysocharis	oscinidis				Y		Y					T
Arthropoda	Insecta	Chrysodeixis	acuta		Tunbridge Wells Gem	Y	Y			Y				T
Arthropoda	Insecta	Chrysodeixis	chalcites		Golden Twin-Spot	Y	Y	Y, Indoors	Y, Indoors	Y				T
Arthropoda	Insecta	Chrysolina	americana		Rosemary Beetle	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Chrysolina	bankii			Y				?				T
Arthropoda	Insecta	Chrysolina	coerulans				Y	Y	Y		N	Y	Y	T
Arthropoda	Insecta	Chrysolina	viridana			Y				?				T
Chordata	Aves	Chrysolophus	amherstiae		Lady Amherst's Pheasant	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Chrysolophus	pictus		Golden Pheasant	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Chrysomphalus	aonidum			Y	Y	Y		?	?	?		T
Arthropoda	Insecta	Chrysomphalus	dictyospermi				Y				?			T
Arthropoda	Insecta	Chrysotus	pallidipalpus					Y	Y					T
Arthropoda	Insecta	Chymomyza	amoena		A Lesser Fruit Fly		Y		Y		?		Y	T
Arthropoda	Insecta	Chymomyza	wirthi		A Lesser Fruit Fly	Y			N	?				T
Chordata	Aves	Ciconia	nigra		Black Stork	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Cimberis	attelaboides			Y				Y				T
Arthropoda	Insecta	Cinara	acutirostris			Y			Y	?				T
Arthropoda	Insecta	Cinara	brauni			Y				?				T
Arthropoda	Insecta	Cinara	cedri			Y	Y	Y		?				T
Arthropoda	Insecta	Cinara	confinis			Y				?				T
Arthropoda	Insecta	Cinara	costata			Y				?				T
Arthropoda	Insecta	Cinara	cuneomaculata			Y	Y			?	N			T
Arthropoda	Insecta	Cinara	cupressi		Cypress Aphid	Y	Y	Y	Y	?	?	?	?	T
Arthropoda	Insecta	Cinara	curvipes			Y				Y				T
Arthropoda	Insecta	Cinara	fresai			Y				?				T
Arthropoda	Insecta	Cinara	juniperi			Y	Y		Y	?			Y	T
Arthropoda	Insecta	Cinara	kochiana			Y	Y			?				T
Arthropoda	Insecta	Cinara	laportei			Y	Y		Y	?				T
Arthropoda	Insecta	Cinara	laricis			Y	Y			?				T
Arthropoda	Insecta	Cinara	nuda			Y				?				T
Arthropoda	Insecta	Cinara	pectinatae			Y				?				T

Arthropoda	Insecta	Cinara	piceae			Y				?				T
Arthropoda	Insecta	Cinara	piceicola			Y				?				T
Arthropoda	Insecta	Cinara	pilicornis			Y				Y				T
Arthropoda	Insecta	Cinara	pinea			Y	Y			Y				T
Arthropoda	Insecta	Cinara	pini			Y	Y		Y	?			Y	T
Arthropoda	Insecta	Cinara	pini	habitans		Y				?				T
Arthropoda	Insecta	Cinara	pruinosa			Y				?				T
Arthropoda	Insecta	Cinara	schimitscheki			Y				?				T
Arthropoda	Insecta	Cinara	tujafilina			Y				?				T
Arthropoda	Insecta	Cinara	viridescens			Y				?				T
Arthropoda	Insecta	Clambus	pallidulus			Y			Y	Y			?	T
Arthropoda	Insecta	Clambus	simsoni			Y	Y		Y	Y			Y	T
Chordata	Actinopterygii	Clarias	gariepinus		North African Catfish	N	Y	Y	Y	N	?	N	?	F
Angiospermae	Eudicotyledoneae	Claytonia	perfoliata		Spring Beauty	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Clepsis	peritana		Garden tortrix	Y								T
Arthropoda	Malacostraca	Clibanarius	erythropus			Y	Y			N	N			M
Arthropoda	Insecta	Clinodiplosis	cattleyae		A Gall Midge	Y	Y			Y				T
Arthropoda	Insecta	Clitarchus	hookeri		Smooth Stick Insect	Y								T
Arthropoda	Insecta	Clonopsis	gallica			Y								T
Arthropoda	Insecta	Closterotomus	trivialis			Y	Y		Y	?			Y	T
Arthropoda	Arachnida	Clubiona	facilis			Y								T
Annelida	Polychaeta	Clymenella	torquata		Bamboo worm	Y	Y			Y	Y			M
Arthropoda	Insecta	Clytiomya	continua		A Tachinid Fly	Y			Y	Y			?	T
Arthropoda	Insecta	Coccidencyrtus	malloi				Y							T
Arthropoda	Insecta	Coccidoxenoides	perminutus			Y								T
Arthropoda	Insecta	Coccophagus	ceroplastae				Y							T
Arthropoda	Insecta	Coccophagus	silvestrii				Y							T
Arthropoda	Insecta	Coccotrypes	dactyliperda		Palm seed borer		Y							T
Arthropoda	Insecta	Coccus	hesperidum		Soft scale	Y	Y	Y	Y	?	?	Y	Y	T
Arthropoda	Insecta	Coccus	longulus				Y				?			T
Arthropoda	Insecta	Coccus	pseudohesperidum		an orchid scale insect	Y	Y			?	?			T
Arthropoda	Insecta	Coccus	pseudomagnoliarum				Y				?			T
Mollusca	Gastropoda	Cochlicella	acuta			Y	nat	Y	Y	Y	nat	Y	Y	T
Mollusca	Gastropoda	Cochlicella	barbara		Small pointed Snail	Y	nat	Y	Y	Y	nat	Y	Y	T
Mollusca	Gastropoda	Cochlostoma	septemspirale				nat	Y			N	Y		T
Chlorophyta	Bryopsidophyceae	Codium	fragile		Green sea fingers	Y	Y	Y	Y	Y	Y	Y	Y	M
Rhodophyta	not assigned	Colaconema	dasyae						Y					M+F
Chordata	Aves	Colaptes	auratus		Northern Flicker	Y								T
Arthropoda	Insecta	Coleophora	laricella		Larch Case-bearer	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Arachnida	Coleosoma	floridanum			Y			Y	Y				T
Arthropoda	Insecta	Coleotechnites	piceaella		Spruce Groundling	Y	Y							T
Chordata	Aves	Colinus	virginianus		Bobwhite	N	Y	Y						T
Arthropoda	Insecta	Colobopyga	kewensis		a palm scale insect	Y				?				T
Heterokontophyta	Phaeophyceae	Colpomenia	peregrina			Y	Y		Y	Y	Y		Y	M
Chordata	Aves	Columba	livia		Rock Dove	Y	Y	Y	Y			Y	Y	T
Chordata	Aves	Columbina	cruziana		Croaking Ground Dove	Y								T
Arthropoda	Insecta	Comperia	merceti				Y				?			T
Arthropoda	Insecta	Comperiella	bifasciata				Y		Y		?		?	T
Arthropoda	Insecta	Comstockiella	sabalis				Y				?			T
Arthropoda	Maxillopoda	Conchoderma	auritum		Rabbit ear barnacle	Y	Y	Y	Y	Y	Y	Y		M
Arthropoda	Insecta	Conostethus	venustus			Y	Y	Y	Y	?	N	Y		T
Arthropoda	Insecta	Contarinia	pisi		Pea Midge	Y	Y	Y	Y					T
Arthropoda	Insecta	Contarinia	pyrivora		Black Gall Midge	Y				Y				T
Arthropoda	Insecta	Contarinia	quinquenotata		Hemerocallis gall midge	Y			Y	Y			?	T
Angiospermae	Eudicotyledoneae	Conyza	canadensis		Canadian Fleabane	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Conyza	sumatrensis		Guernsey Fleabane	Y	Y	Y	Y			Y	Y	T
Nematoda	Secernentea	Cooperia	curticei						Y				?	T
Arthropoda	Insecta	Copidosoma	floridanum			Y	Y			?	?			T
Arthropoda	Insecta	Copidothrips	octarticulatus						Y				?	T
Chordata	Aves	Copsychus	saularis		Oriental Magpie-robin	Y								T
Chordata	Aves	Coracias	benghalensis		Indian Roller	Y								T
Chordata	Aves	Coragyps	atratus		American Black Vulture	Y				Y				T
Mollusca	Bivalvia	Corbicula	fluminalis			N	Y	Y	Y	N	Y	Y	Y	M+F
Mollusca	Bivalvia	Corbicula	fluminea		Asiatic Clam	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Arthropoda	Insecta	Corcyra	cephalonica		Rice Moth	Y	Y	Y	Y	Y				T
Arthropoda	Malacostraca	Cordioniscus	stebbingi			Y			Y	N				F

Cnidaria	Hydrozoa	Cordylophora	caspia		Freshwater hydroid	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Chordata	Actinopterygii	Coregonus	clupeaformis		Lake Whitefish	Y, Ex	Y	N	Y	N	Y	N	Y	F
Chordata	Actinopterygii	Coregonus	lavaretus		European whitefish, Lavaret	Y, nat	nat	Y, nat	Y, Ex, nat	N	nat	Y, Ex, nat	Y, nat	F
Chordata	Actinopterygii	Coregonus	nasus		Broad whitefish	N		Y, N		N		Y, N		F
Chordata	Actinopterygii	Coregonus	peled		Northern whitefish	N	Y	Y, Ex		N	Y	Y, Ex		F
Angiospermae	Eudicotyledoneae	Corispermum	pallasii		Siberian bugseed		Y	Y			Y	Y		T
Angiospermae	Eudicotyledoneae	Cornus	alba		White Dogwood	Y	Y		Y				Y	T
Angiospermae	Eudicotyledoneae	Cornus	sericea		Red-Osier Dogwood	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Malacostraca	Corophium	multisetosum			Y			Y	Y			Y	F
Arthropoda	Malacostraca	Corophium	sextonae			Y	Y	Y	Y	Y	?	Y	Y	M
Arthropoda	Malacostraca	Corophium	acherusicum			Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Insecta	Corticaria	abietorum			Y				?				T
Arthropoda	Insecta	Corticeus	linearis			Y		Y		Y		?		T
Arthropoda	Insecta	Corticeus	pini			Y								T
Cnidaria	Hydrozoa	Coryne	pintneri			Y	Y			Y	N			M
Arthropoda	Insecta	Corythucha	ciliata			Y	Y	Y	Y	Y	N			T
Chordata	Aves	Coscoroba	coscoroba		Coscoroba Swan	Y		Y	Y	Y		Y	Y	F+T
Arthropoda	Insecta	Cosmopterix	pulchrimella			Y	Y							T
Arthropoda	Insecta	Cotesia	marginiventris				Y		Y		?		?	T
Chordata	Aves	Cotinga	cayana		Spangled Cotinga	Y								T
Angiospermae	Eudicotyledoneae	Cotoneaster	bullatus		Hollyberry Cotoneaster	Y		Y						T
Angiospermae	Eudicotyledoneae	Cotoneaster	dielsianus		Diel's Cotoneaster	Y		Y				Y		T
Angiospermae	Eudicotyledoneae	Cotoneaster	frigidus		Tree Cotoneaster	Y								T
Angiospermae	Eudicotyledoneae	Cotoneaster	hjelmqvistii		Hjelmqvist's Cotoneaster	Y								T
Angiospermae	Eudicotyledoneae	Cotoneaster	integrifolius		Entire-leaved Cotoneaster	Y		Y				Y		T
Angiospermae	Eudicotyledoneae	Cotoneaster	lacteus		Late Cotoneaster	Y								T
Angiospermae	Eudicotyledoneae	Cotoneaster	microphyllus		Small-leaved Cotoneaster	Y								T
Angiospermae	Eudicotyledoneae	Cotoneaster	prostratus		Procumbent Cotoneaster	Y								T
Angiospermae	Eudicotyledoneae	Cotoneaster	rehderi		Bullate Cotoneaster	Y		Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Cotoneaster	salicifolius		Willow-leaved Cotoneaster	Y		Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Cotoneaster	simonsii		Himalayan Cotoneaster	Y	Y	Y	Y			Y		T
Angiospermae	Eudicotyledoneae	Cotoneaster	sternianus		Stern's Cotoneaster	Y		Y				Y		T
Angiospermae	Eudicotyledoneae	Cotoneaster	suecicus		Swedish Cotoneaster	Y								T
Angiospermae	Eudicotyledoneae	Cotula	coronopifolia		Brass Buttons	Y	Y	Y	Y			Y	Y	T+M
Chordata	Aves	Coturnix	japonica		Japanese Quail	Y		Y	Y			Y	Y	T
Arthropoda	Insecta	Crambus	leucoschalis		African Grass-veneer	Y	Y			Y				T
Arthropoda	Malacostraca	Crangonyx	pseudogracilis		Northern River Crangonyctid	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Malacostraca	Crangonyx	subterraneus			Y			Y	Y			Y	F
Cnidaria	Hydrozoa	Craspedacusta	sowerbyi			Y	Y	Y	Y	Y	Y	Y	Y	F
Mollusca	Bivalvia	Crassostrea	brasiliana			Y				Y				M
Mollusca	Bivalvia	Crassostrea	gigas		Pacific oyster	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Mollusca	Bivalvia	Crassostrea	rhizophorae		Mangrove oyster	N	Y			N	N			M
Mollusca	Bivalvia	Crassostrea	rivularis		jinjiang oyster		Y				?			M
Mollusca	Bivalvia	Crassostrea	sikamea		Kumamoto oyster		Y				?			M
Mollusca	Bivalvia	Crassostrea	virginica		American oyster	Y	Y	Y	Y	Y	?	Y	Y	M
Angiospermae	Eudicotyledoneae	Crassula	helmsii		New Zealand Pigmyweed	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Insecta	Crematogaster	scutellaris			Y			Y					T
Arthropoda	Insecta	Crenidorsum	aroidephagus				Y				?			T
Mollusca	Gastropoda	Crepidula	fornicata		Slipper limpet	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Crioceris	asparagi		Asparagus Beetle	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Maxillopoda	Critomolgus	actiniae			Y				Y				M
Arthropoda	Insecta	Crocidosema	plebejana		Cotton tipworm	Y	Y		Y	Y			Y	T
Chordata	Mammalia	Crocidura	suaveolens		Lesser White-toothed Shrew	Y	Y			N	N			T
Angiospermae	Monocotyledoneae	Crocosmia	aureaXpottsii		Montbretia	Y	Y							T
Basidiomycota	Urediniomycetes	Cronartium	ribicola			Y	Y	Y	Y	Y				T
Arthropoda	Arachnida	Crossopriza	lyoni					Y				Y		T
Chordata	Aves	Crossoptilon	auritum		Blue Eared Pheasant	Y								T
Arthropoda	Insecta	Cryphalus	abietis			Y				?				T
Arthropoda	Insecta	Cryphalus	asperatus			Y				Y				T
Arthropoda	Insecta	Cryphalus	piceae		Small Fir Bark Beetle	Y								T
Arthropoda	Insecta	Cryphia	algae		Tree-Lichen Beauty	Y	Y			Y	Y			T
Ascomycota	Sordariomycetes	Cryphonectria	parasitica				Y	Y	Y		N			T
Arthropoda	Insecta	Cryptamorpha	desjardinsi					Y	Y			?	?	T
Arthropoda	Insecta	Cryptoblabes	gnidiella		Honeydew moth	Y	Y			N				T
Arthropoda	Insecta	Cryptolaemus	montrouzieri			Y	Y	Y		N		Y		T
Arthropoda	Insecta	Cryptolestes	capensis			Y		Y		?		?		T

Arthropoda	Insecta	Cryptolestes	turcicus						Y					T
Arthropoda	Insecta	Cryptolestes	pusillus			Y	Y		Y	Y				T
Pinophyta	Pinopsida	Cryptomeria	japonica			Y	Y	Y	Y	Y	N	N	N	T
Rhodophyta	not assigned	Cryptonemia	hibernica			Y				?				M
Rhodophyta	not assigned	Cryptonemia	lomation				Y				N			M
Arthropoda	Insecta	Cryptophilus	obliteratus				Y				?			T
Arthropoda	Insecta	Cryptopleurum	subtile			Y	Y	Y	Y	Y				T
Arthropoda	Diplopoda	Cryptops	anomalans			Y				Y				T
Arthropoda	Collembola	Cryptopygus	thermophilus			Y			Y	Y				T
Ascomycota	Ascomycetes	Cryptostroma	corticale			Y	Y			Y				T
Arthropoda	Insecta	Cryptotermes	brevis			Y	Y		Y	?				T
Arthropoda	Insecta	Crypturaphis	grassii			Y				?				T
Arthropoda	Insecta	Crypturgus	cinereus			Y	Y	Y	Y		Y	Y	N	T
Arthropoda	Insecta	Crypturgus	subcribrosus			Y				Y				T
Arthropoda	Insecta	Ctenarytaina	eucalypti		Blue Gum Psyllid	Y	Y			Y				T
Arthropoda	Insecta	Ctenarytaina	peregrina			Y	Y			?	?			T
Arthropoda	Insecta	Ctenarytaina	spatulata				Y				?			T
Arthropoda	Insecta	Cteniscus	dorsalis				Y				?			T
Arthropoda	Insecta	Ctenolepisma	longicaudatum						Y					T
Chordata	Actinopterygii	Ctenopharyngodon	idella		Chinese Grass Carp	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Arachnida	Cupiennus	getazi					Y				Y		T
Pinophyta	Pinopsida	Cupressus	macrocarpa			Y	Y			Y	N			T
Pinophyta	Pinopsida	Cuprocyparis				Y	Y							T
Angiospermae	Eudicotyledoneae	Cuscuta	campestris		Yellow Dodder	Y	Y	Y	Y			Y	Y	T
Chordata	Aves	Cyanochen	cyanoptera		Blue-winged Goose	Y		Y	Y	Y		Y	N	F+T
Chordata	Aves	Cyanocitta	cristata		Blue Jay	Y								T
Chordata	Aves	Cyanoliseus	patagonus		Patagonian Conure	Y				Y				T
Chordata	Aves	Cyanoramphus	novaezelandiae		Red-fronted Parakeet	Y		Y	Y				Y	T
Arthropoda	Insecta	Cycloneda	sanguinea		Spotless ladybird	Y				?				T
Arthropoda	Insecta	Cyclorhipidion	bodoanus				Y		Y		?		?	T
Arthropoda	Insecta	Cyclorhipidion					Y	Y	Y		?	Y	?	T
Arthropoda	Insecta	Cydalima	perspectalis			Y	Y		Y	?	?		Y	T
Arthropoda	Insecta	Cydia	conicolana		Pine-cone Piercer	Y	Y		Y	Y	N		Y	T
Arthropoda	Insecta	Cydia	grunertiana					Y				?		T
Arthropoda	Insecta	Cydia	illutana		Larch Piercer	Y	Y		Y				Y	T
Arthropoda	Insecta	Cydia	milleniana			Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Cydia	pactolana		Spruce bark tortrix	Y	Y		Y	N			Y	T
Arthropoda	Insecta	Cydia	strobilella						Y				?	T
Chordata	Aves	Cygnus	atratus		Black Swan	Y	Y	Y	Y	Y	Y	Y	Y	F+T+M
Chordata	Aves	Cygnus	buccinator		Trumpeter Swan	Y		Y		Y		Y		F+T+M
Chordata	Aves	Cygnus	cygnus		Whooper Swan	Y, nat	nat	nat	nat	Y, nat	nat	nat	nat	F+T
Chordata	Aves	Cygnus	melanocoryphus		Black-necked Swan	Y		Y	Y	Y		Y	Y	F+T+M
Chordata	Aves	Cygnus	olor		Mute Swan	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F+T+M
Ascomycota	Sordariomycetes	Cylindrocladium	buxicola			Y	Y	Y	Y					T
Arthropoda	Diplopoda	Cylindrodesmus	hirsutus			Y	Y		Y					T
Arthropoda	Diplopoda	Cylindroiulus	britannicus			Y			Y	Y			N	T
Arthropoda	Diplopoda	Cylindroiulus	apenninorum						Y					T
Arthropoda	Diplopoda	Cylindroiulus	truncorum			Y	Y	Y	Y	Y				T
Arthropoda	Malacostraca	Cymodoce	truncata			Y			Y	Y			N	M
Arthropoda	Insecta	Cynaeus	angustus				Y				?			T
Angiospermae	Monocotyledoneae	Cyperus	eragrostis		Pale Galingale	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Cyphostethus	tristriatus		Juniper Shieldbug	Y	Y	Y	Y	Y	N	Y	Y	T
Chordata	Actinopterygii	Cyprinella	lutrensis		Red shiner	Y		N		N		N		F
Chordata	Actinopterygii	Cyprinus	carpio		Carp	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Insecta	Cyrtogramme	melagynalis			Y, Indoors				N	N	N	N	F+T
Chordata	Aves	Dacelo	novaeguineae		Laughing Kookaburra			Y				Y		T
Arthropoda	Insecta	Dacne	picta				Y				?			T
Platyhelminthes	Trematoda	Dactylogyrus	anchoratus			Y				Y				M
Platyhelminthes	Trematoda	Dactylogyrus	extensus			Y				?				F
Arthropoda	Insecta	Dactylosternum	abdominale				Y				?			T
Arthropoda	Insecta	Dactylotrypes	longicollis				Y				?			T
Arthropoda	Insecta	Dacus	ciliatus		A Fruit Fly [	Y	N	N	N	N	N	N	N	T
Chordata	Mammalia	Dama	dama		Fallow Deer	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Branchiopoda	Daphnia	ambigua		Water flea	Y		Y	Y	Y		Y	Y	F
Arthropoda	Branchiopoda	Daphnia	atkinsoni			Y			Y	Y			Y	F
Arthropoda	Branchiopoda	Daphnia	parvula						Y				?	F

Arthropoda	Insecta	Dasineura	abietiperda		A Gall Midge	Y	Y			?	?			T
Arthropoda	Insecta	Dasineura	gibsoni		A Gall Midge	Y			N	N			N	T
Arthropoda	Insecta	Dasineura	gleditchiae		Honey Locust Gall(pod) Midge	Y	Y	Y	Y	Y			Y	T
Arthropoda	Insecta	Dasineura	kellneri		A Gall Midge	Y				?				T
Arthropoda	Insecta	Dasineura	oleae		A Gall Midge	Y	N	N	N	Y	N	N	N	T
Arthropoda	Insecta	Dasineura	oxycoccana		A Gall Midge	Y	Y			Y	?			T
Arthropoda	Insecta	Dasineura	pyri		Pear Leaf Midge	Y				Y				T
Arthropoda	Insecta	Dasineura	rhododendri		A Gall Midge	Y	Y		N	N	N		N	T
Rhodophyta	not assigned	Dasya	baillouviana						Y				Y	M
Rhodophyta	not assigned	Dasya	sessilis				Y				N			F
Arthropoda	Insecta	Dasypogon	diadema		A Robber Fly	Y	Y		N	?	?			T
Rhodophyta	not assigned	Dasysiphonia							Y					M
Arthropoda	Insecta	Dasysyrphus	friuliensis		A Hoverfly	Y		Y	Y	Y		?	N	T
Angiospermae	Eudicotyledoneae	Datura	stramonium		Thorn-Apple	Y	Y	Y	Y		Y	Y	Y	T
Nematoda	Secernentea	Deladenus	durus					Y	Y			?	?	T
Angiospermae	Eudicotyledoneae	Delairea	odorata		Cape ivy	Y	Y							T
Arthropoda	Insecta	Delomerista	novita			Y			Y	N			?	T
Arthropoda	Insecta	Delottococcus	euphorbiae				Y				?			T
Arthropoda	Insecta	Delphastus	catalinae			Y				?				T
Platyhelminthes	Turbellaria	Dendrocoelum	romanodanubiale				Y	Y	Y		?	Y	?	F
Arthropoda	Insecta	Dendroctonus	micans		Great Spruce Bark Beetle	Y	Y	Y	Y	Y	N	Y	N	T
Chordata	Aves	Dendrocygna	bicolor		Fulvous Whisting Duck	Y	Y	Y	Y	Y	?	Y	Y	F+T
Chordata	Aves	Dendrocygna	javanica		Lesser Whistling Duck	Y				Y				F+T+M
Chordata	Aves	Dendrocygna	viduata		White-faced Whistling Duck	Y	Y	Y	Y	Y	?	Y	Y	F+T
Chordata	Aves	Dendroica	striata		Blackpoll Warbler	Y	Y			Y				T
Arthropoda	Insecta	Deraeocoris	flavilinea			Y	Y	Y	Y	Y		Y	Y	T
Chlorophyta	Bryopsidophyceae	Derbesia	rhizophora				Y				N			M
Arthropoda	Arachnida	Dermatophagoides	evansi						Y					T
Arthropoda	Insecta	Dermestes	ater		Black Larder Beetle	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Dermestes	bicolor						Y					T
Arthropoda	Insecta	Dermestes	carnivorus			Y	Y	Y		?	?	?		T
Arthropoda	Insecta	Dermestes	frischii			Y	Y		Y	Y	?		Y	T
Arthropoda	Insecta	Dermestes	leechi			Y								T
Arthropoda	Insecta	Dermestes	maculatus		Hide Beetle	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Dermestes	peruvianus		Peruvian Larder Beetle	Y	Y			Y	?			T
Mollusca	Gastropoda	Deroceras	panormitanum		Chestnut Slug	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Derolus	mauritanicus				Y							T
Arthropoda	Insecta	Diabrotica	virgifera		Western Corn Rootworm [	Y, Er	Y	Y	Y	Y, Er	N	Y	Y	T
Arthropoda	Insecta	Diabrotica	virgifera	virgifera		Y	Y	Y	Y	Y	N	Y	Y	T
Cnidaria	Anthozoa	Diadumene	cincta		Known in USA as orange anemone	Y	Y	Y	Y	Y	Y	Y	Y	M
Cnidaria	Anthozoa	Diadumene	lineata				Y	Y			Y	Y		M
Arthropoda	Insecta	Dialeurodes	chittendeni		rhododendron whitefly	Y	Y	Y	Y	?	?	?	?	T
Arthropoda	Insecta	Dialeurodes	citri				Y				?			T
Arthropoda	Insecta	Diaphania	perspectalis				Y		Y		?		?	T
Arthropoda	Insecta	Diaspidiotus	perniciosus			Y	Y		Y	?				T
Arthropoda	Insecta	Diaspis	boisduvalii			Y	Y			?	?			T
Arthropoda	Insecta	Diaspis	bromeliae			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Diaspis	echinocacti			Y	Y			?	?			T
Arthropoda	Arachnida	Diblemma	donisthorpei			Y								T
Arthropoda	Insecta	Dichelia	cedricola				Y				?			T
Arthropoda	Insecta	Dichromothrips	phalaenopsidis						Y				?	T
Arthropoda	Insecta	Dichromothrips	corbetti						Y					T
Arthropoda	Insecta	Dichrooscytus	gustavi			Y	Y	Y	Y	Y				T
Pteridophyta	Pteridopsida	Dicksonia	antarctica		Australian Tree Ferns	Y				Y				T
Arthropoda	Insecta	Dicyphus	escalerae			Y	Y			?	Y			T
Arthropoda	Insecta	Dicyphus	pallicornis			Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Didactylomyia	longimana		A Gall Midge			Y	Y			?	?	T
Arthropoda	Insecta	Didea	intermedia		A Hoverfly	Y			Y	Y			Y	T
Chordata	Ascidiacea	Didemnum	vexillum		Carpet sea squirt	Y	Y		Y	Y	Y		Y	M
Ascomycota	Ascomycetes	Didymascella	thujina			Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Dienerella	ruficollis			Y				Y				T
Arthropoda	Malacostraca	Dikerogammarus	haemophabes				Y	Y	Y		Y	Y	Y	F
Arthropoda	Malacostraca	Dikerogammarus	villosus		Killer Shrimp	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Arthropoda	Insecta	Dinoderus	bifoveolatus			Y		Y	Y	?		?	?	T
Arthropoda	Insecta	Dinoderus	minutus			Y	Y	Y	Y	?	?	Y	Y	T
Arthropoda	Insecta	Dioryctria	schuetzeella		Spruce Knot-horn	Y	Y	Y	Y	Y			Y	T

Arthropoda	Insecta	Diplopseustis	perieresalis			Y	Y	Y	Y	Y	?	?	?	T
Chordata	Ascidiacea	Diplosoma	listerianum			Y	Y	Y	Y	Y	Y		Y	M
Arthropoda	Insecta	Diplostix	mayeti				Y				?			T
Arthropoda	Arachnida	Dipoena	lugens			Y								T
Arthropoda	Insecta	Diprion	similis			Y	Y		Y	?				T
Arthropoda	Insecta	Diradius	intricatus						Y					T
Chordata	Amphibia	Discoglossus	pictus		Mediterranean Painted Frog		Y				N			F
Angiospermae	Eudicotyledoneae	Disphyma	crassifolium		Purple Dewplant	Y								T
Nematoda	Tylenchoidea	Ditylenchus	destructor			Y	Y	Y	Y	?	?	?	?	T
Nematoda	Tylenchoidea	Ditylenchus	dipsaci			Y		Y	Y	Y		Y	N	T
Chordata	Aves	Diuca	diuca		Common Diuca Finch	Y				?				T
Arthropoda	Insecta	Diuraphis	noxia			Y, Er	Y		Y	?				T
Arthropoda	Insecta	Diversinervus	elegans				Y				?			T
Arthropoda	Insecta	Dohrniphora	cornuta		A Scuttle Fly	Y	Y	Y	Y	?	?	Y	?	T
Arthropoda	Insecta	Dorypteryx	domestica			Y	Y			?	?			T
Arthropoda	Insecta	Dorypteryx	pallida				Y				?			T
Mollusca	Bivalvia	Dreissena	polymorpha		Zebra Mussel	Y	Y	Y	Y	Y	Y	Y	Y	F
Ascomycota	Ascomycetes	Drepanopeziza	punctiformis			Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Drepanosiphum	acerinum			Y			Y	?			N	T
Arthropoda	Branchiopoda	Drepanothrix	dentata			Y		Y	Y	Y		Y	Y	F
Arthropoda	Insecta	Drosophila	busckii		A Lesser Fruit Fly	Y		Y	Y	Y		?	?	T
Arthropoda	Insecta	Drosophila	hydei		A Lesser Fruit Fly	Y	Y	Y	Y	Y	?	?	?	T
Arthropoda	Insecta	Drosophila	immigrans		A Lesser Fruit Fly	Y		Y	Y	Y		?	N	T
Arthropoda	Insecta	Drosophila	melanogaster		A Lesser Fruit Fly	Y		Y	Y	Y			Y	T
Arthropoda	Insecta	Drosophila	repleta		A Lesser Fruit Fly	Y		Y	Y					T
Arthropoda	Insecta	Drosophila	suzukii				Y				?			T
Arthropoda	Insecta	Dryadaula	pactolia		Cellar Clothes Moth	Y				N				T
Arthropoda	Insecta	Dryocoetes	himalayensis				Y				?			T
Chordata	Aves	Dryocopus	martius		Black Woodpecker	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Dryocosmus	kuriphilus		Chestnut Gall Wasp	N	Y		N	N	?		N	T
Arthropoda	Insecta	Dryodurgades	antoniae			Y		Y		Y		N		T
Angiospermae	Eudicotyledoneae	Duchesnea	indica		Yellow-flowered Strawberry	Y	Y	Y	Y			Y	Y	T
Platyhelminthes	Turbellaria	Dugesia	tigrina			Y	Y	Y	Y	Y	?	Y	Y	F
Arthropoda	Insecta	Duponchelia	fovealis		Dark Marbled Tabby	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Malacostraca	Dynamene	bidentata			Y			Y	Y			N	M
Arthropoda	Insecta	Dysaphis	tulipae			Y	Y		Y	?	?		?	T
Arthropoda	Arachnida	Dysdera	crocata		Woodlouse spider [	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Arachnida	Dysdera	erythrina			Y	Y	Y	Y	Y			Y	T
Arthropoda	Insecta	Dysmicoccus	brevipes						Y				?	T
Arthropoda	Insecta	Dysmicoccus	grassii				Y				?			T
Arthropoda	Insecta	Dysmicoccus	neobrevipes						Y				?	T
Arthropoda	Malacostraca	Dyspanopeus	sayi		Say mud crab	Y, Er				N				M
Arthropoda	Insecta	Earias	biplaga		Spiny Bollworm	Y				Y				T
Arthropoda	Insecta	Eccopisa	effractella		Royal Knot-horn	Y	Y	Y	Y		N	N	Y	T
Arthropoda	Malacostraca	Echinogammarus	berilloni				Y	Y	Y		Y	Y	Y	F
Arthropoda	Malacostraca	Echinogammarus	ischnus				Y		Y		Y		Y	F
Arthropoda	Malacostraca	Echinogammarus	trichiatus					Y	Y			Y	Y	F
Arthropoda	Insecta	Echinothrips	americanus			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Ectoedemia	heringella			Y	Y			Y				T
Arthropoda	Insecta	Ectopsocopsis	cryptomeriae				Y				?			T
Arthropoda	Insecta	Ectopsocus	axillaris			Y				?				T
Arthropoda	Insecta	Ectopsocus	maindroni			Y				?				T
Arthropoda	Insecta	Ectopsocus	richardsi			Y				?				T
Arthropoda	Insecta	Ectopsocus	briggsi						Y					T
Arthropoda	Insecta	Edwardsiana	ishidai			Y			Y	Y				T
Arthropoda	Insecta	Edwardsiana	nigriloba			Y				Y				T
Angiospermae	Monocotyledoneae	Egeria	densa		Large-Flowered Waterweed	Y	Y	Y	Y	Y	N	Y	Y	F
Angiospermae	Monocotyledoneae	Eichhornia	crassipes		Water Hyacinth	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Insecta	Eilema	caniola			Y	Y	Y	Y	Y	N	N	N	T
Arthropoda	Insecta	Elachista				Y	Y	Y	Y	Y		Y	Y	M
Angiospermae	Eudicotyledoneae	Elaeagnus	angustifolia		Elaeagnus	Y	Y	Y				Y		T
Chordata	Aves	Elanoides	forficatus		American Swallow-tailed Kite	Y								T
Arthropoda	Insecta	Elatobium	abietinum		Green Spruce Aphid	Y	Y		Y	Y	?		Y	T
Bryozoa	Gymnolaemata	Electra	pilosa			Y	Y	Y	Y	Y	Y	Y	Y	M
Chordata	Mammalia	Eliomys	quercinus		Farden Dormouse	Y, Ex	nat	nat	nat	Y, Ex	nat	nat	nat	T
Arthropoda	Maxillopoda	Elminius	modestus			Y	Y	Y	Y	Y	Y	Y	Y	M

Angiospermae	Monocotyledoneae	Elodea	callitrichoides		South American Waterweed	Y	Y			?	?			F
Angiospermae	Monocotyledoneae	Elodea	canadensis		Canadian Pondweed	Y	Y	Y	Y	Y	Y	Y	Y	F
Angiospermae	Monocotyledoneae	Elodea	nuttallii		Esthwaite Water-Weed	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Insecta	Elophila	diffluallis		Asian China-mark	Y, Indoors	N	N	Y	N	N	N	N	F+T
Arthropoda	Insecta	Elophila	manilensis		Philippine China-mark	Y	N	N	N	N	N	N	N	F+T
Arthropoda	Insecta	Elophila	melagynalis			Y				Y				F+T
Arthropoda	Insecta	Elophila	nymphaeata		Brown China-mark	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Arthropoda	Insecta	Elophila	obliteralis			Y				?				F+T
Chordata	Aves	Emberiza	bruniceps		Red-headed Bunting	Y				Y				T
Chordata	Aves	Emberiza	cioides		Siberian Meadow Bunting	Y			Y				N	T
Chordata	Aves	Emberiza	hortulana		Ortolan Bunting	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Emberiza	melanocephala		Black-Headed Bunting	Y	Y		Y	Y			Y	T
Chordata	Aves	Emberiza	rutila		Chestnut Bunting	Y								T
Chordata	Aves	Emberiza	spodocephala		Black-faced Bunting	Y			Y					T
Arthropoda	Insecta	Embidopsocus	minor			Y				?				T
Arthropoda	Insecta	Empicoris	rubromaculatus				Y	Y						T
Arthropoda	Insecta	Empoasca	pteridis			Y	Y	Y		N	N	N		T
Arthropoda	Insecta	Empoasca	punjabensis				Y							T
Chordata	Reptilia	Emys	orbicularis		European Pond Terrapin	Y	Y	Y	Y	Y	N	N	N	F+T
Arthropoda	Insecta	Encarsia	aurantii				Y				?			T
Arthropoda	Insecta	Encarsia	berlesei				Y				?			T
Arthropoda	Insecta	Encarsia	formosa			Y	Y		Y	?	?		N	T
Arthropoda	Insecta	Encarsia	herndoni				Y				?			T
Arthropoda	Insecta	Encarsia	hispida				Y				?			T
Arthropoda	Insecta	Encarsia	lahorensis				Y				?			T
Arthropoda	Insecta	Encarsia	lounsburyi				Y		Y		?		?	T
Arthropoda	Insecta	Encarsia	pergandiella				Y				?			T
Arthropoda	Insecta	Encarsia	perniciosi				Y				?			T
Arthropoda	Insecta	Encarsia	citrina						Y					T
Arthropoda	Insecta	Encyrtus	infelix			Y	Y		N	?	?			T
Arthropoda	Insecta	Enderleinella	obsoleta			Y				?				T
Arthropoda	Insecta	Enderleinellus	longiceps			Y				?				T
Arthropoda	Insecta	Enderleinellus	tamiasis				Y				?			T
Arthropoda	Insecta	Endrosis	sarcitrella			Y		Y	Y	Y		Y	Y	T
Mollusca	Bivalvia	Ensis	directus		American jack knife clam	Y	Y	Y	Y	Y	Y	Y	Y	M
Ascomycota	Ascomycetes	Entoleuca	mammata			Y	Y	Y		Y				T
Chordata	Aves	Eophona	migratoria		Chinese Grosbeak	Y			Y	Y			Y	T
Chordata	Aves	Eophona	personata		Japanese Grosbeak	Y				Y				T
Arthropoda	Arachnida	Eperigone	eschatologica					Y	Y			Y		T
Pinophyta	Pinopsida	Ephedra	altissima				Y							T
Arthropoda	Insecta	Ephestia	elutella		Cacao Moth	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Ephestia	kuehniella		Mediterranean Flour Moth	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Ephestia	unicolorella						Y					T
Arthropoda	Insecta	Ephippigerida	nigromarginata				Y				N			T
Arthropoda	Insecta	Ephistemus	globulus			Y				Y				T
Arthropoda	Insecta	Epichoristodes	acerbella			Y	Y			?	?			T
Arthropoda	Insecta	Epidiplosis	filifera			Y				?				T
Angiospermae	Eudicotyledoneae	Epilobium	ciliatum		American Willowherb	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Epinotia	algeriensis				Y				?			T
Arthropoda	Insecta	Epinotia	cedricida				Y				?			T
Arthropoda	Insecta	Epiphyas	postvittana		Light Brown Apple Moth	Y	Y		N	Y			N	T
Arthropoda	Insecta	Epuraea	luteola				Y				?			T
Arthropoda	Insecta	Epuraea	ocularis				Y				?			T
Pteridophyta	Equisetopsida	Equisetum	ramosissimum		Boston Horsetail	Y	Y	Y	Y	Y	N	N	N	T
Angiospermae	Monocotyledoneae	Eragrostis	curvula		African Love-Grass	Y	Y	Y				Y		T
Arthropoda	Insecta	Eratophyes	amasiella						Y				?	T
Arthropoda	Insecta	Eremocoris	fenestratus			Y				Y				T
Arthropoda	Insecta	Eretmocerus	eremicus				Y		Y		?		?	T
Arthropoda	Insecta	Eretmocerus	mundus						Y				?	T
Arthropoda	Maxillopoda	Ergasilus	briani			Y				Y				F
Arthropoda	Maxillopoda	Ergasilus	gibbus			Y				Y				F
Arthropoda	Maxillopoda	Ergasilus	sieboldi			Y				Y				F
Arthropoda	Insecta	Ericaphis	scammelli			Y	Y		Y	?				T
Arthropoda	Insecta	Ericaphis	wakibae			Y				?				T
Angiospermae	Eudicotyledoneae	Erigeron	annuus		Tall Fleabane	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Arachnida	Erigone	aletris			Y				Y				T

Arthropoda	Malacostraca	Eriocheir	sinensis		Chinese Mitten Crab	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Arthropoda	Insecta	Eriococcus	araucariae				Y				?			T
Arthropoda	Insecta	Eriococcus	coccineus				Y				?			T
Arthropoda	Arachnida	Eriophyes	pyri			Y	Y	Y	Y	Y		Y	N	T
Arthropoda	Insecta	Eriosoma	lanigerum		Woolly Aphid	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Eriozona	erratica		A Hoverfly	Y		Y	Y	Y		?	?	T
Arthropoda	Insecta	Eriozona	syrphoides		A Hoverfly	Y			Y	Y			N	T
Annelida	Clitellata	Erpobdella	testacea					Y	Y			Y	Y	F
Ascomycota	Leotiomycetes	Erysiphe	flexuosa			Y	Y	Y		Y		Y		T
Ascomycota	Leotiomycetes	Erysiphe	palczewskii			Y				Y				T
Ascomycota	Leotiomycetes	Erysiphe	platani			Y	Y			Y				T
Ascomycota	Leotiomycetes	Erysiphe	russellii			Y				Y				T
Ascomycota	Leotiomycetes	Erysiphe	vanbruntiana			Y	Y			N				T
Arthropoda	Insecta	Essigella	californica				Y				?			T
Chordata	Aves	Estrilda	caerulescens		Lavender Waxbill	Y				Y				T
Chordata	Aves	Estrilda	rhodopyga		Crimson-rumped Waxbill	Y				Y				T
Chordata	Aves	Estrilda	troglodytes		Black-rumped Waxbill	Y			Y	Y			N	T
Arthropoda	Insecta	Etiella	zinckenella		Legume Knot-horn		Y	Y	N				N	T
Arthropoda	Insecta	Euborellia	annulipes			Y			Y	Y				T
Arthropoda	Insecta	Eucalymnatus	tessellatus				Y				?			T
Angiospermae	Eudicotyledoneae	Eucalyptus			Gum Tree	Y				Y				T
Cnidaria	Hydrozoa	Eucheilota	paradoxica				Y				N			M
Arthropoda	Insecta	Euchromia	lethe		Basker	Y	N	N	N	N	N	N	N	T
Arthropoda	Insecta	Euchromius	ocellea		Eyed Veneer	Y	Y	N	Y	Y	N	N	Y	T
Arthropoda	Maxillopoda	Eudiaptomus	gracilis						Y					F
Chordata	Aves	Eudocimus	ruber		Scarlet Ibis	Y			Y				Y	T
Arthropoda	Insecta	Euhoplopsyllus	glacialis				Y				?			T
Arthropoda	Insecta	Eulachnus	agilis		Spotted pine aphid	Y				?				T
Arthropoda	Insecta	Eulachnus	bluncki			Y				?				T
Arthropoda	Insecta	Eulachnus	brevipilosus			Y				?				T
Arthropoda	Insecta	Eulagius	filicornis			Y				Y				T
Arthropoda	Insecta	Eulecanium	excrescens		Wisteria [	Y				Y				T
Arthropoda	Insecta	Eulepidosaphes	pyriformis			Y				?				T
Arthropoda	Insecta	Eumerus	funeralis		Lesser Bulb-Fly	Y			Y	Y			Y	T
Arthropoda	Insecta	Euophryum	confine		New Zealand weevil	Y	Y			Y	?			T
Arthropoda	Insecta	Euophryum	rufum			Y	Y			Y	?			T
Chordata	Aves	Euphagus	carolinensis		Rusty Blackbird	Y				N				T
Angiospermae	Eudicotyledoneae	Euphorbia	maculata		Spotted Spurge	Y	Y	Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Euphorbia	Xpseudovirgata		Russian Spurge	Y	Y		N	Y	Y		N	T
Arthropoda	Insecta	Eupithecia	abietaria		Cloaked Pug	Y	Y		Y	Y	N	N	N	T
Arthropoda	Insecta	Eupithecia	intricata		Freyer's Pug	Y	Y	Y	Y	Y	N	Y	N	T
Arthropoda	Insecta	Eupithecia	lariciata		Larch Pug	Y	Y		Y	Y	N	N	Y	T
Arthropoda	Insecta	Eupithecia	phoeniceata		Cypress Pug	Y		Y		Y				T
Arthropoda	Insecta	Eupithecia	pulchellata					Y	Y			?	?	T
Arthropoda	Insecta	Eupithecia	sinuosaria		Goosefoot Pug	Y	Y			Y				T
Platyhelminthes	Turbellaria	Euplana	gracilis						Y				Y	M
Chordata	Aves	Euplectes	albonotatus		White-winged Widow-bird	Y								T
Chordata	Aves	Euplectes	diadematus		Fire-crowned Bishop	Y								T
Chordata	Aves	Euplectes	hordeaceus		Black-winged Red Bishop	Y			Y	Y			Y	T
Chordata	Aves	Euplectes	orix		Red Bishop	Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Euplectes	progne		Long-tailed Widow-bird	Y				Y				T
Arthropoda	Insecta	Eupteryx	decemnotata		Ligurian leafhopper	Y			Y	N			Y	T
Arthropoda	Insecta	Eupteryx	rostrata						Y					T
Arthropoda	Insecta	Eurhadina	loewii			Y		Y	Y	Y		N	N	T
Arthropoda	Arachnida	Euryopis	episinoides					Y				Y		T
Arthropoda	Maxillopoda	Eurytemora	americana			Y	Y		Y	Y	Y		Y	M
Arthropoda	Maxillopoda	Eurytemora	pacifica				Y				N			M
Arthropoda	Arachnida	Eurytetranychus	admes				Y							T
Arthropoda	Insecta	Eurytoma	orchidearum				Y		Y		?		?	T
Arthropoda	Ostracoda	Eusarsiella	zostericola			Y				Y				M
Arthropoda	Insecta	Eustixia	pupula		American Cabbage Pearl	Y								T
Arthropoda	Insecta	Euxesta	notata				Y				?			T
Arthropoda	Insecta	Euxesta	pechumani				Y				?			T
Arthropoda	Insecta	Euzophera	bigella		Peach Knot-horn	Y	Y			N	N			T
Arthropoda	Insecta	Euzophera	osseatella		Potato Knot-horn		Y							T
Arthropoda	Arachnida	Evarcha	jucunda				Y	Y			Y	Y		T

Arthropoda	Insecta	Exaireta	spinigera				Y				?			T
Arthropoda	Insecta	Exochomus	nigromaculatus		Black scale-insect ladybird	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Exochomus	quadripustulatus		Pine Ladybird	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Falco	biarmicus		Lanner	Y	Y	Y	Y	Y			Y	T
Chordata	Aves	Falco	cherrug		Saker	Y	Y	Y	Y	Y		Y	Y	T
Chordata	Aves	Falco	jugger		Laggar Falcon	Y								T
Chordata	Aves	Falco	mexicanus		Prairie Falcon	Y								T
Chordata	Aves	Falco	pelegrinoides		Barbary Falcon	Y	Y							T
Chordata	Aves	Falco	rusticolus		Gyr Falcon	Y	Y	Y	Y	Y		Y	Y	T
Chordata	Aves	Falco	sparverius		American Kestrel	Y		Y	Y	Y			Y	T
Angiospermae	Eudicotyledoneae	Fallopia	baldschuanica		Russian Vine	Y	Y	Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Fallopia	Xbohemica		Bohemian Knotweed, Conolly's Knotweed	Y	Y	Y	Y	Y	Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Fallopia	japonica		Japanese knotweed	Y	Y	Y	Y	Y	Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Fallopia	sachalinensis		Giant Knotweed	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Fannia	pusio				Y				?			T
Platyhelminthes	Trematoda	Pseudodactylogyrus	anguillae				Y							F
Chordata	Mammalia	Felis	catus		Feral Cat	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Feltia	subgothica		Gothic Dart	Y	N	N	N	Y	N	N	N	T
Arthropoda	Insecta	Feltiella	acarisuga		A Predatory Gall Midge	Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Ferrisisa	virgata				Y		Y		?		?	T
Mollusca	Gastropoda	Ferrissia	fragilis		Wautier's Limpet	Y	Y	Y	Y	Y	Y	Y	Y	F
Heterokontophyta	Raphidophyceae	Fibrocapsa	japonica				Y		Y		N			M
Chordata	Aves	Ficedula	mugimaki		Mugimaki Flycatcher	Y								T
Chordata	Aves	Ficedula	strophiata		Orange-gorgetted Flycatcher	Y								T
Annelida	Polychaeta	Ficopomatus	enigmaticus		trumpet worm	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Fieberiella	florii			Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Fieberiella	septentrionalis			Y				?				T
Arthropoda	Insecta	Filicaleyrodes	williamsi		a fern whitefly	Y				?				T
Annelida	Polychaeta	Filogranula	calyculata			Y	Y	Y		N	Y	Y		M
Arthropoda	Insecta	Fiorinia	fioriniae				Y				?			T
Arthropoda	Insecta	Floria	variegata		Laburnum sucker	Y	Y			N	?			T
Arthropoda	Insecta	Forficula	smyrnensis				Y				N			T
Arthropoda	Insecta	Frankliniella	fusca						Y					T
Arthropoda	Insecta	Frankliniella	schultzei						Y					T
Arthropoda	Insecta	Franklinothrips	megalops						Y				?	T
Arthropoda	Insecta	Franklinothrips	vespiformis				Y		Y		?		?	T
Angiospermae	Eudicotyledoneae	Fraxinus	pennsylvanica		Red Ash		Y	Y				Y		T
Arthropoda	Collembola	Friesea	claviseta			Y	Y		Y	Y	N			T
Arthropoda	Insecta	Fulvius	anthocoroides			Y	Y		Y	?				T
Arthropoda	Insecta	Furchadaspis	zamiae			Y	Y			?	?			T
Ascomycota	Sordariomycetes	Fusarium	oxysporum f.			Y	Y		Y	Y			Y	T
Angiospermae	Eudicotyledoneae	Gaillardia	grandiflora		Blanket flower	Y		Y				Y		T
Angiospermae	Eudicotyledoneae	Galega	officinalis		Goat's-Rue	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Galinsoga	parviflora		Gallant Soldier	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Galinsoga	quadriradiata		Shaggy Soldier	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Galleria	mellonella		Wax Moth [	Y	Y	Y	Y	Y	N	N	Y	T
Chordata	Aves	Gallus	gallus		Red Jungle-fowl	Y				Y				T
Chordata	Actinopterygii	Gambusia	affinis		Mosquitofish	N	Y	N		N	N	N		F
Chordata	Actinopterygii	Gambusia	holbrooki		Eastern mosquitofish	N	Y	N		N	N	N		F
Arthropoda	Malacostraca	Gammarus	roeseli				Y	Y	Y		Y	Y	Y	F
Arthropoda	Malacostraca	Gammarus	tigrinus		Side Swimmer	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Cnidaria	Hydrozoa	Garveia	franciscana				Y	Y	Y		Y	Y	Y	M+F
Arthropoda	Insecta	Gastrotheus	sumatranus						Y					T
Angiospermae	Eudicotyledoneae	Gaultheria	shallon		Shallon	Y	Y							T
Arthropoda	Insecta	Gelechia	sabinellus		Juniper Groundling	Y	Y	Y	Y	N	N	N	Y	T
Arthropoda	Insecta	Gelechia	senticetella		Cypress Groundling	Y	Y	Y	Y	Y	N	N	Y	T
Chordata	Mammalia	Genetta	genetta		Common Genet	N	Y	Y	Y	N	Y	Y	N	T
Arthropoda	Insecta	Geococcus	coffeae				Y		Y		?		?	T
Chordata	Aves	Geopelia	cuneata		Diamond Dove	Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Geopelia	striata		Zebra Dove	Y								T
Chordata	Aves	Geophaps	lophotes		Crested Pigeon	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Gibbium	psylloides			Y			Y	Y				T
Mollusca	Gastropoda	Gibbula	albida		Whitish Gibbula		Y				N			M
Arthropoda	Insecta	Gilletteella	cooleyi			Y				Y				T
Arthropoda	Insecta	Gilpinia	hercyniae			Y		Y	Y	?				T
Arthropoda	Insecta	Gilpinia	virens			Y				?				T

Arthropoda	Insecta	Gliricola	porcelli				Y		Y					T
Chordata	Mammalia	Glis	glis		Edible Dormouse	Y	Y	Y, nat	Y	Y	Y	Y, nat	Y	T
Arthropoda	Insecta	Glischrochilus	quadrisignatus		Picnic beetle	Y	Y	Y	Y			Y	Y	T
Nematoda	Secernentea	Globodera	pallida			Y	Y	Y	Y	?	?	?	?	T
Nematoda	Secernentea	Globodera	rostochiensis			Y	Y	Y	Y	Y	?	?	?	T
Ascomycota	Sordariomycetes	Glomerella	acutata			Y	Y	Y	Y					T
Ascomycota	Sordariomycetes	Glomerella	cingulata			Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Glycaspis	brimblecombei	psylloidea			Y				?			T
Arthropoda	Insecta	Glyphodes	perspectalis						Y					T
Arthropoda	Malacostraca	Gnathia	dentata			Y			Y	Y			N	M
Arthropoda	Malacostraca	Gnathia	maxillaris			Y			Y	Y			Y	F
Arthropoda	Insecta	Gnathocerus	cornutus			Y	Y			Y	?			T
Arthropoda	Insecta	Gnathotrichus	materiarius				Y	Y	Y				N	T
Arthropoda	Insecta	Gnatocerus	cornutus		Broad-horned Flour Beetle	Y	Y	Y	Y	Y	?	N	Y	T
Annelida	Polychaeta	Goniadella	gracilis			Y	y			Y				M
Cnidaria	Hydrozoa	Gonionemus	vertens			Y	Y	Y, Er	Y	Y	Y	N	Y	M
Arthropoda	Insecta	Gonipterus	scutellatus				Y				?			T
Rhodophyta	not assigned	Gracilaria	multipartita			Y				Y				M
Rhodophyta	not assigned	Gracilaria	vermiculophylla				Y	Y	Y			Y	Y	M
Arthropoda	Insecta	Gracilia	minuta			Y			Y	Y				T
Chordata	Aves	Gracula	religiosa		Hill Myna	Y				Y				T
Arthropoda	Malacostraca	Grandidierella	japonica			Y				Y				M
Arthropoda	Insecta	Graphocephala	fennahi		Rhododendron leafhopper	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Grapholita	delineana				Y		Y		?		?	T
Chordata	Reptilia	Graptemys	pseudogeographica		False map turtle			Y	Y			Y	Y	F+T
Rhodophyta	not assigned	Grateloupia	filicina			Y	Y			Y	Y			M
Rhodophyta	not assigned	Grateloupia	subpectinata		Grateloup's Fringe Weed	Y	Y			Y				M
Rhodophyta	not assigned	Grateloupia	turuturu		Devil's Tongue Weed	Y	Y		Y	Y	Y		Y	M
Angiospermae	Eudicotyledoneae	Grindelia	squarrosa			Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Gronops	inaequalis			Y				Y				T
Chordata	Aves	Grus	antigone		Sarus Crane	Y	Y			?	Y			T
Arthropoda	Insecta	Gryllodes	sigillatus			Y			Y					T
Arthropoda	Insecta	Gryon	leptocorisae				Y				?			T
Arthropoda	Insecta	Grypotes	puncticollis			Y			Y	Y			N	T
Arthropoda	Insecta	Gugolzia	harmolitae				Y				?			T
Ascomycota	Dothideomycetes	Guignardia	aesculi			Y	Y	Y	Y	Y				T
Angiospermae	Eudicotyledoneae	Gunnera	tinctoria		Giant Rhubarb	Y	Y							T
Arthropoda	Insecta	Gymnaspis	aechmeae			Y	Y			?	?			T
Chordata	Actinopterygii	Gymnocephalus	cernuus		Eurasian Ruffe	Y, nat	Y	Y, nat	Y	Y, nat	Y	Y, nat	Y	F
Dinoflagellata	Dinophyceae	Gymnodinium	catenatum			Y	Y		Y	N	N		Y	M
Arthropoda	Insecta	Gynaikothrips	ficorum						Y					T
Chordata	Aves	Gyps	bengalensis		Indian White-backed Vulture	Y				Y				T
Chordata	Aves	Gyps	fulvus		European Griffon Vulture	Y	Y	Y	Y			Y	Y	T
Mollusca	Gastropoda	Gyraulus	parvus		Ash Gyro				Y				Y	F
Mollusca	Gastropoda	Gyraulus	chinensis			Y, Indoors	Y		Y	Y	Y		Y	F
Arthropoda	Insecta	Gyropus	ovalis				Y		Y					T
Arthropoda	Insecta	Hadena	compta		Varied Coronet	Y	Y	Y	Y	Y	N	N	Y	T
Arthropoda	Insecta	Hadrognathus	longipalpis			Y				N				T
Arthropoda	Arachnida	Hadrotarsus	ornatus					Y				Y		T
Annelida	Clitellata	Haementeria	costata			Y			Y	N			Y	F
Chordata	Aves	Haliaeetus	leucocephalus		Bald Eagle	Y			Y	Y			Y	T
Chordata	Aves	Haliaeetus	leucoryphus		Pallas Sea-eagle	Y								T
Porifera	Demospongiae	Haliclona	loosanoffi		Loosanoff's haliclona				Y	N			Y	M
Porifera	Demospongiae	Haliclona	rosea			Y	Y		Y	Y	Y		Y	M
Porifera	Demospongiae	Haliclona	simplex						Y					M
Porifera	Demospongiae	Haliclona	xena			Y	Y	Y	Y	Y	Y	Y	Y	M
Mollusca	Gastropoda	Haliotis	tuberculata		Green ormer	Y	nat			Y	nat			M
Cnidaria	Anthozoa	Haliplanella	lineata		Orange-striped anemone	Y	Y	Y	Y	Y	Y	Y	Y	M
Cnidaria	Anthozoa	Haliplanella	luciae				Y				N			M
Arthropoda	Arachnida	Haplodrassus				Y	Y	Y	Y	Y	Y	Y	Y	T
Cercozoa	Ascetosporea	Haplosporidium	armoricanum				Y		Y, Ex					M
Arthropoda	Insecta	Haplotinea	ditella		Scarce Drab Clothes Moth	Y	N	Y	Y	N	N	N	N	T
Arthropoda	Insecta	Haplotinea	insectella		Drab Clothes Moth	Y	Y	Y	Y	Y			Y	T
Arthropoda	Insecta	Harmonia	axyridis		Harlequin Ladybird	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Harmonia	quadripunctata		Cream-Streaked Ladybird	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Arachnida	Harpactea	rubicunda			Y		Y		Y				T

Arthropoda	Insecta	Harpalus	cupreus			Y				Y				T
Arthropoda	Arachnida	Hasarius	adansoni				Y	Y	Y			Y		T
Angiospermae	Eudicotyledoneae	Helianthus	rigidusXtuberosus		Perennial Sunflower	Y	Y	Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Helianthus	tuberosus		Jerusalem Artichoke	Y	Y	Y	Y	Y	Y	Y	Y	T
Mollusca	Gastropoda	Helicodiscus	singleyanus		Smooth Coil Snail	Y				Y				T
Arthropoda	Arachnida	Heliophanus	kochii					Y				Y		T
Arthropoda	Insecta	Heliothrips	haemorrhoidalis			Y	Y		Y					T
Mollusca	Gastropoda	Helix	aspersa		Common Garden Snail	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	N	Y, nat	Y, nat	T
Mollusca	Gastropoda	Helix	pomatia		Roman Snail	Y	nat	nat	Y, nat	Y	nat	nat	Y, nat	T
Arthropoda	Insecta	Hemiberlesia	lataniae			Y	Y	Y		?	?	?		T
Arthropoda	Insecta	Hemiberlesia	palmae			Y				?				T
Arthropoda	Insecta	Hemiberlesia	rapax				Y				?			T
Arthropoda	Malacostraca	Hemigrapsus	sanguineus		Asian shore crab	Y	Y	Y	Y	N	Y	Y	Y	M
Arthropoda	Malacostraca	Hemimysis	anomala		Bloody-red Mysid	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Chordata	Mammalia	Hemitragus	jemlahicus		Himalayan Tahr	Ex	Y			N	N			T
Arthropoda	Insecta	Henosepilachna	argus		Bryony Ladybird	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Henoticus	californicus			Y	Y	Y	Y	N			Y	T
Arthropoda	Insecta	Hercinothrips	bicinctus			Y	Y		Y					T
Arthropoda	Insecta	Hercinothrips	femoralis			Y	Y		Y					T
Arthropoda	Insecta	Hermetia	illucens				Y				?			T
Arthropoda	Insecta	Heterobostrychus	hamatipennis					Y				?		T
Nematoda	Secernentea	Heterodera	schachtii			Y			Y	Y			?	T
Nematoda	Secernentea	Heterodera	avenae						Y				?	T
Nematoda	Secernentea	Heterodera	fici						Y				?	T
Chordata	Aves	Heteronetta	atricapilla		Black-headed Duck	Y				?				F+T
Arthropoda	Arachnida	Heteropoda	venatoria					Y	Y			Y		T
Arthropoda	Insecta	Heteropterus	morpheus		Large Chequered Skipper	Y	nat	nat	nat		N	N	N	T
Heterokontophyta	Raphidophyceae	Heterosigma	akashiwo				Y	Y	Y		Y	Y		M
Rhodophyta	not assigned	Heterosiphonia	japonica		Siphoned Japan Weed	Y	Y		Y	?				M
Arthropoda	Insecta	Heterospilus	cephi			Y				?				T
Mollusca	Gastropoda	Hexaplex	trunculus		Banded murex	N	Y			N	N			M
Arthropoda	Insecta	Hippobosca	longipennis		Dog Louse fly	Y			N	?				T
Arthropoda	Insecta	Hippodamia	convergens					Y				?		T
Arthropoda	Insecta	Hister	bipunctatus				Y				?			T
Arthropoda	Insecta	Hofmannophila	pseudospretella		Brown House Moth	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Arachnida	Hogna	hispanica			Y								T
Arthropoda	Arachnida	Holocnemus	pluchei		Marbled Cellar Spider	Y	Y	Y	Y				Y	T
Arthropoda	Insecta	Homotoma	ficus			Y	Y			Y	N			T
Arthropoda	Insecta	Hoplocampa	brevis			Y				?				T
Arthropoda	Insecta	Hoplopleura	sciuricola	anoplura		Y				?				T
Chordata	Aves	Hoplopterus	armatus		Blacksmith Plover	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Hoplopterus	spinosus		Spur-winged Plover	Y				Y				T
Arthropoda	Insecta	Horidiplosis	ficifolii		A Gall Midge	Y, Indoors			Y, Indoors					T
Arthropoda	Insecta	Howardia	biclavis				Y				?			T
Chordata	Actinopterygii	Hucho	hucho		Huchen (Danube salmon)	Y, Ex	Y	Y, Ex		Y, Ex	Y	Y, Ex		F
Angiospermae	Eudicotyledoneae	Humulus	japonicus		Japanese hop	N	Y	Y	N			Y		T
Angiospermae	Monocotyledoneae	Hyacinthoides	hispanica		Spanish Bluebell	Y		Y				Y		T
Arthropoda	Arachnida	Hyalomma	aegyptium			Y	Y	Y		Y				T
Mollusca	Gastropoda	Rapana	venosa		Rapa whelk	Y	Y	Y	Y	N	Y	Y	Y	M
Angiospermae	Eudicotyledoneae	Rhododendron	ponticum		Common Rhododendron	Y	Y	Y	Y	Y	Y	Y	Y	T
Annelida	Polychaeta	Hydroides	dianthus			Y	Y	Y		Y	Y	Y		M
Annelida	Polychaeta	Hydroides	elegans			Y, Er	Y		Y				Y	M
Annelida	Polychaeta	Hydroides	ezoensis			Y	Y	Y		Y	Y	Y		M
Chordata	Mammalia	Hydropotes	inermis		Chinese Water Deer	Y	Y, Er			Y	N			T
Arthropoda	Insecta	Hydrotaea	aenescens		The Dump Fly	Y	Y		Y	?	?		N	T
Mollusca	Gastropoda	Hygromia	cinctella		Girdled Snail	Y	nat	Y	Y	Y	N	Y	Y	T
Mollusca	Gastropoda	Hygromia	limbata		Hedge Snail	Y	nat			Y	N			T
Chordata	Amphibia	Hyla	arborea		Common Tree Frog	Y, Er	Y	Y	Y	N	Y	Y	Y	F+T
Chordata	Amphibia	Hyla	meridionalis				Y		Y		N		Y	F+T
Arthropoda	Insecta	Hylastes	angustatus			Y				Y				T
Arthropoda	Insecta	Hylastes	ater			Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Hylastes	attenuatus			Y				Y				T
Arthropoda	Insecta	Hylastes	cunicularius			Y				Y				T
Arthropoda	Insecta	Hylotrupes	bajulus		House longhorn beetle	Y	Y	Y	Y	Y	Y	Y	Y	T
Porifera	Demospongiae	Hymeniacidon	perlevis			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Hymenochaonia	delicata				Y				?			T

Annelida	Polychaeta	Hypania	invalida			N	Y	Y	Y	N	Y	Y	Y	F
Arthropoda	Insecta	Hyphantria	cunea			Y	Y			?	?			T
Arthropoda	Insecta	Hypogeococcus	pungens				Y				?			T
Chordata	Actinopterygii	Hypophthalmichthys	molitrix		Silver Carp	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Insecta	Hypoponera	ergatandria				Y				?			T
Arthropoda	Insecta	Hypoponera	punctatissima		Roger's ant	Y	Y	Y	Y			Y		T
Arthropoda	Insecta	Hypoponera	schauinslandi					Y				Y		T
Arthropoda	Insecta	Hypothenemus	eruditus				Y							T
Arthropoda	Insecta	Hypothenemus	hampei		Coffee berry borer	Y								T
Chordata	Mammalia	Hystrix	cristata		European Porcupine	Ex		Y		N		Y		T
Arthropoda	Insecta	Iassus	scutellaris			Y		Y		Y		N		T
Arthropoda	Insecta	Icerya	formicarum				Y				?			T
Arthropoda	Insecta	Icerya	purchasi		Cottony cushion scale	Y	Y	Y	Y	?		Y	Y	T
Arthropoda	Insecta	Icosium	tomentosum	atticum			Y				?			T
Chordata	Actinopterygii	Ictalurus	punctatus		Channel Catfish	Y	Y	Y		Y	Y	Y		F
Chordata	Aves	Icterus	galbula		Baltimore Oriole	N			Y					T
Arthropoda	Insecta	Idaea	inquinata						Y				?	T
Arthropoda	Insecta	Idioptera	nephrelepidis			Y	Y	Y	Y	?				T
Arthropoda	Malacostraca	Idotea	metallica			Y	Y	Y	Y	Y	Y	Y	N	F
Arthropoda	Malacostraca	Idotea	neglecta			Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Insecta	Illinoia	andromedae			Y				?				T
Arthropoda	Insecta	Illinoia	azaleae			Y	Y		Y	?				T
Arthropoda	Insecta	Illinoia	goldamaryae			Y				?				T
Arthropoda	Insecta	Illinoia	lambersi			Y		Y	Y	?				T
Arthropoda	Insecta	Illinoia	liriodendri			Y	Y		Y	?			N	T
Arthropoda	Insecta	Illinoia	morrisoni			Y	Y			?				T
Arthropoda	Insecta	Illinoia	rhododendri			Y			Y	?				T
Platyhelminthes	Turbellaria	Imogine	necopinata		oyster leech				Y				Y	M
Angiospermae	Eudicotyledoneae	Impatiens	balfourii				Y	Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Impatiens	capensis		Jewel-Weed	Y	Y		Y		Y		Y	T
Angiospermae	Eudicotyledoneae	Impatiens	glandulifera		Himalayan Balsam	Y	Y	Y	Y	Y	Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Impatiens	parviflora		Small Balsam	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Impatientinum	asiaticum			Y	Y	Y	Y	?		Y	Y	T
Arthropoda	Malacostraca	Incisocalliope	aestuarius				Y	Y	Y		Y	Y	Y	M+F
Arthropoda	Insecta	Insignorthezia	insignis			Y	Y			?	?			T
Angiospermae	Eudicotyledoneae	Ipomoea	hederacea		Ivy-Leaved Morning-Glory	Y		Y	Y			Y	Y	T
Arthropoda	Insecta	Ips	amitinus		Smaller eight-toothed spruce bark beetle	Y		Y				Y		T
Arthropoda	Insecta	Ips	cembrae		Large Larch Bark Beetle	Y	Y	Y	Y	N	?	Y	?	T
Arthropoda	Insecta	Ips	duplicatus					Y				?		T
Arthropoda	Insecta	Ips	sexdentatus		Six-toothed Bark Beetle	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Ips	typographus		Eight-toothed Spruce Bark Beetle	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Ischnaspis	longirostris				Y				?			T
Arthropoda	Arachnida	Ischnothyreus	velox			Y			Y					T
Haptophyta	Coccolithophyceae	Isochrysis	galbana			Y				?				M
Arthropoda	Insecta	Isodontia	mexicana				Y				?			T
Angiospermae	Eudicotyledoneae	Iva	xanthiifolia			Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Ixapion	variegatum			Y				N				T
Chordata	Aves	Ixobrychus	sinensis		Yellow Bittern	Y								T
Arthropoda	Malacostraca	Jaera	istri				Y	Y	Y		N	Y	Y	F
Arthropoda	Insecta	Janetiella	siskiyou		A Gall Midge	Y	Y	Y	Y					T
Arthropoda	Malacostraca	Janira	maculosa			Y	Y	Y	Y	Y	Y	Y	Y	F
Annelida	Polychaeta	Janua	brasiliensis			Y			Y	Y			Y	M
Arthropoda	Insecta	Japananus	hyalinus				Y				?			T
Chordata	Aves	Junco	hyemalis		Dark-Eyed Junco	Y		Y				Y		T
Angiospermae	Monocotyledoneae	Juncus	tenuis		Dudley's Rush	Y	Y	Y	Y		Y	Y	Y	T
Ascomycota	Dothideomycetes	Kabatiella	caulivora			Y	Y	Y	Y					T
Arthropoda	Insecta	Kaltenbachiola	strobi		A Gall Midge	Y	Y		Y	?	?		?	T
Dinoflagellata	Dinophyceae	Karenia	mikimotoi			Y	Y		Y	?	Y		Y	M
Rotifera	Eurotifera	Keratella	tropica					Y	Y			Y	Y	M
Arthropoda	Insecta	Klimaszewskia	salviae				Y				?			T
Platyhelminthes	Turbellaria	Kontikia	andersoni			Y				Y				T
Platyhelminthes	Turbellaria	Kontikia	ventrolineata			Y				Y				T
Arthropoda	Insecta	Kuwanaspis	pseudoleucaspis			Y	Y			?	?			T
Arthropoda	Insecta	Kyboasca	bipunctata			Y	Y		Y	Y				T
Arthropoda	Insecta	Kyboasca	maligna				Y	Y			?	?		T
Angiospermae	Eudicotyledoneae	Laburnum	anagyroides		Golden Rain	Y	Y	Y	Y		Y	Y	Y	T

Heterokontophyta	Labyrinthulomycetes	Labyrinthula	zosterae			Y	Y			?				M
Chordata	Reptilia	Lacerta	bilineata		Western Green Lizard [	Y	Y			Y	N			T
Chordata	Reptilia	Lacerta	viridis		Green lizard	Y, Er	Y	Y			Y	Y		T
Arthropoda	Insecta	Lachesilla	greeni			Y				?				T
Arthropoda	Insecta	Lachesilla	pacifica				Y				?			T
Arthropoda	Insecta	Laelius	pedatus						Y					T
Arthropoda	Insecta	Laemostenus	complanatus			Y	Y			Y				T
Angiospermae	Monocotyledoneae	Lagarosiphon	major		Curly Waterweed	Y	Y	Y	Y	Y	Y	Y	Y	F
Angiospermae	Eudicotyledoneae	Lamiastrum	galeobdolon		Variegated yellow archangel	Y		Y	Y			Y	Y	T
Arthropoda	Insecta	Lamprolonchaea	smaragdi						Y				?	T
Chordata	Aves	Lamprotornis	chalybaeus		Greater Blue-eared Glossy Starling	Y			Y	Y			Y	T
Chordata	Aves	Lamprotornis	purpureus		Purple Glossy Starling	Y		Y	Y	Y		Y	Y	T
Arthropoda	Diplopoda	Lamyctes	coeculus			Y	Y				?			T
Arthropoda	Diplopoda	Lamyctes	emarginatus			Y	Y	Y	Y	Y	?	N	Y	T
Arthropoda	Diplopoda	Lamyctinus	coeculus						Y				N	T
Chordata	Aves	Lanius	meridionalis		Southern Grey Shrike	Y	Y							T
Arthropoda	Insecta	Laricobius	erichsonii			Y				Y				T
Pinophyta	Pinopsida	Larix	decidua			Y	nat	nat	nat	Y				T
Pinophyta	Pinopsida	Larix	kaempferi			Y	Y	Y	Y	Y	Y	Y	Y	T
Pinophyta	Pinopsida	Larix	x			Y	Y							T
Chordata	Aves	Larus	cirrocephalus		Grey-headed Gull	Y				Y				F+T
Chordata	Aves	Larus	novaehollandiae		Silver Gull	Y				Y				F+T
Arthropoda	Insecta	Lasioderma	serricorne			Y		Y	Y	Y		Y		T
Arthropoda	Insecta	Lasius	emarginatus						Y					T
Arthropoda	Insecta	Lasius	neglectus		Invasive garden ant	Y	Y	Y		Y	?	?		T
Arthropoda	Insecta	Lasius	turcicus				Y				?			T
Arthropoda	Insecta	Latheticus	oryzae		Long-Headed Flour Beetle	Y	Y			Y	?			T
Arthropoda	Arachnida	Lathys	lepida			Y								T
Arthropoda	Arachnida	Latrodectus	mactans					Y				Y		T
Arthropoda	Insecta	Laurotrioza	alacris			Y		Y	Y	?		?	?	T
Heterokontophyta	Phaeophyceae	Leathesia	verruculiformis						Y					M
Mollusca	Gastropoda	Lehmannia	nyctelia		Striped field slug	Y	Y			Y	N			T
Mollusca	Gastropoda	Lehmannia	valentiana		Greenhouse Slug	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Leia	arsona		A Fungus Gnat [	Y		Y	Y	?			Y	T
Chordata	Aves	Leiothrix	lutea		Red-billed Leiothrix	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Leistus	rufomarginatus			Y		Y	Y	Y		Y	Y	T
Angiospermae	Monocotyledoneae	Lemna	minuta		Least Duckweed	Y	Y	Y	Y		Y	Y	?	F
Angiospermae	Monocotyledoneae	Lemna	turionifera		Red Duckweed	Y	Y	Y	Y	?	Y	Y	?	F
Basidiomycota	Agaricomycetes	Lentinula	edodes			Y	Y	Y	Y	Y		Y	N	T
Angiospermae	Eudicotyledoneae	Lepidium	draba		Hoary Cress	Y	Y	Y	Y		Y	Y	Y	T
Mollusca	Polyplacophora	Leptochiton	cancellatus			nat	Y	Y	Y	nat	Y	Y	Y	M
Arthropoda	Insecta	Lepidosaphes	beckii				Y				?			T
Arthropoda	Insecta	Lepidosaphes	gloverii				Y				?			T
Arthropoda	Insecta	Lepinotus	inquilinus						Y					T
Arthropoda	Insecta	Lepinotus	patruelis						Y					T
Arthropoda	Insecta	Lepolepis	bicolor			Y				?				T
Chordata	Actinopterygii	Lepomis	gibbosus		Pumpkinseed sunfish	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Insecta	Leptinotarsa	decemlineata		Colorado Beetle	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Leptocera	caenosa		A Lesser Dung Fly	Y			Y	Y			?	T
Arthropoda	Insecta	Leptocybe	invasa				Y				?			T
Arthropoda	Insecta	Leptodictya	tabida						Y				?	T
Arthropoda	Insecta	Leptoglossus	occidentalis		Western Conifer Seed Bug	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Leptomastix	dactylopii			Y	Y		Y	?	?		?	T
Bryophyta	Bryopsida	Leptophascum	leptophyllum			Y	Y			Y				T
Arthropoda	Insecta	Leptopsylla	segnis						Y					T
Chordata	Aves	Leptoptilos	crumeniferus		Marabou Stork	Y		Y	Y	Y		N	Y	T
Chordata	Mammalia	Lepus	granatensis		Granada hare		Y				N			T
Arthropoda	Maxillopoda	Lernaea	cyprinacea		Anchor worm	Y				N				F
Arthropoda	Arachnida	Lessertia	dentichelis			Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Lestodiplosis	pini		A Gall Midge			Y	Y			?	?	T
Arthropoda	Insecta	Leucaspis	podocarpi			Y				?				T
Chordata	Actinopterygii	Leucaspius	delineatus		Belica	Y	Y	Y, nat	Y	Y	Y	Y, nat	Y	F
Chordata	Actinopterygii	Leuciscus	idus		Ide	Y	Y	Y, nat	Y	Y	Y	Y, nat	Y	F
Arthropoda	Insecta	Leucoptera	laburnella		Laburnum Leaf Miner	Y	Y		Y	Y	N		Y	T
Mollusca	Gastropoda	Leucostigma	candidescens				Y				N			T
Arthropoda	Insecta	Leucothrips	nigripennis			Y	Y		Y					T

Arthropoda	Insecta	Liguropia	juniperi			Y	Y			Y	N			T
Angiospermae	Eudicotyledoneae	Ligustrum	ovalifolium		Garden Privet	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Lilioceris	lilii		Lily Beetle	Y	Y	Y	Y	Y	Y	Y	Y	T
Mollusca	Gastropoda	Limacus	flavus		Yellow Slug	Y		Y	Y	Y		Y	Y	T
Mollusca	Gastropoda	Limacus	maculatus		Irish Yellow Slug	Y				Y				T
Annelida	Clitellata	Limnodrilus	cervix			Y		Y	Y	Y		Y	Y	F
Annelida	Clitellata	Limnodrilus	maumeensis			Y			Y	Y			Y	F
Annelida	Clitellata	Limnodrilus	profundicola			Y				N				F
Arthropoda	Malacostraca	Limnomysis	benedeni				Y	Y	Y		Y	Y	Y	F
Arthropoda	Malacostraca	Limnoria	lignorum			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Malacostraca	Limnoria	quadripunctata		Four spotted gribble	Y	Y		Y	N	Y		Y	M
Arthropoda	Malacostraca	Limnoria	tripunctata		Wood-boring gribble	Y	Y			Y				M
Arthropoda	Merostomata	Limulus	polyphemus						Y					T
Angiospermae	Eudicotyledoneae	Lindernia	dubia		moist bank pimpernel		Y	Y			N	Y		T
Arthropoda	Insecta	Lindingaspis	rossi				Y				?			T
Arthropoda	Insecta	Linognathus	stenopsis						Y					T
Arthropoda	Insecta	Liorhyssus	hyalinus			Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Liothrips	vaneeckei						Y					T
Arthropoda	Insecta	Liparthrum	mandibulare			Y				?				T
Arthropoda	Insecta	Lipeurus	maculosus Ischnocera			Y				?				T
Arthropoda	Insecta	Liposcelis	albothoracica			Y				?				T
Arthropoda	Insecta	Liposcelis	entomophila			Y				?				T
Arthropoda	Insecta	Liposcelis	mendax			Y	Y			?	?			T
Arthropoda	Insecta	Liposcelis	obscura			Y				?				T
Arthropoda	Insecta	Liposcelis	pearmani			Y	Y			?	N			T
Arthropoda	Insecta	Liposcelis	rufa			Y				?				T
Arthropoda	Insecta	Liposcelis	decolor						Y					T
Arthropoda	Insecta	Liriomyza	chinensis				Y				?			T
Arthropoda	Insecta	Liriomyza	trifolii		Serpentine leaf miner	Y, Er	Y	Y	Y					T
Arthropoda	Insecta	Lissorhoptrus	oryzophilus		Rice Water Weevil	Y				N				F+T
Arthropoda	Insecta	Listroderes	costrirostris				Y				?			T
Arthropoda	Insecta	Listroderes	difficilis				Y				?			T
Arthropoda	Insecta	Litargus	balteatus				Y				?			T
Chordata	Amphibia	Lithobates	catesbeianus		American Bullfrog	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Arthropoda	Diplopoda	Lithobius	lapidicola			Y	N		Y	Y	N			T
Arthropoda	Diplopoda	Lithobius	peregrinus			Y				N				T
Arthropoda	Insecta	Lithocharis	nigriceps			Y	Y	Y	Y	Y	N	Y	Y	T
Mollusca	Gastropoda	Lithoglyphus	naticoides		Gravel snail		Y	Y	Y		Y	Y	Y	M
Arthropoda	Insecta	Lithophane	leautieri		Blair's Shoulder-Knot	Y	Y	Y	Y	Y	N	Y	N	T
Arthropoda	Insecta	Lithostege	griseata		Grey Carpet	Y	Y			Y				T
Chordata	Amphibia	Litoria	ewingi		Whistling Tree Frog	Y, Er				N				F+T
Mollusca	Gastropoda	Littorina	compressa			Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	M
Arthropoda	Insecta	Livilla	variegata			Y				Y				T
Arthropoda	Insecta	Lobesia	botrana		European Vine Moth	Y	Y		N	Y	N		N	T
Chordata	Aves	Lonchura	cucullata		Bronze Mannikin	Y								T
Chordata	Aves	Lonchura	maja		White-headed Munia	Y								T
Chordata	Aves	Lonchura	malabarica		Indian Silverbill	Y	Y			Y				T
Chordata	Aves	Lonchura	malacca		Chestnut Munia	Y			Y	Y			N	T
Chordata	Aves	Lonchura	punctulata		Spotted Munia	Y				Y				T
Chordata	Aves	Lonchura	striata		White-rumped Munia	Y			Y				Y	T
Arthropoda	Insecta	Longitarsus	obliteratoides			Y								T
Chordata	Mammalia	Sciurus	carolinensis		Grey Squirrel	Y	N	Y	Y	Y	N	Y	Y	T
Angiospermae	Eudicotyledoneae	Lonicera	nitida		Wilson's Honeysuckle	Y		Y				Y		T
Marchantiophyta	Jungermanniopsida	Lophocolea	semiteres			Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Lophodytes	cucullatus		Hooded Merganser	Y, nat		Y, nat		Y, nat		Y, nat		F+T+M
Arthropoda	Insecta	Lopholeucaspis	cockerelli			Y				?				T
Chordata	Aves	Lophonetta	specularoides		Crested Duck	Y				Y				F+T+M
Bryozoa	Phylactolaemata	Lophopus	crystallinus			Y			Y	Y			?	F
Chordata	Aves	Lophura	nycthemera		Silver Pheasant	Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Lophura	swinhoii		Swinhoe's Pheasant	Y			Y	Y			Y	T
Entoprocta	not assigned	Loxosomella	antedonis			Y				?				M
Entoprocta	not assigned	Loxosomella	kefersteinii			Y				?				M
Arthropoda	Insecta	Lozotaenia	cedrivora				Y				?			T
Arthropoda	Insecta	Lucasianus	levaillantii				Y							T
Angiospermae	Magnoliopsida	Ludwigia	peploides		Floating Water-primrose	Y	Y	Y	Y	?	N	?		F
Arthropoda	Insecta	Luperomorpha	xanthodera		Rose Flea Beetle	Y	Y		Y					T

Angiospermae	Eudicotyledoneae	Lupinus	polyphyllus		Garden Lupin	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Lycium	barbarum		Duke of Argyll's Teaplant	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Lyctocoris	campestris		Debris Bug	Y	Y	Y	Y	Y	N	N	N	T
Arthropoda	Insecta	Lyctus	africanus				Y				?			T
Arthropoda	Insecta	Lyctus	brunneus			Y	Y		Y	Y			N	T
Arthropoda	Insecta	Lyctus	cavicollis				Y				?			T
Arthropoda	Insecta	Lyctus	planicollis				Y				?			T
Arthropoda	Insecta	Lyctus	sinensis		Chinese powderpost beetle	Y				Y				T
Arthropoda	Insecta	Lymantria	dispar		Gypsy Moth	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Lyphia	tetraphylla				Y				?			T
Angiospermae	Monocotyledoneae	Lysichiton	americanus		American Skunk-cabbage	Y	Y	Y	Y			N	Y	T
Angiospermae	Monocotyledoneae	Lysichiton	camtschatcensis		Asian Skunk-Cabbage	Y								T
Arthropoda	Arachnida	Macaroeris	nidicolens				Y	Y	Y		N	Y	Y	T
Arthropoda	Insecta	Macrolabis	aquilegiae		A Gall Midge	Y			N	Y			N	T
Arthropoda	Insecta	Macrolophus	melanotoma			Y		Y	Y	?		?	?	T
Arthropoda	Malacostraca	Macromedaeus	voeltzkowi				Y				N			F
Ascomycota	Dothideomycetes	Macrophomina	phaseolina			Y	Y							T
Chordata	Mammalia	Macropus	rufogriseus		Red-necked Wallaby	Y	Y		Y	Y	Y		N	T
Arthropoda	Insecta	Macrorhyncolus	littoralis			Y								T
Arthropoda	Insecta	Macrosiphoniella	aphidoidea			Y	Y			?	?			T
Arthropoda	Insecta	Macrosiphoniella	sanborni			Y	Y	Y		?	?	?		T
Arthropoda	Insecta	Macrosiphum	albifrons		Lupin Aphid	Y	Y	Y		Y	?	?		T
Arthropoda	Insecta	Macrosiphum	aphidoidea			Y				?				T
Arthropoda	Insecta	Macrosiphum	euphorbiae		potato aphid	Y	Y	Y	Y	Y	?	?	Y	T
Arthropoda	Insecta	Macrosiphum	ptericolens			Y				?				T
Arthropoda	Insecta	Macrotylus	horvathi			Y	Y			?	N			T
Cnidaria	Hydrozoa	Maeotias	marginata				Y		Y		?		Y	M
Arthropoda	Insecta	Magdalis	memnonia			Y		Y	Y	Y		N	N	T
Angiospermae	Magnoliopsida	Mahonia	aquifolium		Oregon-grape	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Manduca	quinquemaculatus		Five-Spotted Hawk-Moth	Y	N			N				T
Arthropoda	Insecta	Marava	arachidis			Y	Y		Y	Y	?		?	T
Annelida	Polychaeta	Marenzelleria	viridis		Red-gilled mud worm	Y	Y	Y	Y	Y	Y	Y	Y	M
Annelida	Polychaeta	Marenzelleria	wireni			Y	Y	Y	Y	Y	Y	Y		M+F
Chordata	Aves	Marmaronetta	angustirostris		Marbled Duck	Y	Y	Y		Y	?	?		F+T+M
Mollusca	Gastropoda	Marmorana	serpentina				Y				N			T
Mollusca	Gastropoda	Marstoniopsis	insubrica		Taylor's Spire Snail	Y			Y	Y			Y	F
Cercozoa	Ascetosporea	Marteilia	refringens			Y	Y		Y, Ex					M
Arthropoda	Insecta	Maruca	vitrata		Mung Moth	Y				N				T
Arthropoda	Insecta	Massilieurodes	chittendeni			Y	Y	Y	Y	?	?	?	?	T
Angiospermae	Eudicotyledoneae	Matricaria	discoidea		Pineapple Weed	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Matsucoccus	feytaudi				Y		Y				?	T
Pteridophyta	Pteridopsida	Matteuccia	struthiopteris		Ostrich Fern	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Reptilia	Mauremys	leprosa				Y		N		N			T
Chordata	Actinopterygii	Maylandia			Zebrafish species	Y, Ex		N		N		N		F
Arthropoda	Diplopoda	Mecistocephalus	maxillaris				Y		Y					T
Arthropoda	Insecta	Meconema	meridionale						Y					T
Arthropoda	Insecta	Medetera	grisescens		A Dolichopodid Fly [	Y				Y				T
Arthropoda	Maxillopoda	Megabalanus	coccoporna				Y	Y	Y		Y	Y	Y	M
Arthropoda	Maxillopoda	Megabalanus	tintinnabulum				Y	Y	Y		Y	Y	Y	M
Arthropoda	Insecta	Megadytes	costalis			Y				?				T
Arthropoda	Arachnida	Megalepthyphantes	collinus			Y	Y			Y				T
Arthropoda	Arachnida	Megalepthyphantes	nebulosus			Y			Y	Y			N	T
Arthropoda	Insecta	Megaselia	dimorphica		A Scuttle Fly	Y			N				N	T
Arthropoda	Insecta	Megaselia	gregaria		A Scuttle Fly	Y			Y	Y			?	T
Arthropoda	Insecta	Megaselia	scalaris		A Scuttle Fly	Y	Y	Y	Y	?	?	?	?	T
Arthropoda	Insecta	Megastigmus	aculeatus				Y				?			T
Arthropoda	Insecta	Megastigmus	atedius			Y	Y			?	?			T
Arthropoda	Insecta	Megastigmus	milleri			Y	Y		Y					T
Arthropoda	Insecta	Megastigmus	nigrovariegatus				Y				?			T
Arthropoda	Insecta	Megastigmus	pictus			Y				?				T
Arthropoda	Insecta	Megastigmus	pinsapinis				Y				?			T
Arthropoda	Insecta	Megastigmus	schimitscheki				Y				?			T
Arthropoda	Insecta	Megastigmus	suspectus			Y				?				T
Arthropoda	Insecta	Megastigmus	transvaalensis				Y				?			T
Arthropoda	Insecta	Megastigmus	wachtli				Y				?			T
Arthropoda	Insecta	Megastigmus	pinus			Y	Y		Y					T

Arthropoda	Insecta	Megastigmus	rafni			Y	Y		Y					T
Arthropoda	Insecta	Megastigmus	specularis				Y		Y					T
Arthropoda	Insecta	Megastigmus	spermotrophus			Y	Y		Y					T
Ascomycota	Urediniomycetes	Melampsora	medusae				Y	Y						T
Ascomycota	Pucciniomycetes	Melampsoridium	hiratsukanum			Y		Y	Y	N		N	N	T
Arthropoda	Insecta	Melanaphis	bambusae				Y				?			T
Mollusca	Gastropoda	Melanoides	tuberculatus			Y			Y	Y			Y	F
Arthropoda	Insecta	Melanophila	acuminata			Y				Y				T
Arthropoda	Insecta	Melaphis	rhois			Y				?				T
Chordata	Aves	Meleagris	gallopavo		Wild Turkey	Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Meligethes	incanus		Catmint pollen beetle	Y		Y		Y		N		T
Arthropoda	Insecta	Meligethes	ruficornis		Horehound pollen beetle	Y		Y	Y	Y		Y	Y	T
Arthropoda	Malacostraca	Melita	nitida				Y	Y	Y		Y	Y	Y	M
Nematoda	Secernentea	Meloidogyne	arenaria			Y	Y	Y	Y	Y	?	?	Y	T
Nematoda	Secernentea	Meloidogyne	chitwoodi			N	Y	Y	Y	N	?	?	?	T
Nematoda	Secernentea	Meloidogyne	fallax				Y	Y	Y					T
Nematoda	Secernentea	Meloidogyne	hapla			Y	Y	Y	Y	?	?	?	?	T
Chordata	Aves	Melopsittacus	undulatus		Budgerigar	Y	Y	Y	Y	Y		Y	Y	T
Chordata	Aves	Melospiza	melodia		Song Sparrow	Y		Y	Y	Y		Y	Y	T
Bryozoa	Gymnolaemata	Membranipora	membranacea			Y	Y	Y	Y	Y	Y	Y	Y	M
Mollusca	Gastropoda	Menetus	dilatatus		Trumpet Ramshorn	Y	Y	Y	Y	Y	Y	Y	Y	F
Chordata	Mammalia	Mephitis	mephitis		Striped Skunk	Y, Ex		Y	Y	N		Y	Y	T
Mollusca	Bivalvia	Mercenaria	mercenaria		American hard-shelled clam	Y	Y	Y	Y	Y	Y	Y	Y	M
Chordata	Mammalia	Meriones	unguiculatus		Mongolian Gerbil	Y, Ex		Y		Y, Ex		Y		T
Arthropoda	Insecta	Merodon	equestris		Greater Bulb-Fly	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Merodon	avidus				Y		Y		N		?	T
Chordata	Aves	Merops	bullockoides		White-fronted Bee-eater	Y			Y	Y			Y	T
Chordata	Aves	Merops	philippinus		Blue-tailed Bee-eater	Y								T
Arthropoda	Insecta	Merothrips	floridensis				Y				?			T
Arthropoda	Collembola	Mesaphorura	krausbaueri			Y			Y	Y				T
Chordata	Mammalia	Mesocricetus	auratus		Golden Hamster	Er			Y	Er			Y	T
Arthropoda	Insecta	Mesopolobus	pinus			Y	Y		Y					T
Arthropoda	Insecta	Mesopolobus	spermotrophus			Y	Y		Y					T
Chordata	Amphibia	Mesotriton	alpestris		Alpine Newt	Y	Y	Y	Y	Y	N	Y	Y	F+T
Arthropoda	Insecta	Metaphycus	flavus				Y				?			T
Arthropoda	Insecta	Metaphycus	helvolus				Y		Y		?		?	T
Arthropoda	Insecta	Metaphycus	lounsburyi				Y		Y		?		?	T
Arthropoda	Insecta	Metaphycus	maculipennis				Y				?			T
Arthropoda	Insecta	Metaphycus	swirskii				Y		Y		?		?	T
Arthropoda	Diplopoda	Metatrichoniscoides	leydigii			Y			Y	N			Y	T
Annelida	Polychaeta	Metavermilia	multicristata				Y	Y		N	Y	Y		M
Arthropoda	Insecta	Metcalfa	pruinosa				Y				?			T
Arthropoda	Insecta	Metophthalmus	serripennis			Y				Y				T
Arthropoda	Insecta	Microgaster	pantographae			Y				?				T
Arthropoda	Insecta	Microlestes	minutulus			Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Arachnida	Micropholcus	fauroti					Y				Y		T
Annelida	Polychaeta	Microphthalmus	similis			Y	Y	Y	Y	Y	Y	Y	Y	M
Chordata	Actinopterygii	Micropogonias	undulatus		Atlantic croaker	N	Y	Y	Y	N	Y	Y	Y	M+F
Chordata	Actinopterygii	Micropterus	dolomieui		Smallmouth Bass	Y, Ex	Y	Y, Ex	Y	N	Y	Y, Ex	Y	F
Chordata	Actinopterygii	Micropterus	salmoides		Largemouth Bass	Y, Ex	Y	Y, Ex	Y	N	Y	Y, Ex	Y	F
Arthropoda	Insecta	Micropygus	vagans		A Dolichopodid Fly [	Y			N	?				T
Mollusca	Gastropoda	Milax	gagates		Smooth Jet Slug	Y	Y, nat	Y	Y	Y	Y, nat	Y	Y	T
Mollusca	Gastropoda	Milax	nigricans		Rough Jet Slug	Y	Y		Y	Y	Y		Y	T
Chordata	Aves	Milvus	migrans		Black Kite	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Mimosestes	mimose				Y				?			T
Angiospermae	Eudicotyledoneae	Mimulus	guttatus		Monkeyflower	Y	Y	Y	Y		Y	Y	Y	T
Chordata	Aves	Mimus	polyglottos		Northern Mockingbird	Y								T
Arthropoda	Insecta	Mindarus	abietinus		Balsam Twig Aphid	Y	Y			?	N			T
Arthropoda	Insecta	Mindarus	obliquus		Spruce Twig Aphid	Y				?				T
Chordata	Actinopterygii	Misgurnus	fossilis		European Weatherfish (Pond Loach)	Y	Y	Y, nat	Y	N	Y	Y, nat	Y	F
Chordata	Ascidiacea	Molgula	manhattensis		Sea grape (USA)	Y	Y	Y	Y	Y	Y	Y	Y	M
Mollusca	Gastropoda	Monacha	parumcincta				Y				Y			T
Arthropoda	Insecta	Monarthropalpus	flavus		Boxwood leaf-miner	Y			Y	N			?	T
Arthropoda	Insecta	Monelliopsis	caryae				Y				?			T
Platyhelminthes	Cestoda	Monobothrium	wageneri		tape worm	Y				Y				M
Arthropoda	Insecta	Monochamus	galloprovincialis					Y	Y			Y	N	T

Arthropoda	Insecta	Monochamus	sartor		Sawyer beetle	Y	Y	Y	Y	N	N	Y		T
Arthropoda	Insecta	Monochamus	sutor					Y				?		T
Arthropoda	Malacostraca	Monocorophium	acherusicum		Slender-tube amphipod	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Malacostraca	Monocorophium	sextonae			Y	Y	Y	Y	Y	Y	Y	Y	M+F
Arthropoda	Insecta	Monomorium	pharaonis		Pharo's ant	Y	Y	Y	Y	Y	?	Y	?	T
Arthropoda	Insecta	Monomorium	salomonis			Y	Y			?	?			T
Arthropoda	Insecta	Monomorium	floricola						Y					T
Annelida	Clitellata	Monopylephorus	limosus					Y				Y		F
Chlorophyta	Ulvophyceae	Monostroma	obscurum			Y	Y			N	N			M
Chordata	Aves	Monticola	solitarius		Blue Rock Thrush	Y	Y		Y				Y	T
Chordata	Aves	Montifringilla	nivalis		Snow Finch	Y	Y							T
Arthropoda	Insecta	Moranila	californica				Y				?			T
Arthropoda	Insecta	Mordellistena	cattleyana						Y				?	T
Arthropoda	Insecta	Moritziella	corticalis		Oak Bark Phylloxera	Y			Y	?			?	T
Ascomycota	Ascomycetes	Seiridium	cardinale		Cypress canker	Y	Y							T
Arthropoda	Insecta	Murmidius	ovalis			Y	Y			Y	?			T
Chordata	Mammalia	Mus	musculus		House Mouse	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Muscicapa	dauurica		Asian Brown Flycatcher	Y								T
Chordata	Aves	Muscicapa	thalassina		Indian Verditer Flycatcher	Y								T
Mollusca	Bivalvia	Musculium	transversum		Oblong Orb Mussel	Y	Y		Y	Y	Y		Y	F
Arthropoda	Insecta	Spodoptera	littoralis		African Cotton Leafworm	Y, Er	Y	N	Y, Er	N	N	N	N	T
Chordata	Mammalia	Mustela	lutreola		European mink		Y				Y			F+T
Heterokontophyta	Phaeophyceae	Undaria	pinnatifida		Japanese kelp	Y	Y	Y	Y	Y	Y	Y	Y	M
Mollusca	Bivalvia	Mya	arenaria		Sand-gaper	Y	Y	Y	Y	Y	Y	Y	Y	M
Porifera	Demospongiae	Mycale	micracanthoxea					Y	Y			Y	Y	M
Ascomycota	Dothideomycetes	Mycosphaerella	dearnessii				Y							T
Arthropoda	Maxillopoda	Myicola	ostreae				Y		Y		N		Y	M
Arthropoda	Insecta	Vespa	velutina		Asian Hornet	N	Y	N	N	N	?	N	N	T
Chordata	Mammalia	Myocastor	coypus		Coypu	Er	Y	Y	Y	N	Y	Er	Y	F+T
Heterokontophyta	Phaeophyceae	Myriactula				Y			Y	Y				M
Bryozoa	Gymnolaemata	Watersipora	subtorquata			Y	Y	Y		Y	Y	Y		M
Angiospermae	Eudicotyledoneae	Myriophyllum	verrucosum		Red Watermilfoil	Y				Y				F
Arthropoda	Insecta	Myrmecocephalus	concinnus			Y		Y	Y	Y		N		T
Arthropoda	Insecta	Myrmecopora	brevipes			Y				Y				T
Arthropoda	Insecta	Myrrha	octodecimguttata		18-Spot Ladybird [	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Myrsidea	quadrifasciata				Y				?			T
Arthropoda	Maxillopoda	Mytilicola	intestinalis		parasitic copepod	Y	Y	Y	Y	N	Y	Y	Y	M
Arthropoda	Maxillopoda	Mytilicola	orientalis		parasitic copepod	Y	Y		Y	N	Y		Y	M
Mollusca	Bivalvia	Mytilopsis	leucophaeta		False dark mussel	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Arthropoda	Insecta	Myzaphis	turanica			Y	Y			?				T
Arthropoda	Insecta	Myzia	oblongoguttata		Striped Ladybird	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Myzocallis	boerneri			Y				?				T
Arthropoda	Insecta	Myzocallis	schreiberi			Y				?				T
Arthropoda	Insecta	Myzocallis	walshii				Y	Y			?	?		T
Arthropoda	Insecta	Myzus	ascalonicus			Y	Y	Y	Y	Y			N	T
Arthropoda	Insecta	Myzus	cymbalariae			Y	Y	Y		?				T
Arthropoda	Insecta	Myzus	hemerocallis				Y				?			T
Arthropoda	Insecta	Myzus	ornatus			Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Myzus	persicae			Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Myzus	varians		Large peach aphid	Y	Y	Y		?	?	?		T
Arthropoda	Malacostraca	Nagurus	cristatus			Y			Y	Y			Y	F
Angiospermae	Monocotyledoneae	Najas	graminea		Ricefield Waternymph	Y				N				F
Arthropoda	Insecta	Nala	lividipes				Y				?			T
Arthropoda	Insecta	Napomyza	carotae		A Leaf-ming Fly				Y				?	T
Arthropoda	Insecta	Napomyza	cichorii		A Leaf-ming Fly			Y	Y			?	?	T
Chordata	Mammalia	Nasua	nasua		Coati	Y, Ex		Y		N		Y		T
Arthropoda	Insecta	Nathrius	brevipennis		Plain shortwing beetle	Y		Y	Y	Y		Y	Y	T
Chordata	Reptilia	Natrix	tessellata		Dice Snake	N	Y	Y		N	N	Y		T
Ascomycota	Dothideomycetes	Nattrassia	mangiferae			Y				Y				T
Arthropoda	Insecta	Nauphoeta	cinerea			Y				?				T
Arthropoda	Insecta	Nearctaphis	bakeri			Y	Y			?	N			T
Arthropoda	Insecta	Necrobia	rufipes			Y			Y	Y			Y	T
Chordata	Aves	Nectarinia	senegalensis		Scarlet-chested Sunbird	Y								T
Chordata	Aves	Nectarinia	venusta		Variable Sunbird	Y								T
Ascomycota	Sordariomycetes	Nectria	auriger				Y							T
Arthropoda	Insecta	Nemapogon	granella		Corn Moth	Y	Y	Y	Y	Y	N	Y	Y	T

Arthropoda	Insecta	Nemapogon	variatella		Pale Corn Clothes Moth	Y	Y		Y	Y	N		Y	T
Arthropoda	Insecta	Nematus	spiraeae			Y				?				T
Arthropoda	Insecta	Nematus	tibialis			Y	Y		Y	Y	?		Y	T
Cnidaria	Hydrozoa	Nemopsis	bachei				Y	Y	Y		Y	Y	Y	M
Chordata	Aves	Neochen	jubata		Orinoco Goose	Y				N				F+T
Arthropoda	Insecta	Neoclytus	acuminatus				Y				?			T
Arthropoda	Insecta	Neoderelomus	piriformis				Y				?			T
Arthropoda	Insecta	Neodicyphus	rhododendri			Y				Y				T
Arthropoda	Insecta	Neodryinus	typhlocybae				Y				?			T
Arthropoda	Maxillopoda	Neoergasilus	japonicus			Y	Y			Y	Y			F
Arthropoda	Insecta	Neoheegeria	dalmatica						Y					T
Arthropoda	Insecta	Neohydatothrips	samayunkur				Y				?			T
Arthropoda	Insecta	Neomyzus	circumflexus			Y	Y	Y	Y	?	?	?	?	T
Chordata	Aves	Neophron	percnopterus		Egyptian Vulture	Y	Y	Y	Y			Y		T
Arthropoda	Insecta	Neopulvinaria	innumerabilis				Y				?			T
Arthropoda	Arachnida	Neoscona	nautica					Y				Y		T
Rhodophyta	not assigned	Neosiphonia	harveyi			Y	Y	Y	Y	Y	Y	Y		M
Arthropoda	Insecta	Neotoxoptera	formosana			Y	Y		Y	?				T
Arthropoda	Insecta	Neotoxoptera	oliveri				Y				?			T
Arthropoda	Insecta	Neotoxoptera	violae				Y				?			T
Arthropoda	Arachnida	Nephilengys	cruentata					Y				Y		T
Arthropoda	Insecta	Nephus	reunioni				Y				?			T
Arthropoda	Insecta	Nepticulomima	sakuntala			Y				?				T
Annelida	Polychaeta	Nereis	virens		sandworm	Y			Y	Y			Y	M
Arthropoda	Insecta	Nesothrips	propinquus						Y				?	T
Arthropoda	Arachnida	Nesticodes	rufipes					Y				Y		T
Chordata	Aves	Netta	peposaca		Rosy-billed Pochard	Y	Y	Y	Y	Y	?	Y	Y	F+T
Chordata	Aves	Netta	rufina		Red-crested Pochard	Y, nat	nat	nat	Y, nat	Y, nat	nat	nat	Y, nat	F+T
Arthropoda	Insecta	Nezara	viridula		Southern Green Shield Bug	Y	Y	Y	Y	Y	N	Y	N	T
Arthropoda	Insecta	Niditinea	fuscella		Brown-Dotted Clothes Moth	Y	Y		Y	Y	N		Y	T
Arthropoda	Arachnida	Nigma	walckenaeri			Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Nipaecoccus	nipae			Y				?				T
Arthropoda	Insecta	Nipponorthezinella	guadalcanalia			Y				?				T
Arthropoda	Insecta	Niptus	hololeucus			Y			Y	Y				T
Dinoflagellata	Dinophyceae	Noctiluca	scintillans			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Norellia	spinipes		A Plant-feeding Dung Fly	Y			Y	Y			Y	T
Arthropoda	Insecta	Nosopsyllus	fasciatus			Y	Y	Y	Y					T
Arthropoda	Insecta	Nosopsyllus	londinensis	londinensis		Y	Y	Y		?	?	?		T
Arthropoda	Diplopoda	Nothogeophilus	turki			Y								T
Arthropoda	Insecta	Novelsis	horni						Y				?	T
Arthropoda	Maxillopoda	Nucellicola	holmanae		parasitic copepod	Y				Y				M
Chordata	Aves	Numida	meleagris		Helmeted Guinea fowl	Y		Y	Y	Y		Y	Y	T
Angiospermae	Magnoliidae	Nuphar	advena		Spatter-dock	Y				?				F
Chordata	Aves	Nycticorax	nycticorax		Black-crowned Night Heron	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Nymphicus	hollandicus		Cockatiel	Y	Y	Y	Y			Y	Y	T
Arthropoda	Insecta	Nymphula	crisonalis		Pale Asian China-mark	Y	N			Y	N			F+T
Arthropoda	Insecta	Nymphula	diminutalis		Small Brown China-mark	Y, Indoors	N			N	N			F+T
Arthropoda	Insecta	Nymphula	fluctuosalis		Waved China-mark	Y	N	N	N	Y	N			F+T
Arthropoda	Insecta	Nysius	huttoni		Wheat Bug [	Y	Y	Y	Y	?	?	?	Y	T
Arthropoda	Insecta	Obolodiplosis	robiniae		Locust gall midge	Y	Y		Y	Y	?		Y	T
Arthropoda	Insecta	Oceanaspidiotus	spinosus			Y	Y			?	?			T
Mollusca	Gastropoda	Ocenebra	erinacea		European sting winkle	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	M
Arthropoda	Insecta	Ochlerotatus	japonicus				Y	Y			?	Y		T
Mollusca	Gastropoda	Ocinebrellus	inornatus		Asian/Japanese oyster drill	N	Y		Y	N	Y		Y	M
Arthropoda	Insecta	Ocnerostoma	friesei		Grey Pine Ermel	Y	Y		Y	Y	N		Y	T
Chordata	Amphibia	Xenopus	laevis		African Clawed Toad	Y	Y	Y	Y	N	N			F+T
Arthropoda	Insecta	Odonaspis	secreta				Y				?			T
Arthropoda	Arachnida	Oecobius	navus		Urban wall spider	Y		Y	Y			Y		T
Chordata	Aves	Oena	capensis		Namaqua Dove	Y		Y				Y		T
Angiospermae	Eudicotyledoneae	Oenothera	biennis		Common Evening-Primrose	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Insecta	Oinophila	v-flava		Yellow V Moth [	Y	N		Y	Y	N		Y	T
Arthropoda	Arachnida	Oligonychus	ilicis						Y					T
Arthropoda	Arachnida	Oligonychus	perditus					Y	Y					T
Arthropoda	Insecta	Oligosita	distincta				Y				?			T
Arthropoda	Insecta	Oligostigma	polydectalis		Small Ringed China-mark	Y	N				N			F+T
Arthropoda	Insecta	Oligota	parva			Y	Y	Y	Y	Y		Y	Y	T

Arthropoda	Arachnida	Olios	sanctivincenti			Y								T
Heterokontophyta	Raphidophyceae	Olisthodiscus	luteus			Y				?				M
Arthropoda	Insecta	Ommatissus	binotatus				Y				?			T
Arthropoda	Insecta	Omonadus	floralis			Y	Y		Y	Y			Y	T
Chordata	Actinopterygii	Oncorhynchus	clarki		Cutthroat trout	Y		N		Y		N		F
Chordata	Actinopterygii	Oncorhynchus	gorbuscha		Humpback Salmon	Y		N		Y		N		M+F
Chordata	Actinopterygii	Oncorhynchus	kisutch		Coho Salmon	Y	Y	Y	Y	N	Y	N	Y	M+F
Chordata	Actinopterygii	Oncorhynchus	mykiss		Rainbow Trout	Y	Y	Y	Y	Y	Y	Y	Y	F
Chordata	Actinopterygii	Oncorhynchus	tshawytscha		Chinook salmon	Y, N	Y	N	Y	Y, N	Y	N	Y	F
Chordata	Mammalia	Ondatra	zibethicus		Muskrat	Er	Y	Y	Y	N	Y	Y	Y	F+T
Pteridophyta	Polypodiopsida	Onoclea	sensibilis		Sensitive Fern	Y	Y	Y		Y	N	Y		T
Arthropoda	Collembola	Onychiurus	folsomi			Y				Y				T
Arthropoda	Insecta	Ooencyrtus	kuwanae				Y				?			T
Arthropoda	Arachnida	Oonops	domesticus		Pink Prowler	Y	Y	Y	Y	Y			N	T
Arthropoda	Arachnida	Oonops	pulcher			Y		Y	Y					T
Mollusca	Gastropoda	Opeas	pumilum		Dwarf Awlsnail		Y		Y		Y		Y	T
Arthropoda	Insecta	Opetiopalpus	scutellaris				Y				?			T
Arthropoda	Insecta	Ophelimus	maskelli			Y	Y			?	?			T
Arthropoda	Arachnida	Opilio	parietinus					Y	Y			N	N	T
Arthropoda	Insecta	Opius	dimidiatus						Y					T
Arthropoda	Insecta	Opogona	sacchari		Cane borer	Y, Er	Y, Er	Y	Y	N	N	N	N	T
Arthropoda	Insecta	Opsius	stactogalus			Y		Y	Y	Y		Y	?	T
Arthropoda	Insecta	Opuntaspis	philococcus				Y				?			T
Arthropoda	Malacostraca	Orchestia	cavimana			Y	Y	Y	Y	Y	Y	Y	Y	M+F
Arthropoda	Insecta	Orchopeas	howardi			Y				?				T
Arthropoda	Malacostraca	Orconectes	limosus		Spinycheek Crayfish	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Malacostraca	Orconectes	virilis		Virile Crayfish	Y	Y		Y	Y	Y		Y	F
Chordata	Actinopterygii	Oreochromis	niloticus		Nile tilapia	Y	Y	Y	Y	?	?	N	?	F
Chordata	Aves	Oreortyx	pictus		Mountain Quail	Y								T
Arthropoda	Insecta	Orientus	ishidae	auchenorrhyncha			Y				?			T
Chordata	Aves	Oriolus	chinensis		Black-naped Oriole	Y				Y				T
Arthropoda	Insecta	Orius	laevigatus			Y	Y	Y	Y	Y	N	Y	N	T
Arthropoda	Insecta	Orphinus	fulvipes			Y	Y							T
Arthropoda	Insecta	Orseolia	cynodontis				Y				?			T
Arthropoda	Insecta	Orsillus	depressus			Y	Y	Y	Y	Y	N	Y	Y	T
Bryophyta	Bryopsida	Orthodontium	lineare			Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Orthoperus	aequalis			Y	Y			Y	?			T
Arthropoda	Insecta	Orthoperus	atomarius			Y			Y	N				T
Chordata	Aves	Orthopsittaca	manilata		Red-bellied Macaw	Y								T
Arthropoda	Insecta	Orthotylus	caprai			Y				?				T
Chordata	Mammalia	Oryctolagus	cuniculus		Rabbit	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Oryzaephilus	acuminatus			Y				?				T
Arthropoda	Insecta	Oryzaephilus	surinamensis			Y			Y	Y			N	T
Chordata	Actinopterygii	Osphronemus	goramy		Giant gourami	N	Y	N		N	N	N		M
Arthropoda	Arachnida	Ostearius	melanopygius			Y	Y	Y	Y					T
Chordata	Amphibia	Osteopilus	septentrionalis		Cuban Tree Frog	Y				?				F+T
Nematoda	Chromadorea	Ostertagia	mossi						Y				?	T
Zygomycota	not assigned	Ostracoblabe	implexa				Y				?			M
Mollusca	Bivalvia	Ostrea	angasi		Southern mud oyster		Y				Y			M
Mollusca	Bivalvia	Ostrea	denselamellosa		Asian Milin oyster		Y	Y	Y		Y	Y	Y	M
Mollusca	Bivalvia	Ostrea	edulis		European flat oyster	nat	Y, nat	nat	nat	nat	Y, nat	nat	nat	M
Mollusca	Bivalvia	Ostrea	puelchana		Argentinean flat oyster		Y				N			M
Cnidaria	Hydrozoa	Ostroumovia	inkermanica						Y, Er				Y	M
Arthropoda	Insecta	Otiorhynchus	apenninus						Y				Y	T
Arthropoda	Insecta	Otiorhynchus	armadillo			Y			Y	Y			Y	T
Arthropoda	Insecta	Otiorhynchus	aurifer			Y			Y				Y	T
Arthropoda	Insecta	Otiorhynchus	coecus			Y								T
Arthropoda	Insecta	Otiorhynchus	corruptor			Y	Y							T
Arthropoda	Insecta	Otiorhynchus	crataegi		Privet weevil	Y			Y	Y			Y	T
Arthropoda	Insecta	Otiorhynchus	dieckmanni			Y			Y	Y			Y	T
Arthropoda	Insecta	Otiorhynchus	salicicola			Y				Y				T
Arthropoda	Insecta	Otiorhynchus	setosulus			Y				Y				T
Arthropoda	Insecta	Otiorhynchus	sulcatus		Black Vine Weevil	Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Ovaticoccus	agavium			Y	Y			?	?			T
Chordata	Mammalia	Ovis	aries		Wild Sheep	Y	Y	Y	Y	N	?	?	?	T
Angiospermae	Eudicotyledoneae	Oxalis	corniculata		Procumbent Yellow-Sorrel	Y	Y	Y	Y		Y	Y	Y	T

Angiospermae	Eudicotyledoneae	Oxalis	debilis		Large-Flowered Pink-Sorrel	Y	Y	Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Oxalis	latifolia		Garden Pink-sorrel	Y	Y	Y	Y			Y		T
Arthropoda	Diplopoda	Oxidus	gracilis			Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Oxycarenus	lavaterae				Y		Y					T
Arthropoda	Insecta	Oxytelus	migrator				Y	Y			?	?		T
Chordata	Aves	Oxyura	jamaicensis		Ruddy Duck	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Chordata	Aves	Oxyura	leucocephala		White-headed Duck	Y	nat	nat	nat	Y	nat	nat	nat	F+T
Chordata	Aves	Oxyura	maccoa		Maccoa Duck	Y				Y				F+T
Chordata	Aves	Oxyura	vittata		Argentine Blue-billed Duck	Y			Y	Y			Y	F+T
Chordata	Actinopterygii	Pachychilon	pictum		Albanian Roach	N	Y	N		N	?	N		F
Arthropoda	Diplopoda	Pachymerium	ferrugineum			Y	Y			Y	N			T
Arthropoda	Insecta	Pachynematus	imperfectus			Y		Y	Y	N		?	?	T
Arthropoda	Insecta	Pachynematus	montanus			Y				?				T
Arthropoda	Insecta	Pachynematus	scutellatus			Y				?				T
Arthropoda	Insecta	Pachyprotasis	variegata			Y				?				T
Arthropoda	Insecta	Pachyrhinus	lethierryi			Y			Y	Y			Y	T
Chordata	Amphibia	Pachytriton	labiatus		newt			Y				Y		F
Arthropoda	Malacostraca	Pacifastacus	leniusculus		Signal Crayfish	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Malacostraca	Palaemon	macrodactylus		Oriental prawn	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Malacostraca	Palinurus	elephas			Y	Y	Y	Y	Y	N	Y	Y	F
Arthropoda	Insecta	Palmicultor	palmarum				Y							T
Arthropoda	Insecta	Palorus	ratzeburgii		Small-Eyed Flour Beetle	Y	Y	Y	Y	Y	?	?	?	T
Arthropoda	Insecta	Palorus	subdepressus		Depressed Flour Beetle	Y	Y			Y	N			T
Arthropoda	Insecta	Palorus	depressus						Y				Y	T
Arthropoda	Insecta	Panaphis	juglandis			Y	Y	Y		Y	N	Y		T
Angiospermae	Monocotyledoneae	Panicum	dichotomiflorum		Autumn Millet	Y	Y	Y	Y			Y	Y	T
Angiospermae	Monocotyledoneae	Panicum	miliaceum		Common Millet	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Monocotyledoneae	Panicum	schinzii		Transvaal Millet	Y	Y	Y	Y			Y		T
Arthropoda	Insecta	Panolis	flammea		Pine Beauty	Y	Y	Y	Y	Y	Y		Y	T
Arthropoda	Arachnida	Panonychus	citri			Y	Y		Y					T
Arthropoda	Insecta	Panspaeus	guttatus			Y				Y				T
Arthropoda	Insecta	Paoliella	eastopi			Y				?				T
Angiospermae	Magnoliopsida	Papaver	atlanticum		Atlas Poppy	Y		Y	Y			Y	Y	T
Arthropoda	Insecta	Parabemisia	myricae				Y				?			T
Chordata	Aves	Parabuteo	unicinctus		Harris's Hawk	Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Paracarotomus	cephalotes				Y				?			T
Arthropoda	Insecta	Paracolopha	morrisoni			Y				?				T
Chordata	Aves	Paradoxornis	webbianus		Vinous-throated Parrotbill	Y			Y	Y				T
Arthropoda	Maxillopoda	Paraergasilus	longidigitus			Y				Y				F
Annelida	Polychaeta	Paralaeospira	malardi			Y	Y			Y	N			M
Mollusca	Gastropoda	Paralaoma	servilis		Pinhead Spot Slug	Y			Y	Y			N	T
Arthropoda	Insecta	Paralipsa	gularis		Stored Nut Moth	Y	Y	Y	Y	Y				T
Nematoda	Adenophorea	Paralongidorus	maximus		Needle nematode	Y				Y				F
Arthropoda	Insecta	Paraphloeostiba	gayndahensis				Y				?			T
Arthropoda	Malacostraca	Parapilumnus	malardi				Y		Y		Y		Y	F
Arthropoda	Insecta	Parapoynx	bilinealis			Y								F+T
Arthropoda	Insecta	Parapoynx	crisonalis			Y				?				F+T
Arthropoda	Insecta	Parapoynx	diminutalis			Y				?				F+T
Arthropoda	Insecta	Parapoynx	fluctuosalis			Y				?				F+T
Arthropoda	Insecta	Parapoynx	obscuralis		American China-mark	Y, Indoors								F+T
Arthropoda	Insecta	Parapoynx	polydectalis			Y				?				F+T
Arthropoda	Insecta	Parasaissetia	nigra			Y	Y			?	?			T
Arthropoda	Insecta	Parascythopus	exsulans						Y					T
Arthropoda	Diplopoda	Paraspirobolus	lucifugus			Y	Y		Y					T
Arthropoda	Insecta	Parasyrphus	lineolus			Y				?				T
Arthropoda	Insecta	Parasyrphus	malinellus		A Hoverfly	Y	Y		Y	Y	N		Y	T
Arthropoda	Insecta	Paratillus	carus			Y	Y			Y	?			T
Arthropoda	Insecta	Paratrechina	bourbonica		Robust crazy ant	Y								T
Arthropoda	Insecta	Paratrechina	longicornis		Crazy ant	Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Paratrechina	vividula			Y	Y		Y					T
Nematoda	Adenophorea	Paratrichodorus	renifer		Stubby-root Nematode				Y				?	T
Arthropoda	Insecta	Pardasena	virgulana		Grey Square	Y				Y				T
Arthropoda	Insecta	Parectopa	robiniella			Y	Y			?	?			T
Arthropoda	Collembola	Parisotoma	notabilis			Y	Y	Y	Y	Y	N	N	Y	T
Arthropoda	Insecta	Parlatoria	blanchardi				Y				?			T
Arthropoda	Insecta	Parlatoria	camelliae				Y				?			T

Arthropoda	Insecta	Parlatoria	crotonis			Y	Y			?	?			T
Arthropoda	Insecta	Parlatoria	pergandii				Y				?			T
Arthropoda	Insecta	Parlatoria	proteus			Y	Y			?	?			T
Arthropoda	Insecta	Parlatoria	theae				Y				?			T
Arthropoda	Insecta	Parlatoria	ziziphi				Y				?			T
Chordata	Aves	Paroaria	coronata		Red-crested Cardinal	Y			Y				Y	T
Arthropoda	Insecta	Paromalus	luderti				Y				?			T
Angiospermae	Magnoliopsida	Parthenocissus	inserta		False Virginia-Creeper	Y	Y	Y	Y		Y	Y	Y	T
Angiospermae	Magnoliopsida	Parthenocissus	quinquefolia		Virginia-creeper	Y	Y	Y	Y			Y	Y	T
Arthropoda	Insecta	Parthenolecanium	fletcheri				Y		Y					T
Arthropoda	Insecta	Parthenothrips	dracaenae			Y	Y		Y					T
Chordata	Aves	Parula	americana		Northern Parula	Y	Y							T
Angiospermae	Monocotyledoneae	Paspalum	dilatatum		Dallisgrass		Y	Y				Y		T
Chordata	Aves	Passer	castanopterus		Somali Sparrow	Y								T
Chordata	Aves	Passer	luteus		Sudan Golden Sparrow	Y			Y	Y			Y	T
Chordata	Aves	Passerina	amoena		Lazuli Bunting	Y								T
Chordata	Aves	Passerina	caerulea		Blue Grosbeak	Y		Y				Y		T
Chordata	Aves	Passerina	ciris		Painted Bunting	Y								T
Chordata	Aves	Passerina	cyanea		Indigo Bunting	Y								T
Chordata	Aves	Passerina	leclancherii		Orange-breasted Bunting	Y								T
Chordata	Aves	Passerina	versicolor		Varied Bunting	Y								T
Mollusca	Bivalvia	Patinopecten	yessoensis		Japanese scallop		Y				N			M
Arthropoda	Insecta	Pauesia	cedrobii				Y				?			T
Chordata	Aves	Pavo	cristatus		Indian Peafowl	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Paysandisia	archon			Y	Y	N		Y		N		T
Arthropoda	Insecta	Pealius	azaleae		Azalea whitefly	Y		Y	Y	?		?	?	T
Mollusca	Bivalvia	Pecten	maximus		Great scallop	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	M
Bryozoa	Phylactolaemata	Pectinatella	magnifica				Y		Y		N		N	F
Arthropoda	Insecta	Pediobius	phyllotretae			Y				?				T
Chordata	Aves	Pelecanus	crispus		Dalmatian Pelican	Y				Y				F+T
Chordata	Aves	Pelecanus	onocrotalus		Great White Pelican	Y			Y	Y			Y	F+T
Chordata	Aves	Pelecanus	rufescens		Pink-backed Pelican	Y		Y	Y	Y		Y	Y	F+T
Arthropoda	Arachnida	Pellenes	geniculatus					Y				Y		T
Platyhelminthes	Trematoda	Pellucidhaptor	pricei			Y				?				F
Arthropoda	Insecta	Pelomyia	occidentalis		A Shore Fly	Y	N	N	N					T
Chordata	Amphibia	Pelophylax	bedriagae				Y	Y			Y	Y		F+T
Chordata	Amphibia	Pelophylax	esculentus		Edible Frog	Y	Y			Y	Y			F+T
Chordata	Amphibia	Pelophylax	lessonae		Pool Frog	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Chordata	Amphibia	Pelophylax	ridibundus		Marsh Frog	Y, Er	Y	Y	Y	N	Y	Y	Y	F+T
Arthropoda	Insecta	Pelosoma	lafertei				Y				?			T
Arthropoda	Insecta	Pemphigus	populitransversus			Y		Y		?		Y		T
Arthropoda	Insecta	Pentalonia	nigronervosa			Y			Y	?				T
Arthropoda	Insecta	Pentarthrum	huttoni			Y	Y	Y	Y	Y	?	Y	Y	T
Chordata	Aves	Perdix	perdix		Grey Partridge	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Peribatodes	secundaria		Feathered Beauty	Y	Y	Y	Y	Y	N	N	Y	T
Arthropoda	Insecta	Perigona	nigriceps			Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Periphyllus	acericola			Y				?				T
Arthropoda	Insecta	Periphyllus	aceris			Y				?				T
Arthropoda	Insecta	Periphyllus	californiensis			Y			Y	Y				T
Arthropoda	Insecta	Periphyllus	lyropictus			Y				?				T
Arthropoda	Insecta	Periphyllus	xanthomelas			Y				?				T
Arthropoda	Insecta	Periplaneta	americana			Y	Y	Y	Y	Y	N	N	N	T
Arthropoda	Insecta	Periplaneta	australasiae			Y	Y	Y	Y	Y	N	N	Y	T
Arthropoda	Insecta	Peripsocus	bivari				Y				?			T
Arthropoda	Insecta	Peripsocus	milleri			Y				?				T
Arthropoda	Insecta	Peripsocus	parvulus			Y				?				T
Heterokontophyta	Oomycetes	Peronospora	hyoscyami f.			Y	Y			N				T
Chordata	Ascidiacea	Perophora	japonica			Y	Y		Y	Y	N		Y	M
Angiospermae	Eudicotyledoneae	Persicaria	wallichii		Himalayan Knotweed	Y	Y	Y	Y		Y	Y	Y	T
Mollusca	Bivalvia	Petricola	pholadiformis		American piddock	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Pezothrips	kellyanus						Y					T
Arthropoda	Insecta	Phacophallus	parumpunctatus			Y				Y				T
Ascomycota	Dothideomycetes	Phaeocryptopus	gaeumannii			Y	Y	Y	Y					T
Haptophyta	Coccolithophyceae	Phaeocystis	pouchetii			Y	Y	Y	Y	Y	Y	Y	Y	M
Chordata	Aves	Phaethon	aethereus		Red-billed Tropicbird	Y								T
Platyhelminthes	Turbellaria	Phagocata	woodworthi			Y				N				F

Chordata	Aves	Phalacrocorax	auritus		Double-crested Cormorant	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Ascidiacea	Phallusia	mammillata			Y	Y			Y	Y			M
Arthropoda	Insecta	Phasia	barbifrons		A Tachinid Fly	Y			Y	Y			Y	T
Chordata	Aves	Phasianus	colchicus		Common Pheasant	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Phasianus	versicolor		Green Pheasant	Y				Y				T
Arthropoda	Insecta	Pheidole	anastasii						Y					T
Arthropoda	Insecta	Pheidole	bilimeki			Y	Y							T
Arthropoda	Insecta	Pheidole	guineensis				Y				?			T
Arthropoda	Insecta	Pheidole	megacephala		Bigheaded ant	Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Phenacoccus	madeirensis				Y				?			T
Arthropoda	Insecta	Phenacoccus	peruvianus				Y				?			T
Chordata	Aves	Pheucticus	melanocephalus		Black-headed Grosbeak	Y								T
Nematoda	Secernentea	Philometroides	sanguinea		Cruican Carp Nematode (no official common name found)	Y								F
Arthropoda	Insecta	Philonthus	rectangulus			Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Philonthus	spinipes			Y	Y		Y	N			Y	T
Arthropoda	Insecta	Philothermus	montandoni				Y				?			T
Arthropoda	Insecta	Phloeosinus	aubei						Y				Y	T
Arthropoda	Insecta	Phloeosinus	thujae			Y				Y				T
Arthropoda	Insecta	Phloeosinus	rudis				Y		Y					T
Ascomycota	Dothideomycetes	Phloeospora	robiniae			Y	Y			Y				T
Arthropoda	Insecta	Phloeotribus	caucasicus				Y				?			T
Arthropoda	Insecta	Phoenicococcus	marlatti				Y				?			T
Chordata	Aves	Phoeniconaias	minor		Lesser Flamingo	Y	Y	Y	Y	Y	?	Y	Y	F+T
Chordata	Aves	Phoenicopterus	chilensis		Chilean Flamingo	Y	Y	Y	Y	Y		Y	Y	F+T
Chordata	Aves	Phoenicopterus	ruber		Greater Flamingo	Y		Y	Y	Y		Y	Y	F+T
Chordata	Aves	Phoenicurus	auroreus		Daurian Redstart	Y				N				T
Chordata	Aves	Phoenicurus	leucocephalus		White-capped Redstart	Y								T
Arthropoda	Arachnida	Pholcus	opilionoides				Y	Y			N	Y		T
Arthropoda	Arachnida	Pholcus	phalangioides		Daddy-long-legs spider	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Arachnida	Phoneutria	nigriventer					Y				Y		T
Arthropoda	Insecta	Phoracantha	semipunctata				Y				?			T
Bryozoa	Gymnolaemata	Phoronis	hippocrepia			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Phradonoma	tricolor						Y				?	T
Arthropoda	Insecta	Phryneta	leprosa				Y							T
Arthropoda	Insecta	Phthorimaea	operculella		Potato Tuber Moth	Y, Er	Y	Y	Y	N	N		Y	T
Arthropoda	Insecta	Phyllocnistis	citrella				Y				?			T
Arthropoda	Arachnida	Phyllocoptes	azaleae						Y					T
Arthropoda	Maxillopoda	Phyllodicola	petiti		parasitic copepod	Y				N				M
Arthropoda	Insecta	Phyllodiplosis	cocciferae			Y				?				T
Arthropoda	Insecta	Phyllonorycter	comparella		Winter Poplar Midget [	Y	Y	Y	Y	Y	N	N	Y	T
Arthropoda	Insecta	Phyllonorycter	geniculella		Sycamore Midget	Y	Y	Y	Y	Y	N	N	Y	T
Arthropoda	Insecta	Phyllonorycter	issikii			Y			Y	?				T
Arthropoda	Insecta	Phyllonorycter	joannisi			Y	Y	Y	Y				Y	T
Arthropoda	Insecta	Phyllonorycter	leucographella		Firethorn Leaf Miner	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Phyllonorycter	platani		London Midget	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Phyllonorycter	strigulatella		Grey-alder Midget	Y	Y		Y	Y	N		Y	T
Arthropoda	Insecta	Phyllonorycter	robiniella			Y	Y	Y	Y					T
Arthropoda	Insecta	Phymatocera	aterrima			Y				?				T
Arthropoda	Insecta	Phymatodes	lividus			Y				Y				T
Pteridophyta	Pteridopsida	Phymatosorus	diversifolius		Kangaroo Fern	Y				?				T
Mollusca	Gastropoda	Physa			Bladder Snails	Y				Y				T
Mollusca	Gastropoda	Physella	acuta		European physa	Y	Y	Y	Y	Y	Y	Y	Y	F
Mollusca	Gastropoda	Physella	gyrina		Tadpole physa	Y				Y				F
Angiospermae	Eudicotyledoneae	Phytolacca	acinosa		Indian Pokeweed	Y		Y	Y	Y		Y	?	T
Angiospermae	Eudicotyledoneae	Phytolacca	americana		American pokeweed	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Phytoliriomyza	melampyga		A Leaf-ming Fly	Y			Y	Y			Y	T
Arthropoda	Insecta	Phytomyza	astrantiae		A Leaf-mining Fly				Y				N	T
Arthropoda	Insecta	Phytomyza	gymnostoma		A Leaf-mining Fly				Y				?	T
Arthropoda	Insecta	Phytomyza	hellebori		A Leaf-ming Fly	Y				Y				T
Heterokontophyta	Oomycetes	Phytophthora	lateralis				Y		Y					T
Heterokontophyta	Oomycetes	Phytophthora	ramorum			Y	Y	Y	Y			Y		T
Arthropoda	Arachnida	Phytoseiulus	persimilis			Y		Y						T
Pinophyta	Pinopsida	Picea	glauca			Y				Y				T
Pinophyta	Pinopsida	Picea	omorika			Y		Y	Y	Y		Y	Y	T
Pinophyta	Pinopsida	Picea	sitchensis		Sitka Spruce	Y	Y	Y	Y	Y	Y	Y	Y	T
Rhodophyta	not assigned	Pikea	californica		Captain Pike's weed	Y				N				M

Annelida	Polychaeta	Pileolaria	berkeleyana			Y	Y			Y	N			M
Annelida	Polychaeta	Pileolaria	militaris			Y	Y			Y	N			M
Arthropoda	Malacostraca	Pilumnoides	inglei		xanthid crab	Y, Er				N				M
Arthropoda	Malacostraca	Pilumnoides	perlatus		xanthid crab	Y				N				M
Chordata	Actinopterygii	Pimephales	promelas		Fathead Minnow	Y	Y	Y	Y	Y	Y	Y	Y	F
Arthropoda	Insecta	Pineus	orientalis			Y			Y	?				T
Arthropoda	Insecta	Pineus	phylloxeroidea			Y			Y	?			?	T
Arthropoda	Insecta	Pineus	pineoides			Y				?				T
Arthropoda	Insecta	Pineus	similis			Y				?				T
Arthropoda	Insecta	Pineus	strobi			Y			Y	?				T
Arthropoda	Insecta	Pinnaspis	aspidistrae			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Pinnaspis	buxi			Y	Y			?	?			T
Arthropoda	Insecta	Pinnaspis	strachani			Y	Y			?	?			T
Pinophyta	Pinopsida	Pinophyta	wallichiana			Y								T
Pinophyta	Pinopsida	Pinus	banksiana			Y	Y			N	N			T
Pinophyta	Pinopsida	Pinus	contorta		Lodgepole Pine	Y	Y	Y	Y	Y	N	Y	N	T
Pinophyta	Pinopsida	Pinus	mugo			Y	nat	Y	Y					T
Pinophyta	Pinopsida	Pinus	nigra		Black Pine	Y	Y	Y	Y	Y	Y	Y	Y	T
Pinophyta	Pinopsida	Pinus	peuce			Y		Y		Y		Y		T
Pinophyta	Pinopsida	Pinus	pinaster		Atlantic Maritime Pine	Y	Y	Y	Y	Y	Y	Y	Y	T
Pinophyta	Pinopsida	Pinus	ponderosa			Y	Y	Y	Y	Y		N	N	T
Pinophyta	Pinopsida	Pinus	radiata			Y	Y			Y	N			T
Pinophyta	Pinopsida	Pinus	strobus			Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Pipilo	maculatus		Spotted Towhee	Y								T
Chordata	Actinopterygii	Pisodonophis	semicinctus		(eel)	N	Y			N	N			M
Arthropoda	Insecta	Pistosia	dactyliferae				Y				?			T
Chlorophyta	Ulvophyceae	Pithophora	oedogonia			Y				?				M+F
Arthropoda	Insecta	Pitrufquenia	coypus			Y			Y					T
Arthropoda	Insecta	Pityogenes	bidentatus			Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Pityogenes	quadridens			Y		Y		N		N		T
Arthropoda	Arachnida	Pityohyphantes	phrygianus			Y			Y	N				T
Arthropoda	Insecta	Placotettix	taeniatifrons			Y				Y				T
Arthropoda	Insecta	Plagiolepis	alluaudi				Y		Y					T
Arthropoda	Insecta	Plagiolepis	taurica						Y					T
Arthropoda	Insecta	Plagiomerus	diaspidis				Y				?			T
Platyhelminthes	Turbellaria	Planaria	torva			Y		Y	Y	Y		Y	Y	F
Arthropoda	Insecta	Planococcus	citri			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Planococcus	vovae		Cypress mealybug	Y				?				T
Heterokontophyta	Oomycetes	Plasmopara	halstedii				Y		Y					T
Arthropoda	Insecta	Plastanoxus	laevis				Y				?			T
Chordata	Aves	Platalea	alba		African Spoonbill	Y		Y	Y	Y		Y	N	T
Arthropoda	Malacostraca	Platorchestia	platensis						Y				Y	T
Chordata	Aves	Platycercus	elegans		Crimson Rosella	Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Platycercus	eximius		Eastern Rosella	Y		Y	Y	Y		Y	Y	T
Pinophyta	Pinopsida	Platycladus	orientalis			Y	Y			Y	N			T
Arthropoda	Insecta	Platygaster	robiniae				Y				?			T
Arthropoda	Insecta	Platynota	rostrana			Y	N	N	N	N	N	N	N	T
Arthropoda	Insecta	Platypus	curtus			Y				?				T
Arthropoda	Insecta	Platypus	parallelus			Y				?				T
Arthropoda	Insecta	Platypus	penetralis			Y				?				T
Chordata	Aves	Plegadis	falcinellus		Glossy Ibis	Y	Y	Y	Y	Y		Y	Y	T
Chordata	Aves	Plegadis	ridgwayi		Puna Ibis	Y		Y				Y		T
Heterokontophyta	Bacillariophyceae	Pleurosigma	planctonicum			Y	Y			Y				M
Heterokontophyta	Bacillariophyceae	Pleurosigma	simonsenii			Y			Y	Y				M
Arthropoda	Arachnida	Plexippus	paykulli			Y	Y	Y				Y		T
Arthropoda	Insecta	Plioreocepta	poeciloptera		Asparagus fly			Y	Y			?	N	T
Chordata	Aves	Ploceus	castaneiceps		Taveta Golden Weaver	Y				N				T
Chordata	Aves	Ploceus	cucullatus		Village Weaver	Y	Y		Y	Y	Y		Y	T
Chordata	Aves	Ploceus	melanocephalus		Black-headed Weaver	Y		Y		Y		Y		T
Chordata	Aves	Ploceus	vitellinus		Vitelline Masked Weaver	Y				Y				T
Arthropoda	Insecta	Plochionus	pallens				Y		Y		?		?	T
Arthropoda	Insecta	Plodia	interpunctella		Indian Meal Moth	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Plutella	porrectella		Grey-streaked Smudge	Y	Y	Y	Y	Y	N	N	Y	T
Arthropoda	Insecta	Pocadius	adustus			Y				Y				T
Chordata	Reptilia	Podarcis	muralis		Wall Lizard [	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Reptilia	Podarcis	siculus		Italian wall lizard		Y	Y			N	N		T

Arthropoda	Insecta	Podisus	maculiventris				Y	Y	Y		?	?	?	T
Ascomycota	Leotiomycetes	Podosphaera	mors-uvae			Y	Y	Y	Y	Y				T
Chordata	Actinopterygii	Poecilia	reticulata		Guppy	Y, Ex		N	Y	N		N	Y	M
Arthropoda	Insecta	Poecilium	lividum					Y	Y			?	?	T
Chordata	Aves	Poephila	guttata		Zebra Finch	Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Poicephalus	senegalus		Senegal Parrot	Y	Y	Y	Y	Y		Y	Y	T
Annelida	Polychaeta	Polydora	hoplura			Y	Y	Y	Y	Y	Y	Y	Y	M
Annelida	Polychaeta	Polydora	ciliata		bristleworm	Y	Y	Y	Y	Y	?	Y	Y	M
Arthropoda	Insecta	Polydrusus	impar					Y	Y			N	N	T
Arthropoda	Insecta	Polygraphus	poligraphus			Y				Y				T
Arthropoda	Arachnida	Polyphagotarsonemus	latus			Y		Y	Y					T
Arthropoda	Insecta	Polyplax	spinulosa				Y		Y					T
Rhodophyta	not assigned	Polysiphonia	harveyi			Y	Y		Y	Y	Y			M
Rhodophyta	not assigned	Polysiphonia	senticulosa				Y	Y	Y		Y	Y	Y	M+F
Pteridophyta	Pteridopsida	Polystichum	munitum		Western Sword-Fern [	Y				Y				T
Chordata	Aves	Polytelis	alexandrae		Princess Parrot	Y								T
Arthropoda	Insecta	Ponera	coarctata		Indolent Ant	Y		Y						T
Arthropoda	Diplopoda	Poratia	digitata			Y	Y		Y	Y				T
Arthropoda	Malacostraca	Porcellio	laevis			Y			Y	Y			Y	F
Arthropoda	Malacostraca	Porcellionides	pruinosus			Y		Y	Y	Y		Y	Y	F
Chordata	Aves	Porphyrio	porphyrio		Purple Swamphen	Y	Y	Y	Y	Y	?	Y	N	F+T+M
Platyhelminthes	Trematoda	Posthodiplostomum	cuticola						Y				?	F
Angiospermae	Monocotyledoneae	Potamogeton	epihydrus		American Pondweed	Y				?				F
Arthropoda	Malacostraca	Potamon	ibericum				Y				N			F
Mollusca	Gastropoda	Potamopyrgus	antipodarum		Jenkins' Spire Snail, New Zealand Mudsnail	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Annelida	Clitellata	Potamothrix	vejdovskyi					Y	Y			Y	Y	M
Nematoda	Adenophorea	Pratylenchus	bolivianus		Root Lesion Nematode	Y				Y				T
Nematoda	Adenophorea	Pratylenchus	vulnus						Y				?	T
Arthropoda	Insecta	Prays	citri				Y		Y					T
Arthropoda	Insecta	Pristiphora	abietina			Y				?				T
Arthropoda	Insecta	Pristiphora	amphibola			Y				?				T
Arthropoda	Insecta	Pristiphora	compressa			Y				?				T
Arthropoda	Insecta	Pristiphora	erichsonii			Y			Y	N			?	T
Arthropoda	Insecta	Pristiphora	glauca			Y				?				T
Arthropoda	Insecta	Pristiphora	laricis			Y		Y	Y	N		?	?	T
Arthropoda	Insecta	Pristiphora	leucopus			Y				?				T
Arthropoda	Insecta	Pristiphora	nigella			Y				?				T
Arthropoda	Insecta	Pristiphora	saxesenii			Y				?				T
Arthropoda	Insecta	Pristiphora	subarctica			Y				?				T
Arthropoda	Insecta	Pristiphora	thalictri			Y				?				T
Arthropoda	Insecta	Pristiphora	wesmaeli			Y			Y	Y			?	T
Arthropoda	Malacostraca	Proasellus	coxalis				Y	Y	Y		N	Y	Y	F
Arthropoda	Malacostraca	Proasellus	meridianus			Y	Y	Y	Y	Y	N	Y	Y	F
Arthropoda	Malacostraca	Procambarus	acutus		white river crayfish				Y				Y	F
Arthropoda	Malacostraca	Procambarus	clarkii		Red Swamp Crayfish	Y	Y	Y	Y	Y	Y	Y	Y	F
Annelida	Polychaeta	Proceraea	cornuta			Y			Y	Y			Y	M
Arthropoda	Insecta	Prociphilus	fraxini			Y		Y	Y	?		Y	N	T
Chordata	Mammalia	Procyon	cancrivorus		Crab-eating Raccoon			Y				N		T
Chordata	Mammalia	Procyon	lotor		Raccoon	Y, Ex	Y	Y	Y	N	Y	Y	Y	T
Arthropoda	Insecta	Prodiplosis	violicola						Y				?	T
Chordata	Aves	Progne	subis		Purple Martin	Y								T
Arthropoda	Collembola	Proisotoma	filifera			Y			Y	Y			?	T
Arthropoda	Collembola	Proisotoma	minuta			Y	Y		Y	Y	N			T
Arthropoda	Insecta	Prokelisia	marginata		Spartina Planthopper	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Propsocus	pulchripennis			Y	Y			?	?			T
Dinoflagellata	Dinophyceae	Prorocentrum	minimum			Y	Y		Y	?	Y		Y	M
Dinoflagellata	Dinophyceae	Prorocentrum	triestinum				Y		Y		N			M
Arthropoda	Insecta	Prosopantrum	flavifrons		A Cnemospathid [	Y				Y				T
Arthropoda	Diplopoda	Prosopodesmus	panporus			Y			Y	Y				T
Platyhelminthes	Cestoda	Proteocephalus	osculatus			Y				N				F
Arthropoda	Insecta	Protopulvinaria	pyriformis				Y				?			T
Angiospermae	Eudicotyledoneae	Prunus	laurocerasus		Cherry Laurel	Y	Y	Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Prunus	serotina		Rum Cherry	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Pryeria	sinica		Euonymus Leaf Notcher	Y	N	N	N	Y	N	N	N	T
Arthropoda	Insecta	Psacothea	hilaris			Y				?				T
Annelida	Clitellata	Psammoryctides	moravicus				Y	Y	Y		Y	Y	Y	M+F

Arthropoda	Insecta	Psammotettix	saxatilis				Y				?			T
Arthropoda	Insecta	Psectrosema	tamaricis		A Gall Midge	Y								T
Arthropoda	Insecta	Pseudagrion	microcephalum					Y				Y		F
Arthropoda	Insecta	Pseudaulacaspis	cockerelli				Y				?			T
Arthropoda	Insecta	Pseudaulacaspis	pentagona			Y	Y		Y	?				T
Arthropoda	Insecta	Pseudauparlatoria	parlatorioides				Y				?			T
Arthropoda	Arachnida	Pseudeuophrys	lanigera		House Jumping spider	Y		Y	Y	Y		N	Y	T
Arthropoda	Insecta	Pseudococcus	calceolariae		Citrus Mealybug	Y	Y			?	?			T
Arthropoda	Insecta	Pseudococcus	comstocki				Y				?			T
Arthropoda	Insecta	Pseudococcus	longispinus			Y	Y			?	?			T
Arthropoda	Insecta	Pseudococcus	viburni			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Pseudocoremia	suavis			Y				?				T
Arthropoda	Insecta	Pseudodendrothrips	mori				Y				?			T
Arthropoda	Maxillopoda	Pseudomyicola	spinosus				Y				N			F
Arthropoda	Insecta	Pseudopachymerina	spinipes				Y				?			T
Arthropoda	Insecta	Pseudoparlatoria	ostreata			Y	Y			?	?			T
Arthropoda	Insecta	Pseudoparlatoria	parlatorioides				Y				?			T
Heterokontophyta	Oomycetes	Pseudoperonospora	humuli			Y	Y	Y	Y	Y				T
Chordata	Actinopterygii	Pseudorasbora	parva		Topmouth Gudgeon	Y	Y	Y	Y	Y	Y	Y	Y	F
Platyhelminthes	Turbellaria	Pseudostylochus	ostreophagus				Y				?			M
Pinophyta	Pinopsida	Pseudotsuga	menziesii		Douglas Fir	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Arachnida	Psilochorus	simoni		Long-legged cellar spider	Y	Y	Y	Y	Y			Y	T
Mollusca	Bivalvia	Psiloteredo	megotara		Big-ear shipworm	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	M
Chordata	Aves	Psittacula	alexandri		Moustached Parakeet	Y								T
Chordata	Aves	Psittacula	cyanocephala		Plum-headed Parakeet	Y			Y	Y			Y	T
Chordata	Aves	Psittacula	eupatria		Alexandrine Parakeet	Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Psittacula	krameri		Ring-Necked Parakeet	Y	Y	Y	Y	Y		Y	Y	T
Chordata	Aves	Psittacus	erithacus		African Grey Parrot	Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Psoquilla	marginepunctata			Y				?				T
Arthropoda	Insecta	Psychoides	filicivora		Fern Smut	Y	N	N	N	Y	N	N	N	T
Arthropoda	Insecta	Psydrothrips	kewi			Y				?				T
Arthropoda	Insecta	Psyllaephagus	pilosus			Y	Y			?	?			T
Arthropoda	Insecta	Psylliodes	chrysocephalus			Y				?				T
Arthropoda	Insecta	Psylliodes	cucullata			Y				?				T
Arthropoda	Insecta	Psyllipsocus	ramburii			Y			Y	Y			Y	T
Arthropoda	Insecta	Psyttalia	concolor				Y				?			T
Pteridophyta	Pteridopsida	Pteris	cretica		Ribbon Fern	Y	Y	Y		Y	N	Y		T
Angiospermae	Eudicotyledoneae	Pterocarya	fraxinifolia		Caucasian Wingnut	Y	Y	Y						T
Arthropoda	Insecta	Pterochloroides	persicae				Y				?			T
Arthropoda	Insecta	Pterostichus	angustatus			Y				?				T
Arthropoda	Insecta	Pterostichus	cristatus			Y	Y	Y	Y	N	N	N	N	T
Arthropoda	Insecta	Pterostichus	quadrifoveolatus			Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Pteroxanium	kelloggi			Y	Y			?	?			T
Arthropoda	Insecta	Ptilineurus	marmoratus				Y				?			T
Arthropoda	Insecta	Ptilodactyla	exotica				Y				?			T
Arthropoda	Insecta	Ptinella	cavelli			Y				Y				T
Arthropoda	Insecta	Ptinella	simsoni			Y				Y				T
Arthropoda	Insecta	Ptinella	taylorae			Y				N				T
Arthropoda	Insecta	Ptinella	errabunda			Y			Y	Y			Y	T
Arthropoda	Insecta	Ptinus	ocellus			Y	Y	Y	Y		?	?	?	T
Arthropoda	Insecta	Ptinus	tectus		Australian Spider Beetle	Y	Y	Y	Y	Y	?	?	?	T
Ascomycota	Urediniomycetes	Puccinia	distincta			Y	Y		Y	Y			Y	T
Ascomycota	Urediniomycetes	Puccinia	lagenophorae			Y	Y	Y	Y	Y			Y	T
Ascomycota	Urediniomycetes	Puccinia	malvacearum			Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Puliciphora	borinquenensis		A Scuttle Fly	Y				N				T
Arthropoda	Insecta	Pulvinaria	floccifera			Y	Y	Y	Y	?		Y	Y	T
Arthropoda	Insecta	Pulvinaria	horii				Y				?			T
Arthropoda	Insecta	Pulvinaria	hydrangeae		Hydrangea Scale	Y	Y	Y	Y	Y	?	N	N	T
Arthropoda	Insecta	Pulvinaria	psidii		Green shield scale	Y				?				T
Arthropoda	Insecta	Pulvinaria	regalis		Horse Chestnut Scale	Y	Y	Y	Y	Y	?	N	Y	T
Arthropoda	Insecta	Pulvinariella	mesembryanthemi		Hottentot fig scale	Y	Y			?	?			T
Arthropoda	Insecta	Pycnocelus	surinamensis						Y					T
Arthropoda	Insecta	Pycnomerus	fuliginosus			Y				Y				T
Chordata	Aves	Pycnonotus	aurigaster		Sooty-headed Bulbul	Y			Y				Y	T
Chordata	Aves	Pycnonotus	cafer		Red-vented Bulbul	Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Pycnonotus	jocosus		Red-whiskered Bulbul	Y		Y	Y	Y		Y	Y	T

Chordata	Aves	Pycnonotus	sinensis		Chinese Bulbul	Y			Y				N	T
Arthropoda	Insecta	Pycnoscelus	surinamensis			Y	Y			Y	?			T
Arthropoda	Insecta	Pyralis	farinalis		Meal Moth	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Pyrrharctia	isabella		Isabelline Tiger	Y	N	N	N	N	N	N	N	T
Chordata	Aves	Pyrrhocorax	graculus		Alpine Chough	Y	Y							T
Chordata	Aves	Quelea	erythrops		Red-headed Quelea	Y				Y				T
Chordata	Aves	Quelea	quelea		Red-billed Quelea	Y			Y	Y				T
Angiospermae	Eudicotyledoneae	Quercus	cerris		Turkey Oak	Y	Y	Y	Y		Y		Y	T
Angiospermae	Eudicotyledoneae	Quercus	ilex		Evergreen Oak	Y								T
Angiospermae	Eudicotyledoneae	Quercus	rubra		Red Oak	Y	Y	Y	Y		Y	Y	Y	T
Annelida	Clitellata	Quistadrilus	multisetosus					Y	Y			Y	Y	F
Nematoda	Chromadorea	Radopholus	similis				Y	Y	Y					T
Chordata	Aves	Ramphastos	toco		Toco Toucan		Y				?			T
Mollusca	Bivalvia	Rangia	cuneata		Atlantic rangia		Y	Y	Y		Y	Y	Y	M+F
Chordata	Mammalia	Rangifer	tarandus		Reindeer	Y, Ex				N				T
Arthropoda	Insecta	Rapala	schistacea		Slate Flash	Y				Y				T
Chordata	Mammalia	Rattus	norvegicus		Brown Rat	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Mammalia	Rattus	rattus		Ship Rat	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Malacostraca	Reductoniscus	costulatus			Y	Y		Y	N			Y	F
Arthropoda	Insecta	Reesa	vespulae		Museum Nuisance	Y	Y			?	?			T
Arthropoda	Insecta	Resseliella	skuhravyorum			Y		Y	Y	?		?	?	T
Arthropoda	Insecta	Reticulitermes	flavipes				Y				?			T
Arthropoda	Insecta	Reticulitermes	lucifugus			Y								T
Arthropoda	Insecta	Reuteria	marqueti			Y	Y	Y	Y	?	N	N	Y	T
Ascomycota	Ascomycetes	Rhabdocline	pseudotsugae			Y	Y	Y	Y	N				T
Arthropoda	Insecta	Rhagium	inquisitor			Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Rhagoletis	cerasi		A Fruit Fly [	Y			Y				Y	T
Arthropoda	Insecta	Rhagoletis	completa				Y				?			T
Arthropoda	Insecta	Rhagoletis	meigenii		A Fruit Fly [	Y			Y	Y			Y	T
Arthropoda	Insecta	Rhagoletis	cingulata				Y		Y		?		N	T
Arthropoda	Insecta	Rhizoecus	cacticans			Y			Y	?			?	T
Arthropoda	Insecta	Rhizoecus	dianthi			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Rhizophagus	grandis			Y				?				T
Heterokontophyta	Bacillariophyceae	Rhizosolenia	indica			Y	Y		Y	Y	N		Y	M
Chordata	Actinopterygii	Rhodeus	amarus		Bitterling	Y	nat	nat	nat	Y	nat	nat	nat	F
Arthropoda	Insecta	Rhodobium	porosum			Y	Y		Y	?				T
Angiospermae	Eudicotyledoneae	Rhododendron	luteum		Yellow Azalea	Y	Y	Y	Y			Y	Y	T
Chordata	Aves	Rhodopechys	obsoleta		Desert Finch	Y				Y				T
Arthropoda	Insecta	Rhopalapion	longirostre				Y		Y		?		?	T
Arthropoda	Insecta	Rhopalomyia	chrysanthemi		Chrysanthemum Midge	Y	Y			N	?			T
Arthropoda	Insecta	Rhopalomyia	grossulariae		A Gall Midge	Y								T
Arthropoda	Insecta	Rhopalosiphoninus	latysiphon			Y	Y	Y	Y	?	?	?	?	T
Arthropoda	Insecta	Rhopalosiphum	insertum			Y	Y	Y	Y	?	Y	Y	Y	T
Arthropoda	Insecta	Rhopalosiphum	maidis			Y	Y	Y	Y	?	?	?	?	T
Arthropoda	Insecta	Rhopalosiphum	rufiabdominale		Rice root aphid	Y	Y			?				T
Arthropoda	Insecta	Rhopalosiphum	rufulum			Y			Y	?			Y	T
Angiospermae	Eudicotyledoneae	Rhus	typhina		Stag's-Horn Sumach	Y	Y	Y	Y		Y	Y	Y	T
Platyhelminthes	Turbellaria	Rhynchodemus	sylvaticus			Y				Y				M
Arthropoda	Insecta	Rhynchophorus	ferrugineus				Y				?			T
Arthropoda	Insecta	Rhyopsocus	disparilis			Y				?				T
Arthropoda	Insecta	Rhyopsocus	peregrinus			Y				?				T
Arthropoda	Insecta	Rhyparochromus	vulgaris			Y		Y	Y	?		Y	Y	T
Arthropoda	Insecta	Rhyzobius	forestieri				Y				?			T
Arthropoda	Insecta	Rhyzobius	lophanthae			Y	Y			Y	?			T
Arthropoda	Insecta	Rhyzopertha	dominica		Lesser Grain Borer	Y	Y	Y	Y	Y		Y	Y	T
Marchantiophyta	Marchantiopsida	Riccia	crystallina			Y	Y	Y	Y	Y	N	Y		T
Arthropoda	Insecta	Ripidius	pectinicornis						Y				?	T
Angiospermae	Eudicotyledoneae	Robinia	pseudoacacia		False Acacia	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Rodolia	cardinalis		Vedalia Ladybird	Y	Y			Y				T
Arthropoda	Insecta	Roeslerstammia	erxlebella		Copper Ermel	Y	Y	Y	N	Y	N	N	N	T
Angiospermae	Eudicotyledoneae	Rosa	rugosa		Japanese Rose	Y	Y	Y	Y	Y	Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Rudbeckia	laciniata		Coneflower	Y	Y	Y	Y		N	Y	Y	T
Arthropoda	Insecta	Rutherfordia	major				Y				?			T
Annelida	Polychaeta	Sabellaria	spinulosa		Ross worm	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Sacchiphantes	viridis			Y		Y	Y	Y		Y	N	T
Angiospermae	Monocotyledoneae	Sagittaria	latifolia		Duck-potato	Y	Y	Y	Y	?	?	?		F

Angiospermae	Monocotyledoneae	Sagittaria	rigida		Canadian Arrowhead	Y				?				F
Angiospermae	Monocotyledoneae	Sagittaria	subulata		Narrow-leaved Arrowhead	Y				?				F
Arthropoda	Insecta	Saissetia	coffeae			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Saissetia	oleae		Olive hemipherical scale	Y	Y		Y	?	?		Y	T
Arthropoda	Arachnida	Saitis	barbipes				Y	Y	Y		N	Y		T
Chordata	Amphibia	Salamandra	salamandra		Fire Salamander	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Chordata	Actinopterygii	Salmo	salar		Atlantic Salmon	Y, nat	nat	nat	nat	Y, nat	nat	nat	nat	F
Chordata	Actinopterygii	Salvelinus	alpinus		Atlantic charr	Y, nat	Y	N	Y	N	N	N	?	F
Chordata	Actinopterygii	Salvelinus	fontinalis		American Brook Trout	Y	Y	Y, Ex	Y	Y	Y	Y, Ex	Y	F
Pteridophyta	Pteridopsida	Salvinia	molesta		Giant Salvinia			Y	Y	N		Y	Y	F
Arthropoda	Insecta	Samia	cynthia				Y				N			T
Chordata	Actinopterygii	Sander	lucioperca		Pikeperch	Y	Y	Y	Y, nat	Y	Y	Y	Y, nat	F
Platyhelminthes	Trematoda	Sanguinicola	inermis			Y				Y				F
Arthropoda	Insecta	Saprinus	lugens				Y				?			T
Arthropoda	Insecta	Saprosites	mendax			Y				Y				T
Arthropoda	Insecta	Saprosites	natalensis			Y				Y				T
Chordata	Mammalia	Sarcophilus	harrisi		Tasmanian devil			Y				Y		T
Heterokontophyta	Phaeophyceae	Sargassum	muticum			Y	Y	Y	Y	Y	Y	Y	Y	M
Chordata	Aves	Sarkidiornis	melanotos		Comb Duck	Y		Y		Y		Y		F+T
Arthropoda	Insecta	Scaphoideus	titanus				Y				?			T
Arthropoda	Insecta	Scaptomyza	adusta		A Lesser Fruit Fly	Y	N	N	N					T
Arthropoda	Insecta	Scaptomyza	vittata		A Lesser Fruit Fly	Y	N	N	N	?				T
Arthropoda	Insecta	Sceliodes	laisalis		African Tomato Pearl	Y	N	N	N	Y	N	N	N	T
Arthropoda	Insecta	Sceliphron	caementarium				Y				N			T
Arthropoda	Insecta	Sceliphron	curvatum				Y				N			T
Arthropoda	Insecta	Sceliphron	deforme				Y				N			T
Arthropoda	Insecta	Schizolachnus	pineti		Grey Pine Needle Aphid	Y			Y	Y			N	T
Arthropoda	Arachnida	Schizotetranychus	bambusae				Y							T
Arthropoda	Insecta	Sciophila	fractinervis		A Fungus Gnat	Y	N	N	N					T
Arthropoda	Insecta	Scirtothrips	dorsalis			Y			Y					T
Arthropoda	Insecta	Scirtothrips	longipennis						Y					T
Chordata	Mammalia	Sciurotamias	davidianus		Père David's rock squirrel	N	N	Y?	N	N	N	Y?	N	T
Arthropoda	Insecta	Sclerocona	acutellus		Thatch Pearl	Y	Y	N	Y	Y	N	N	N	T
Arthropoda	Insecta	Scolytogenes	jalapae				Y				?			T
Arthropoda	Insecta	Scolytus	dimidiatus			Y								T
Arthropoda	Insecta	Scolytus	laevis			Y				N				T
Arthropoda	Insecta	Scolytus	pygmaeus		Pygmy Elm Bark Beetle	Y	Y	Y			Y	Y		T
Dinoflagellata	Dinophyceae	Scrippsiella	hangoei			Y				?				M
Bryozoa	Gymnolaemata	Scruparia	ambigua			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Scybalicus	oblongiusculus			Y				Y				T
Arthropoda	Insecta	Scymnus	impexus			Y	Y				N			T
Arthropoda	Insecta	Scymnus	nigrinus			Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Scymnus	suturalis			Y	Y	Y	Y	Y	Y	Y	Y	T
Porifera	Calcarea	Scypha	scaldiensis						Y				Y	M
Arthropoda	Insecta	Scyphophorus					Y				?			T
Arthropoda	Arachnida	Scytodes	thoracica		Spitting Spider	Y	Y	Y	Y	Y			Y	T
Arthropoda	Diplopoda	Sechellobolus	dictyonotus						Y				?	T
Arthropoda	Insecta	Sefrania	bleusei				Y				?			T
Lycopodiophyta	Selaginellopsida	Selaginella	kraussiana			Y	Y	Y		Y		Y		T
Mollusca	Gastropoda	Selenochlamys	ysbryda		Ghost Slug	Y				Y				T
Arthropoda	Arachnida	Selenops	radiatus					Y				Y		T
Arthropoda	Insecta	Semanotus	russicus			Y				?				T
Angiospermae	Eudicotyledoneae	Senecio	inaequidens		Narrow-Leaved Ragwort	Y	Y	Y	Y		Y	Y	Y	T
Ascomycota	Leotiomycetes	Septotis	podophyllina				Y		Y					T
Pinophyta	Pinopsida	Sequoia	sempervirens			Y	Y			Y	N			T
Pinophyta	Pinopsida	Sequoiadendron	giganteum			Y	Y		Y	Y	N		N	T
Arthropoda	Insecta	Serangium	parcesetosum				Y				?			T
Chordata	Aves	Serinus	canaria		Canary	Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Serinus	canicollis		Yellow-crowned Canary	Y								T
Chordata	Aves	Serinus	mozambicus		Yellow-fronted Canary	Y				Y				T
Chordata	Aves	Serinus	pusillus		Red-fronted Serin	Y								T
Chordata	Aves	Setophaga	ruticilla		American Redstart	N	Y							T
Chordata	Aves	Sicalis	flaveola		Saffron Finch	Y								T
Chordata	Actinopterygii	Silurus	glanis		European catfish	Y	Y	Y, nat	Y	Y	Y	Y, nat	Y	F
Arthropoda	Malacostraca	Sinelobus	stanfordi					Y	Y			Y	Y	M
Arthropoda	Insecta	Siphonatrophia	cupressi				Y				?			T

Arthropoda	Insecta	Sipyloidea	sipylus			Y				?				T
Arthropoda	Insecta	Sirex	areolatus			Y				?				T
Arthropoda	Insecta	Sirex	cyaneus			Y	Y		Y					T
Arthropoda	Insecta	Sirex	juvencus			Y				?				T
Arthropoda	Insecta	Sirex	noctilio			Y	nat	nat		?				T
Arthropoda	Insecta	Sitobion	alopecuri			Y			Y	?				T
Arthropoda	Insecta	Sitobion	luteum			Y	Y	Y		?				T
Arthropoda	Insecta	Sitobion	ptericolens			Y				?				T
Arthropoda	Insecta	Sitophilus	linearis				Y				?			T
Arthropoda	Insecta	Sitophilus	oryzae		Lesser Rice Weevil	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Sitophilus	zeamais		Greater Rice Weevil	Y	Y	Y		N				T
Arthropoda	Insecta	Sitotroga	cerealella		Angoumois Grain Moth	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Arachnida	Sitticus	pubescens			Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Collembola	Sminthurinus	trinotatus			Y	Y		Y	Y	N		N	T
Bryozoa	Gymnolaemata	Smittoidea	prolifica						Y				Y	M
Angiospermae	Eudicotyledoneae	Smyrnium	perfoliatum		Perfoliate Alexanders	Y		Y	Y			Y	Y	T
Arthropoda	Insecta	Soa	flaviterminata			Y				?				T
Angiospermae	Eudicotyledoneae	Solanum	triflorum		Small Nightshade	Y	Y	Y	Y			Y	Y	T
Arthropoda	Insecta	Solenopotes	muntiacus anoplura			Y				?				T
Angiospermae	Eudicotyledoneae	Solidago	canadensis		Canadian Goldenrod	Y	Y	Y	Y	Y	Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Solidago	gigantea		Early Goldenrod	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Maxillopoda	Solidobalanus	fallax		barnacle	Y	Y	Y		Y	Y	Y		M
Rhodophyta	not assigned	Solieria	chordalis			Y				Y				M
Rhodophyta	not assigned	Solieria	filiformis			Y				Y				M
Arthropoda	Insecta	Somotrichus	unifasciatus				Y				?			T
Angiospermae	Eudicotyledoneae	Sorbaria	sorbifolia		Sorbaria	Y	Y	Y	Y	Y	Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Sorbaria	tomentosa		Himalayan Sorbaria	Y	Y	Y	Y	Y	Y	Y		T
Arthropoda	Insecta	Spalangia	albip						Y					T
Annelida	Clitellata	Sparganophilus	tamensis			Y				Y				F
Angiospermae	Monocotyledoneae	Spartina	alterniflora		Smooth Cord-grass	Y	Y		Y	Y	Y			T+M
Angiospermae	Monocotyledoneae	Spartina	anglica		Common Cord-grass	Y	Y	Y	Y	Y	Y	Y	Y	T+M
Angiospermae	Monocotyledoneae	Spartina	pectinata		Prairie Cord-grass	Y				Y				T+M
Angiospermae	Monocotyledoneae	Spartina	townsendii		Townsend's Cord-Grass	Y	Y	Y	Y	Y	Y	Y	Y	T+M
Arthropoda	Insecta	Specularius	impressithorax						Y				?	T
Chordata	Amphibia	Speleomantes	ambrosii		French cave salamander		Y				N			F+T
Arthropoda	Arachnida	Spermophora	senoculata				Y	Y				Y		T
Arthropoda	Insecta	Sphaericus	gibboides			Y				Y				T
Arthropoda	Collembola	Sphaeridia	pumilis			Y	Y	Y	Y	Y	N	N		T
Marchantiophyta	Marchantiopsida	Sphaerocarpos	michelii			Y	Y			Y				T
Marchantiophyta	Marchantiopsida	Sphaerocarpos	texanus			Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Malacostraca	Sphaeroma	walkeri				Y				N			F
Arthropoda	Insecta	Sphegina	sibirica		A Hoverfly	Y			Y	N			Y	T
Arthropoda	Insecta	Sphodrus	leucophthalmus			Y		Y		Y		N		T
Arthropoda	Collembola	Sphyrotheca	multifasciata			Y				Y				T
Nematoda	Secernentea	Spiculopteragia	asymmetrica						Y				?	T
Arthropoda	Insecta	Spilococcus	mamillariae			Y	Y			?	?			T
Arthropoda	Maxillopoda	Spiophanicola	spinosus		parasitic copepod	Y				N				M
Angiospermae	Eudicotyledoneae	Spiraea	alba		Pale Bridewort	Y	Y	Y	Y	Y	?	Y	Y	T
Angiospermae	Eudicotyledoneae	Spiraea	billardii		Billard's Bridewort	Y	Y	Y	Y			Y	Y	T
Angiospermae	Eudicotyledoneae	Spiraea	douglasii		Steeplebush	Y	Y	Y	Y	Y	Y	Y	Y	T
Angiospermae	Eudicotyledoneae	Spiraea	salicifolia		Spiraea Bridewort group	Y	Y	Y				Y		T
Annelida	Polychaeta	Spirorbis	marioni				Y				N			M
Mollusca	Bivalvia	Spisula	solidissima		Atlantic surf clam	Y	Y		Y	N	N		Y	M
Arthropoda	Insecta	Spodoptera	eridania		Southern Army Worm	N	N	N	Y	N	N	N	N	T
Arthropoda	Insecta	Spodoptera	litura		Asian Cotton Leafworm	Y	Y		Y, Er	N	N		N	T
Arthropoda	Insecta	Spoladea	recurvalis		Hawaiian beet webworm	N	Y	N	Y	N	N	N	N	T
Arthropoda	Insecta	Stagona	pini		Pine Root Aphid	Y				?				T
Angiospermae	Magnoliopsida	Staphylea	pinnata		Bladdernut	Y	Y	Y	Y		Y			T
Arthropoda	Arachnida	Steatoda	grossa		Cupboard spider	Y	Y	Y	Y	Y		N	Y	T
Arthropoda	Arachnida	Steatoda	nobilis		Biting spider	Y	Y			Y				T
Arthropoda	Arachnida	Steatoda	paykulliana					Y				Y		T
Arthropoda	Arachnida	Steatoda	triangulosa		Triangulate Cobweb spider	Y	Y	Y	Y	N		Y	Y	T
Arthropoda	Insecta	Stegobium	paniceum		Biscuit Beetle	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Stelidota	geminata				Y				?			T
Arthropoda	Insecta	Stenchaetothrips	spinalis				Y				?			T
Arthropoda	Insecta	Stenchaetothrips	biformis			Y			Y					T

Arthropoda	Insecta	Stenocrotaphus	gigas			Y	Y			?	?			T
Arthropoda	Insecta	Stenodiplosis	sorghicola				Y				?			T
Arthropoda	Insecta	Stenopelmus	rufinasus		Azolla Weevil	Y	Y	Y	Y	Y	?	?	?	F
Arthropoda	Insecta	Stenoptilia	millieridactyla		Saxifrage Plume	Y	Y			N				T
Arthropoda	Malacostraca	Stenothoe	gallensis				Y				N			M
Arthropoda	Insecta	Stephanitis	oberti					Y	Y				N	T
Arthropoda	Insecta	Stephanitis	pyrioides				Y		Y					T
Arthropoda	Insecta	Stephanitis	rhododendri		Rhododendron Lacebug	Y	Y	Y	Y	Y	?	Y	N	T
Arthropoda	Insecta	Stephanitis	takeyai		Andromeda Lacebug	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Stictocephala	bisonia		Buffalo treehopper		Y	Y	Y				N	T
Arthropoda	Arachnida	Stigmaeopsis	celarius			Y	Y	Y	Y					T
Arthropoda	Diplopoda	Stigmatogaster	souletina			Y				Y				T
Arthropoda	Insecta	Stigmella	pyri		Pear-tree Pigmy	Y	Y	Y	Y	Y			Y	T
Arthropoda	Insecta	Stigmella	speciosa		Barred Sycamore Pigmy	Y	Y		Y	Y	N		Y	T
Arthropoda	Insecta	Stigmella	suberivora		Holm-oak Pigmy	Y	Y	N	N	Y	N	N	N	T
Annelida	Polychaeta	Streblospio	benedicti			Y	Y	Y	Y	Y	Y	Y	Y	M
Chordata	Aves	Streptopelia	decaocto		Collared Dove	Y	Y	Y	Y	Y	Y	Y	Y	T
Chordata	Aves	Streptopelia	risoria		Barbary Dove	Y		Y	Y	Y		Y	Y	T
Chordata	Aves	Streptopelia	senegalensis		Laughing Dove	Y	Y			Y				T
Arthropoda	Insecta	Stricticomus	tobias			Y	Y	Y	Y	Y			Y	T
Arthropoda	Insecta	Strobilomyia	infrequens		An Anthomyiid Fly	Y		Y	Y	Y		?	?	T
Arthropoda	Insecta	Strobilomyia	laricicola			Y		Y	Y	Y		?	?	T
Arthropoda	Insecta	Strobilomyia	melania		An Anthomyiid Fly	Y		Y	Y	Y		?	?	T
Basidiomycota	Agaricomycetes	Stropharia	aurantiaca			Y	Y	Y	Y	Y		Y	N	T
Arthropoda	Insecta	Strumigenys	rogeri			Y				?				T
Chordata	Aves	Struthio	camelus		Ostrich	Y			Y				Y	T
Arthropoda	Insecta	Sturmia	bella		A Tachinid Fly	Y	Y	Y	Y	Y	?	?	Y	T
Chordata	Aves	Sturnus	cineraceus		White-cheeked Starling	Y				Y				T
Chordata	Aves	Sturnus	contra		Pied Starling	Y				Y				T
Chordata	Aves	Sturnus	pagodarum		Brahminy Myna	Y								T
Chordata	Aves	Sturnus	roseus		Rose-Coloured Starling	Y	Y	Y	Y	Y		Y	Y	T
Chordata	Aves	Sturnus	sinensis		White-shouldered Starling	Y				Y				T
Chordata	Aves	Sturnus	sturninus		Daurian Starling	Y				N				T
Chordata	Ascidiacea	Styela	clava			Y	Y	Y	Y	Y	Y	Y	Y	M
Platyhelminthes	Turbellaria	Stylochus	flevensis						Y				Y	M
Porifera	Demospongiae	Suberites	massa			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Supella	longipalpa			Y	Y		Y	Y	N		Y	T
Arthropoda	Insecta	Syagrius	intrudens		Fern Weevil	Y				Y				T
Annelida	Polychaeta	Syllidia	armata			Y	Y		Y	Y	Y		Y	M
Annelida	Polychaeta	Syllis	gracilis			Y	Y	Y	Y	Y	Y	Y	Y	M
Angiospermae	Eudicotyledoneae	Symphoricarpos	albus		Snowberry	Y	Y	Y	Y		Y	Y	Y	T
Arthropoda	Malacostraca	Synarmadillo	pallidus						Y				Y	T
Arthropoda	Insecta	Synclita	obliteralis		Waterlily leafcutter	Y	N	N	N	N	N	N	N	F+T
Arthropoda	Malacostraca	Synidotea	laevidorsalis				Y	Y			N	Y		F+T
Arthropoda	Malacostraca	Synidotea	laticauda					Y				Y		M
Arthropoda	Insecta	Synophropsis	lauri		Bay Leafhopper	Y				?				T
Bryophyta	Bryopsida	Syntrichia	amplexa			Y				Y				F+T
Arthropoda	Malacostraca	Synurella	ambulans					Y				Y		F
Chordata	Aves	Syrmaticus	reevesii		Reeves's Pheasant	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Tachycines	asynamorus			Y	Y		Y					T
Arthropoda	Insecta	Tachystola	acroxantha		Ruddy Streak	Y	N	N	N	Y	N	N	N	T
Chordata	Aves	Tadorna	cana		Cape Shelduck	Y		Y	Y	Y		Y	Y	F+T
Chordata	Aves	Tadorna	ferruginea		Ruddy Shelduck	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Chordata	Aves	Tadorna	radjah		Radjah Shelduck	Y			Y	N			Y	F+T+M
Chordata	Aves	Tadorna	tadornoides		Australian Shelduck	Y		Y	Y	Y		Y	Y	F+T
Chordata	Aves	Tadorna	variegata		Paradise Shelduck	Y		Y	Y	Y		N	Y	F+T+M
Arthropoda	Insecta	Taeniothrips	eucharii						Y					T
Arthropoda	Insecta	Takecallis	arundicolens			Y	Y			Y	?			T
Arthropoda	Insecta	Takecallis	arundinariae			Y				Y				T
Arthropoda	Insecta	Takecallis	taiwana			Y	Y			?	?			T
Chordata	Mammalia	Tamias	sibiricus		Siberian Chipmunk	Y, Ex	Y	Y	Y	Y, Ex	Y	Y	Y	T
Arthropoda	Malacostraca	Tanais	dulongii			Y	Y	Y	Y	Y	Y	Y	Y	M
Mollusca	Gastropoda	Tandonia	budapestensis		Budapest Slug	Y	nat	Y, nat	Y, nat	Y	nat	Y, nat	Y, nat	T
Mollusca	Gastropoda	Tandonia	rustica			Y	Y	N	Y	Y	N	N	N	T
Mollusca	Gastropoda	Tandonia	sowerbyi		Keeled Slug	Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Taomyia	marshalli		A Fruit Fly [	Y	N	N	N	Y				T

Mollusca	Bivalvia	Tapes	philippinarum		Manila clam	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Tapinella	castanea			Y				?				T
Arthropoda	Insecta	Tapinoma	melanocephalum			Y	Y	Y	Y					T
Chordata	Aves	Tarsiger	cyanurus		Red-Flanked Bluetail	Y	Y	Y	Y	Y		Y	Y	T
Annelida	Clitellata	Tasserkidrilus	americanus					Y				Y		F
Arthropoda	Insecta	Taylorilygus	apicalis				Y				?			T
Arthropoda	Insecta	Technomyrmex	albipes						Y					T
Arthropoda	Insecta	Technomyrmex	vitiensis					Y				Y		T
Arthropoda	Arachnida	Tegenaria	agrestis			Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Arachnida	Tegenaria	atrica		Giant House spider	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Arachnida	Tegenaria	domestica		Common House Spider	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Arachnida	Tegenaria	ferruginea			Y		Y	Y	N		Y	Y	T
Arthropoda	Arachnida	Tegenaria	gigantea			Y				Y				T
Arthropoda	Arachnida	Tegenaria	saeva		House Spider	Y	Y	Y		Y				T
Arthropoda	Insecta	Telmatogeton	japonicus			Y	Y	Y	Y		Y	Y		T
Arthropoda	Insecta	Telopes	heydeni				Y				?			T
Arthropoda	Insecta	Tenaga	nigripunctella		Black-spot Clothes Moth	Y	Y	N	Y	Y	N	N	N	T
Arthropoda	Insecta	Tenebrio	obscurus		Dark Mealworm Beetle	Y	Y	Y	Y	Y	N	?	?	T
Arthropoda	Insecta	Tenebroides	mauritanicus			Y			Y	Y				T
Arthropoda	Insecta	Tenthecoris	bicolor			Y				?				T
Arthropoda	Insecta	Tenthecoris	orchidearum			Y				?				T
Arthropoda	Arachnida	Tenuipalpus	caudatus				Y							T
Arthropoda	Arachnida	Tenuipalpus	pacificus			Y			Y					T
Arthropoda	Insecta	Tephritis	divisa		A Fruit Fly [	Y	N	N	N	Y				T
Arthropoda	Insecta	Tephritis	matricariae		A Fruit Fly [	Y			Y	Y			?	T
Arthropoda	Insecta	Tephritis	praecox		A Fruit Fly [	Y			Y	?			Y	T
Chordata	Aves	Terathopius	ecaudatus		Bateleur	Y				Y				T
Mollusca	Bivalvia	Teredo	navalis		Common shipworm	Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Terellia	fuscicornis		A Fruit Fly [	Y			N	?				T
Arthropoda	Insecta	Teropalpus	unicolor			Y				Y				T
Arthropoda	Insecta	Tesarius	caelatus			Y				N				T
Mollusca	Gastropoda	Testacella	haliotidea		Common Shelled Slug	Y	Y	Y	Y	Y	N	?	Y	T
Mollusca	Gastropoda	Testacella	maugei		Mauge's Shelled Slug	Y	Y			Y	N			T
Mollusca	Gastropoda	Testacella	scutulum		Golden Shelled Slug	Y				Y				T
Chordata	Reptilia	Testudo	graeca				Y	Y			N	Y		T
Chordata	Reptilia	Testudo	hermanni				Y	Y			N	N		T
Arthropoda	Insecta	Tetracnemoidea	brevicornis				Y				?			T
Arthropoda	Insecta	Tetramesa	albomaculatum			Y				?				T
Arthropoda	Insecta	Tetramorium	caldarium			Y								T
Arthropoda	Insecta	Tetramorium	insolens				Y		Y					T
Arthropoda	Insecta	Tetramorium	simillimum			Y	Y							T
Arthropoda	Insecta	Tetramorium	bicarinatum						Y					T
Arthropoda	Insecta	Tetranecmoidea	peregrina				Y				?			T
Arthropoda	Arachnida	Tetranychus	evansi				Y							T
Arthropoda	Arachnida	Tetranychus	mcdanieli				Y							T
Chordata	Actinopterygii	Tetraodon	fluviatilis		green pufferfish	N		Y		N		Y		M+F
Arthropoda	Insecta	Tetropium	castaneum		Bark spruce longhorn beetle	Y	Y	Y	Y	Y	Y	Y	Y	T
Heterokontophyta	Bacillariophyceae	Thalassiosira	punctigera			Y	Y	Y	Y		Y	Y		M
Arthropoda	Insecta	Thaumaglossa	rufocapillata						Y				?	T
Arthropoda	Insecta	Thaumatotibia	leucotreta		False Codling Moth	Y	N	N	Y	N	N	N	N	T
Arthropoda	Insecta	Thaumetopoea	processionea		Oak Processionary Moth	Y	Y	Y	Y	Y	N	Y	Y	T
Mollusca	Gastropoda	Theba	pisana		White Snail [	Y	Y	Y	Y	Y	Y	Y	Y	T
Cnidaria	Hydrozoa	Thecocodium	brieni				Y		Y		N		Y	M
Arthropoda	Insecta	Thecturota	marchii			Y		Y		Y		Y		T
Arthropoda	Insecta	Thera	britannica		Spruce Carpet	Y	Y	Y	Y	Y	N	N	N	T
Chordata	Aves	Theristicus	caudatus		Buff-necked Ibis	Y								T
Arthropoda	Insecta	Thes	bergrothi			Y				Y				T
Arthropoda	Insecta	Thoracochaeta	johnsoni			Y			N	?				T+M
Arthropoda	Insecta	Thoracochaeta	seticosta			Y				?				T+M
Arthropoda	Insecta	Thorictodes	heydeni			Y				?				T
Chordata	Aves	Threskiornis	aethiopicus		Sacred Ibis	Y	Y	Y	Y	Y	N	Y	Y	F+T
Chordata	Aves	Threskiornis	spinicollis		Straw-necked Ibis	Y		Y				Y		T
Arthropoda	Insecta	Thripobius	javae				Y		Y		?		?	T
Arthropoda	Insecta	Thrips	australis				Y				?			T
Arthropoda	Insecta	Thrips	hawaiiensis				Y				?			T
Arthropoda	Insecta	Thrips	simplex			Y	Y		Y					T

Arthropoda	Insecta	Thrips	palmi						Y					T
Pinophyta	Pinopsida	Thuja	plicata			Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Thylodrias	contractus		Odd Beetle	Y	Y							T
Chordata	Actinopterygii	Thymallus	thymallus		Grayling	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	F
Arthropoda	Insecta	Tinea	dubiella		Buff Clothes Moth	Y	Y	N	Y	Y		N	Y	T
Arthropoda	Insecta	Tinea	flavescentella		Plain Clothes Moth	Y	Y	N	N	N		N	N	T
Arthropoda	Insecta	Tinea	murariella		Casemaking Clothes Moth	Y	Y	N	N	N	N	N	N	T
Arthropoda	Insecta	Tinea	pallescentella		Large Pale Clothes Moth	Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Tinea	pellionella		Case-bearing Clothes Moth	Y	Y	N	Y	Y	N	N	Y	T
Arthropoda	Insecta	Tinea	translucens		Beaked Clothes Moth	Y	Y	N	N	N		N	N	T
Arthropoda	Insecta	Tineola	bisselliella		Common Clothes Moth	Y	Y	Y	Y	Y	N	N	N	T
Arthropoda	Insecta	Tinocallis	kahawaluokalani				Y				?			T
Arthropoda	Insecta	Tinocallis	nevskyi		Gold Elm Aphid	Y		Y	Y	?				T
Arthropoda	Insecta	Tinocallis	takachihoensis				Y				?			T
Arthropoda	Insecta	Tinocallis	ulmiparvifoliae			Y				?				T
Arthropoda	Insecta	Tinocallis	zelkowae			Y	Y			?	?			T
Arthropoda	Insecta	Tinocallis	saltans				Y		Y		?			T
Mollusca	Bivalvia	Tiostrea	chilensis		Chilean oyster		Y				N			M
Mollusca	Bivalvia	Tiostrea	lutaria		New Zealand flat oyster	Y				N				M
Arthropoda	Insecta	Topana	cincticornis				Y				?			T
Bryophyta	Bryopsida	Tortula	freibergii			Y								T
Arthropoda	Insecta	Torymus	sinensis				Y				N			T
Arthropoda	Insecta	Toxoptera	aurantii			Y	Y			Y	?			T
Arthropoda	Maxillopoda	Tracheliastes	maculatus			Y			Y	N			Y	F
Arthropoda	Maxillopoda	Tracheliastes	polycolpus			Y				N				F
Chordata	Reptilia	Trachemys	scripta		Red-eared Terrapin	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Arthropoda	Insecta	Trechicus	nigriceps			Y	Y	Y	Y	?	?	?	?	T
Arthropoda	Insecta	Trechus	subnotatus			Y				Y				T
Arthropoda	Insecta	Tremex	columba			Y				?				T
Arthropoda	Arachnida	Triaeris	stenaspis				Y	Y				Y		T
Arthropoda	Insecta	Trialeurodes	vaporariorum			Y	Y		Y	Y	?		Y	T
Arthropoda	Insecta	Tribolium	castaneum		Rust-red Flour Beetle	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Tribolium	confusum		Confused Flour Beetle	Y	Y	Y	Y	Y	?	Y	Y	T
Arthropoda	Insecta	Tribolium	destructor		Dark Flour Beetle	Y	Y	Y	Y	?	?	?	?	T
Bryozoa	Gymnolaemata	Tricellaria	inopinata			Y	Y	Y	Y	Y	Y	Y	Y	M
Arthropoda	Insecta	Trichiusa	immigrata			Y	Y	Y	Y	Y				T
Arthropoda	Insecta	Trichodectes	canis						Y					T
Arthropoda	Insecta	Trichogramma	achaeae				Y				?			T
Arthropoda	Insecta	Trichogramma	brassicae				Y		Y		?		?	T
Arthropoda	Insecta	Trichogramma	dendrolimi				Y				?			T
Arthropoda	Insecta	Trichogramma	perkinsi				Y				?			T
Arthropoda	Insecta	Trichophaga	tapetzella		Tapestry Moth	Y	Y	Y	Y	Y	N	N	Y	T
Arthropoda	Insecta	Trichopoda	pennipes				Y				?			T
Arthropoda	Insecta	Trichopsocus	clarus			Y			Y	Y			?	T
Arthropoda	Insecta	Trichopsocus	dalii			Y		Y		?		?		T
Arthropoda	Malacostraca	Trichorhina	tomentosa			Y	Y	Y	Y	N	Y		Y	F
Arthropoda	Insecta	Trichosiphonaphis	polygonifoliae			Y	Y			?				T
Arthropoda	Insecta	Tricorynus	tabaci				Y				?			T
Arthropoda	Insecta	Trigonogenius	globulus		Globular Spider Beetle	Y				N				T
Arthropoda	Insecta	Trimenopon	hispidum				Y		Y					T
Chordata	Actinopterygii	Trinectes	maculatus		Hogchoker	N		N	Y	N		N	N	M
Arthropoda	Insecta	Trinophylum	cribratum			Y				Y				T
Arthropoda	Insecta	Trionymus	angustifrons				Y				?			T
Arthropoda	Insecta	Trionymus	diminutus			Y				?				T
Arthropoda	Insecta	Trioza	alacris		Bay Sucker	Y	Y	Y	Y	N	N	Y	Y	T
Arthropoda	Insecta	Trioza	vitreoradiata		Pittosporum Psyllid	Y	Y			Y	?			T
Arthropoda	Arachnida	Trisetacus	chamaecypari			Y								T
Chordata	Amphibia	Triturus	carnifex		Italian Crested Newt	Y	Y	Y	Y	Y	Y	Y	Y	F+T
Chordata	Amphibia	Triturus	marmoratus				Y	Y			Y			F+T
Arthropoda	Insecta	Trochiscococcus	speciosus			Y	Y				?			T
Mollusca	Gastropoda	Trochoidea	elegans		Top Snail	Y	nat	Y, nat		Y	nat	Y, nat		T
Arthropoda	Insecta	Trogium	pulsatorium						Y					T
Arthropoda	Insecta	Trogoderma	glabrum		Coloured Cabinet Beetle		Y	Y			N	Y		T
Arthropoda	Insecta	Trogoderma	granarium		Khapra Beetle	Y				Y				T
Arthropoda	Insecta	Trogoderma	inclusum		Large Cabinet Beetle	Y								T
Arthropoda	Insecta	Trogoderma	insulare				Y				?			T

Arthropoda	Insecta	Trogoderma	megatomoides				Y		Y		?		?	T
Arthropoda	Insecta	Trogoderma	variabile		Warehouse beetle [	Y								T
Arthropoda	Insecta	Trogoderma	angustum					Y	Y			Y	Y	T
Arthropoda	Insecta	Tropideres	dorsalis				Y				?			T
Arthropoda	Insecta	Tropidosteptes	pacificus						Y					T
Pinophyta	Pinopsida	Tsuga	heterophylla			Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Tuberocephalus	higansakurae	hainnevilleae			Y				?			T
Annelida	Clitellata	Tubificoides	heterochaetus			Y		Y	Y	Y		Y	Y	M+F
Annelida	Clitellata	Tubificoides	pseudogaster			Y			Y	Y			Y	M
Arthropoda	Insecta	Tupiocoris	rhododendri			Y		Y	Y	Y			N	T
Arthropoda	Insecta	Tuponia	brevirostris			Y				?				T
Arthropoda	Insecta	Tuponia	hippophaes				Y	Y			N			T
Arthropoda	Insecta	Tuponia	mixticolor			Y				Y				T
Chordata	Aves	Turdus	kessleri		Kessler's Thrush	Y				N				T
Chordata	Aves	Turdus	migratorius		American Robin	Y				Y				T
Arthropoda	Insecta	Tuta	absoluta			Y	Y		Y	?	?		N	T
Nematoda	Secernentea	Tylenchorhynchus	claytoni		Stunt Nematode	Y			Y	Y			?	T
Platyhelminthes	Trematoda	Tylodelphys	clavata						Y					M
Arthropoda	Arachnida	Uloborus	plumipes		Garden Centre spider	Y		Y	Y	Y			Y	T
Chlorophyta	Ulvophyceae	Ulva	fasciata				Y				N			M
Chordata	Actinopterygii	Umbra	pygmaea		Eastern mudminnow	N	Y	Y	Y	N	?	Y	Y	F
Arthropoda	Insecta	Unaspis	euonymi			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Unaspis	yanonensis				Y				?			T
Arthropoda	Diplopoda	Unciger	foetidus			Y				Y				T
Chordata	Aves	Uragus	sibiricus		Long-tailed Rosefinch	Y		Y	Y	Y		Y	Y	T
Arthropoda	Insecta	Urocerus	californicus			Y				?				T
Arthropoda	Insecta	Urocerus	gigas			Y				?				T
Arthropoda	Insecta	Urocerus	albicornis			Y			Y					T
Chordata	Aves	Urocissa	erythrorhyncha		Red-billed Blue Magpie	Y			Y				Y	T
Platyhelminthes	Trematoda	Urocleidus	principalis			Y				Y				M
Arthropoda	Insecta	Uroleucon	erigeronense			Y	Y	Y	Y	?				T
Arthropoda	Insecta	Urophorus	humeralis				Y				?			T
Mollusca	Gastropoda	Urosalpinx	cinerea		American tingle, American oyster drill	Y	Y	Y	Y	Y	N	Y	Y	M+F
Arthropoda	Arachnida	Urozelotes	rusticus			Y				Y				T
Arthropoda	Insecta	Utamphorophora	humboldti			Y	Y			?				T
Angiospermae	Eudicotyledoneae	Vallisneria	spiralis		Tapegrass	Y	Y	Y	Y			N		F
Arthropoda	Arachnida	Varroa	destructor		Varroa Mite	Y	Y	Y	Y	Y		Y	Y	T
Arthropoda	Arachnida	Varroa	jacobsoni		mite, parasitises bees			Y				Y		T
Arthropoda	Malacostraca	Venezillo	parvus			Y			Y				Y	F
Annelida	Polychaeta	Vermiliopsis	striaticeps				Y			N	N			M
Bryozoa	Gymnolaemata	Victorella	pavida		Trembling Sea-mat	Y	Y	Y	Y	Y	Y	Y	Y	M+F
Chordata	Aves	Vidua	macroura		Pin-tailed Whydah	Y		Y	Y	Y		Y	Y	T
Chordata	Actinopterygii	Vimba	vimba		Vimba bream	N	Y	Y, N	Y	N	Y	Y, N	Y	F
Arthropoda	Insecta	Viridicerus	ustulatus			Y			Y	Y			Y	T
Arthropoda	Insecta	Viteus	vitifoliae				Y				?			T
Arthropoda	Insecta	Vryburgia	amaryllidis			Y	Y		Y	?	?		?	T
Arthropoda	Insecta	Vryburgia	brevicruris			Y	Y			?	Y			T
Arthropoda	Insecta	Vryburgia	rimariae				Y				?			T
Arthropoda	Insecta	Wagneripteryx	germari			Y			Y	Y			N	T
Arthropoda	Insecta	Wahlgreniella	arbuti			Y	Y		Y	?				T
Arthropoda	Insecta	Wahlgreniella	nervata			Y	Y	Y		?				T
Bryozoa	Gymnolaemata	Walkeria	uva			Y	Y		Y	Y	Y		N	M
Arthropoda	Insecta	Wesmaelius	ravus			Y				?				T
Rhodophyta	not assigned	Womersleyella	setacea				Y							M
Angiospermae	Eudicotyledoneae	Xanthium	strumarium		Cocklebur	Y	Y	Y	Y			Y	Y	T
Chordata	Aves	Xanthocephalus	xanthocephalus		Yellow-headed Blackbird	Y				Y				T
Arthropoda	Insecta	Xanthogaleruca	luteola			Y								T
Arthropoda	Insecta	Xanthorhoe	biriviata		Balsam Carpet	Y	Y	Y	Y	Y	Y	Y	Y	T
Arthropoda	Insecta	Xenopsylla	brasiliensis			Y				?				T
Arthropoda	Insecta	Xenopsylla	cheopis	cheopis		Y	Y			?	?			T
Mollusca	Bivalvia	Xenostrobus	securis		Black pigmy mussel		Y				N			M
Arthropoda	Insecta	Xeris	spectrum			Y				?				T
Mollusca	Gastropoda	Xerosecta	cespitum				nat	Y			N	Y		T
Nematoda	Adenophorea	Xiphinema	coxi		Dagger Nematode	Y				Y				F
Nematoda	Adenophorea	Xiphinema	italiae				Y				N			T
Nematoda	Adenophorea	Xiphinema	pachtaicum		Dagger Nematode	Y				Y				F

Nematoda	Adenophorea	Xiphinema	rivesi				Y				N			T
Nematoda	Adenophorea	Xiphinema	rivesi				Y							T
Nematoda	Adenophorea	Xiphinema	vuittenezi		Dagger Nematode	Y	Y		Y		?		?	F
Nematoda	Adenophorea	Xiphinema	diversicaudatum			Y	Y	Y	Y	?	?	?	?	T
Arthropoda	Insecta	Xylaplothrips	subterraneus						Y					T
Arthropoda	Insecta	Xyleborinus	attenuatus						Y				?	T
Arthropoda	Insecta	Xyleborus	pfeilii				Y				?			T
Arthropoda	Insecta	Xyleborus	alni						Y					T
Arthropoda	Insecta	Xyleborus	bodoanus						Y					T
Arthropoda	Insecta	Xyleborus	germanus				Y	Y	Y				Y	T
Arthropoda	Insecta	Xylocoris	afer			Y				?				T
Arthropoda	Insecta	Xylocoris	flavipes			Y	Y		Y	Y	Y		Y	T
Arthropoda	Insecta	Xylographus	bostrychoides				Y				?			T
Arthropoda	Insecta	Xylosandrus	germanus				Y	Y	Y		N			T
Arthropoda	Insecta	Xylosandrus	morigerus		Brown coffee twig beetle	Y	Y							T
Arthropoda	Insecta	Xylota	caeruleiventris		A Hoverfly	Y			N	?				T
Arthropoda	Insecta	Xylotrechus	stebbingi				Y				?			T
Arthropoda	Insecta	Yponomeuta	malinellus		Apple Ermine	Y	Y	Y	Y	Y	N	Y	Y	T
Arthropoda	Insecta	Yuccaborus	frontalis						Y				?	T
Arthropoda	Insecta	Zabrotes	subfasciatus				Y		Y		?		?	T
Chordata	Reptilia	Zamenis	longissimus		Aesculapian Snake	Y	Y			Y	N			T
Arthropoda	Arachnida	Zodarion	rubidum			Y		Y		N				T
Chordata	Aves	Zonotrichia	albicollis		White-throated Sparrow	Y				Y				T
Chordata	Aves	Zonotrichia	capensis		Rufous-collared Sparrow	Y			Y				Y	T
Chordata	Aves	Zonotrichia	leucophrys		White-Crowned Sparrow	Y	Y							T
Chordata	Aves	Zoothera	sibirica		Siberian Thrush	Y	Y			Y				T
Arthropoda	Insecta	Zophodia	grossulariella		Gooseberry Knot-horn	Y	Y	Y	Y	N	N	N	N	T
Arthropoda	Arachnida	Zoropsis	spinimana					Y				Y		T
Chordata	Aves	Zosterops	erythropleura		Chestnut-flanked White-eye	Y								T
Chordata	Aves	Zosterops	japonicus		Japanese White-eye	Y								T
Chordata	Aves	Zosterops	palpebrosus		Oriental White-eye	Y								T
Arthropoda	Insecta	Zygina	nivea			Y	Y			Y	?			T
Arthropoda	Insecta	Zyginella	pulchra			Y		Y	Y	Y		N	Y	T
Arthropoda	Insecta	Zygogramma	piceicollis						Y					T
Arthropoda	Arachnida	Seothyra	perelegans				Y							T
Arthropoda	Arachnida	Sosticus	loricatus				Y							T
Arthropoda	Arachnida	Mermessus	trilobatus					Y				Y		T
Arthropoda	Arachnida	Ischnothyreus	lymphaseus				Y							T
Arthropoda	Arachnida	Smeringopus	pallidus				Y	Y						T
Arthropoda	Arachnida	Menemerus	bivittatus			Y	Y							T
Arthropoda	Arachnida	Panysinus	nicholsoni				Y							T
Arthropoda	Arachnida	Scytodes	venusta						Y					T
Arthropoda	Arachnida	Loxosceles	rufescens				Y		Y					T
Arthropoda	Arachnida	Tychicus	longipes						Y					T
Arthropoda	Arachnida	Chrysso	spiniventris						Y					T
Arthropoda	Arachnida	Bassaniana	versicolor				Y							T
Arthropoda	Arachnida	Aceria	ligustri					Y						T
Arthropoda	Arachnida	Aceria	petanovicae			Y								T
Arthropoda	Arachnida	Epitrimerus	cupressi				Y							T
Arthropoda	Arachnida	Tetranychus	kanzawai					Y						T
Arthropoda	Arachnida	Argas	reflexus			Y	Y	Y		Y	Y			T
Arthropoda	Arachnida	Aceria	loewi			Y	Y							T
Arthropoda	Arachnida	Aculus	hippocastani				Y							T
Arthropoda	Arachnida	Hyalomma	scupense				Y							T
Arthropoda	Arachnida	Rhipicephalus	sanguineus			Y		Y	Y	Y				T
Arthropoda	Arachnida	Trisetacus	laricis			Y								T
Arthropoda	Arachnida	Amblyseius	degenerans			Y								T
Arthropoda	Malacostraca	Burmoniscus	meeusei			Y								T
Arthropoda	Malacostraca	Styloniscus	spinosus			Y								T
Arthropoda	Malacostraca	Nagurus	nanus			Y								T
Arthropoda	Malacostraca	Miktoniscus	linearis			Y				N				T
Arthropoda	Malacostraca	Brevitalitrus	hortulanus			Y			Y					M
Arthropoda	Malacostraca	Talitroides	alluaudi			Y	Y	Y	Y					T
Arthropoda	Malacostraca	Talitroides	topitotum			Y			Y					T
Arthropoda	Diplopoda	Allopauropus	pseudomillotianus				Y							T
Arthropoda	Diplopoda	Hanseniella	caldaria			Y	Y							T

Arthropoda	Diplopoda	Mecistocephalus	guildingii			Y	Y							T
Arthropoda	Diplopoda	Tygarrup	javanicus			Y								T
Arthropoda	Diplopoda	Cryptops	doriae			Y								T
Arthropoda	Diplopoda	Scolopendra	gigantea			Y								T
Arthropoda	Diplopoda	Scolopendra	morsitans			Y								T
Arthropoda	Diplopoda	Scolopendra	subspinipes			Y								T
Arthropoda	Diplopoda	Rhinotus	purpureus			Y								T
Arthropoda	Diplopoda	Asiomorpha	coarctata			Y								T
Arthropoda	Diplopoda	Chondromorpha	kelaarti			Y								T
Arthropoda	Diplopoda	Poratia	obliterata				Y							T
Arthropoda	Diplopoda	Pseudospirobolellus	avernus			Y								T
Arthropoda	Diplopoda	Anadenobolus	monilicornis			Y								T
Arthropoda	Diplopoda	Anadenobolus	vincenti			Y								T
Arthropoda	Diplopoda	Trigoniulus	corallinus			Y								T
Chordata	Mammalia	Callosciurus	erythraeus		Pallas's squirrel	N	Y	Y	Y	N	N	Y	N	T
Chordata	Mammalia	Tamiasciurus	hudsonicus		American Red Squirrel				Y				Y	T
Chordata	Mammalia	Sciurus	niger		Fox squirrel				Y				Y	T
Chordata	Mammalia	Mephitis	macroura		Hooded skunk				Y				N	T
Chordata	Mammalia	Cavia	porcellus		Guinea pig	Ex	Y	Y	Y	Ex	?	Y	Y	T
Chordata	Mammalia	Sciurus	lis		Japanese squirrel				Y				Y	T
Chordata	Mammalia	Kobus	leche		Lechwe				Y				N	T
Chordata	Mammalia	Sciurus	granatensis		red-tailed squirrel				Y				Y	T
Chordata	Reptilia	Vipera	aspis		European asp	Y		Y	Y		N	Y	Y	T
Chordata	Reptilia	Pantherophis	guttatus		Corn Snake				Y				Y	T
Chordata	Reptilia	Pseudemys	rubriventris		northern red-bellied turtle			Y	Y			Y	Y	T
Chordata	Reptilia	Elaphe	schrenckii		Russian Ratsnake				Y				N	T
Arthropoda	Insecta	Spialia	sertorius		Kalkgraslanddikkopje		Y	Y	Y		Y	Y	N	T
Arthropoda	Insecta	Lycaena	virgaureae		Scarce copper		nat	nat	Y		N	N		T
Arthropoda	Insecta	Colias	palaeno		Veenluzernevlinder		Y	Y	Y		N	N	N	T
Chordata	Actinopterygii	Abramis	sapa		White-eye bream	N	Y	N	Y	N	?	N	Y	F
Chordata	Actinopterygii	Huso	huso		beluga sturgeon	N		N	Y	N		N	Y	M+F
Chordata	Actinopterygii	Neogobius	kessleri		Bighead goby	N		Y	Y	N		Y	Y	M+F
Chordata	Actinopterygii	Proterorhinus	semilunaris		Western tubenose goby	N		Y	Y	N		N	Y	M+F
Chordata	Actinopterygii	Neogobius	fluviatilis		Monkey goby	N	Y	N	Y	N	?	N	Y	M+F
Chordata	Actinopterygii	Acipenser	stellatus		Starry sturgeon	N		Y	Y	N		?	N	M+F
Mollusca	Gastropoda	Xerotricha	apicina		Behaarde grasslak		Y, nat		Y		N		Y	T
Mollusca	Gastropoda	Bellamya	chinensis		Chinese mystery snail				Y				Y	F
Mollusca	Gastropoda	Helix	lucorum		Turkish snail		Y		Y				Y	T
Mollusca	Gastropoda	Lucilla	scintilla		Gewoon aardschijfje	Y			Y	Y			Y	T
Mollusca	Gastropoda	Deroceras	sturanyi		Eastern Fieldslug				Y				N	T
Chordata	Amphibia	Pelophylax	kurtmuelleri		Balkan frog			Y				N		F
Bryozoa	Gymnolaemata	Fenestrulina	delicia				Y	Y			Y	Y		M
Cnidaria	Hydrozoa	Melicertum	octocostatum			Y	Y	Y		N	Y	Y		M
Rhodophyta	not assigned	Acrochaetium	savianum			Y		Y	Y	Y		Y	Y	M
Rhodophyta	not assigned	Porphyrostromium	sp.			Y	Y		Y	Y	Y		N	M
Heterokontophyta	Phaeophyceae	Elachista	sp.						Y					M
Heterokontophyta	Bacillariophyceae	Stephanopyxis	palmeriana						Y					M
Heterokontophyta	Bacillariophyceae	Thalassiosira	tealata			Y	Y	Y	Y					M
Chlorophyta	Bryopsidophyceae	Codium	fragile	tomentosoides		Y	Y		Y	Y			Y	M
Heterokontophyta	Phaeophyceae	Acrothrix	gracilis			Y	Y			Y				M
Heterokontophyta	Phaeophyceae	Chorda	filum			Y	Y	Y	Y	Y	Y	Y	Y	M
Heterokontophyta	Phaeophyceae	Cladosiphon	zosterae			Y	Y			Y				M
Heterokontophyta	Phaeophyceae	Desmarestia	viridis			Y	Y		Y	Y	Y		Y	M
Heterokontophyta	Phaeophyceae	Fucus	spiralis			Y	Y	Y	Y	Y				M
Heterokontophyta	Phaeophyceae	Halothrix	lumbricalis			Y	Y			N				M
Heterokontophyta	Phaeophyceae	Laminaria	japonica				Y							M
Heterokontophyta	Phaeophyceae	Leathesia	difformis			Y	Y		Y	Y	Y		N	M
Heterokontophyta	Phaeophyceae	Pilayella	littoralis			Y	Y	Y	Y	Y	Y	Y	Y	M
Heterokontophyta	Phaeophyceae	Scytosiphon	dotyi			Y	Y			Y				M
Heterokontophyta	Phaeophyceae	Sphaerotrichia	firma				Y							M
Rhodophyta	not assigned	Aglaothamnion	feldmanniae			Y	Y			N				M
Rhodophyta	not assigned	Ahnfeltiopsis	flabelliformis				Y							M
Rhodophyta	not assigned	Antithamnion	amphigeneum				Y							M
Rhodophyta	not assigned	Antithamnion	pectinatum				Y							M
Rhodophyta	not assigned	Audouinella	codicola				Y							M
Rhodophyta	not assigned	Chondria	curvilineata				Y							M

Rhodophyta	not assigned	Chondrus	giganteus				Y								M
Rhodophyta	not assigned	Chrysymenia	wrightii				Y								M
Rhodophyta	not assigned	Grateloupia	lanceolata				Y								M
Rhodophyta	not assigned	Grateloupia	patens				Y								M
Rhodophyta	not assigned	Griffithsia	corallinoides			Y	Y			Y	Y				M
Rhodophyta	not assigned	Herposiphonia	parca				Y								M
Rhodophyta	not assigned	Hypnea	valentiae				Y								M
Rhodophyta	not assigned	Laurencia	okamurae				Y								M
Rhodophyta	not assigned	Lithophyllum	yessoense				Y								M
Rhodophyta	not assigned	Lomentaria	hakodatensis			Y	Y		Y	N					M
Rhodophyta	not assigned	Neosiphonia	sphaerocarpa				Y								M
Rhodophyta	not assigned	Pleonosporium	caribaeum			Y	Y			Y					M
Rhodophyta	not assigned	Polysiphonia	atlantica			Y	Y	Y	Y	Y		Y	Y		M
Rhodophyta	not assigned	Polysiphonia	fucoides			Y	Y	Y	Y	Y	Y	Y	Y		M
Rhodophyta	not assigned	Polysiphonia	morrowii				Y								M
Rhodophyta	not assigned	Polysiphonia	paniculata				Y								M
Rhodophyta	not assigned	Porphyra	yezoensis				Y								M
Rhodophyta	not assigned	Pterosiphonia	tanakae				Y								M
Rhodophyta	not assigned	Rhodophysema	georgii			Y	Y			Y					M
Rhodophyta	not assigned	Antithamnion	densum				Y				Y				M
Rhodophyta	not assigned	Goniotrichiopsis	sublittoralis				Y								M
Angiospermae	Monocotyledoneae	Spartina	patens				Y								T+M
Heterokontophyta	Bacillariophyceae	Asteromphalus	sarcophagus				Y								M
Heterokontophyta	Bacillariophyceae	Chaetoceros	peruvianus			Y	Y			Y	N				M
Heterokontophyta	Bacillariophyceae	Chaetoceros	rostratus				Y								M
Heterokontophyta	Bacillariophyceae	Eucampia	cornuta				Y								M
Heterokontophyta	Phaeophyceae	Laurencia	brongniartii				Y								M
Heterokontophyta	Phaeophyceae	Macrocystis	pyrifera				Y								M
Basidiomycota	Agaricomycetes	Amanita	asteropus				Y								T
Basidiomycota	Agaricomycotina	Bolbitius	incarnatus				Y								T
Basidiomycota	Dacrymycetes	Calocera	pallidospathulata			Y	Y	Y	Y	Y		Y	Y		T
Ascomycota	Sordariomycetes	Ceratocystis	paradoxa			Y	Y	Y	Y						T
Basidiomycota	Agaricomycetes	Chlorophyllum	molybdites				Y								T
Ascomycota	Ascomycetes	Ciboria	americana			Y	Y	Y	Y	Y		Y	N		T
Ascomycota	Ascomycetes	Ciborinia	camelliae			Y	Y			Y					T
Basidiomycota	Agaricomycetes	Clathrus	archeri			Y	Y		Y	Y			Y		T
Ascomycota	Ascomycetes	Cochliobolus	heterostrophus				Y								T
Ascomycota	Sordariomycetes	Colletotrichum	lindemuthianum			Y	Y		Y	N					T
Ascomycota	Basidiomycetes	Collybia	luxurians				Y	Y	Y			Y	Y		T
Ascomycota	Agaricomycetes	Coprinus	kimurae			Y	Y			N					T
Basidiomycota	Pucciniaceae	Cumminsiella	mirabilissima			Y	Y	Y		Y		Y			T
Basidiomycota	Agaricomycetes	Cylindrobasidium	eucalypti				Y								T
Basidiomycota	Agaricomycetes	Cystolepiota	cystidiosa			Y	Y	Y		Y		Y			T
Basidiomycota	Agaricomycetes	Cystolepiota	luteicystidiata				Y								T
Basidiomycota	Agaricomycetes	Dendrothele	nivosa				Y								T
Basidiomycota	Agaricomycetes	Descolea	tenuipes				Y								T
Ascomycota	Sordariomycetes	Diaporthe	helianthi				Y								T
Ascomycota	Dothideomycetes	Didymella	ligulicola			Y	Y								T
Basidiomycota	Exobasidiomycetes	Entyloma	dahliae			Y	Y			N					T
Ascomycota	Leotiomycetes	Erysiphe	australiana				Y								T
Ascomycota	Leotiomycetes	Erysiphe	begoniicola				Y								T
Ascomycota	Leotiomycetes	Erysiphe	deutziae				Y								T
Ascomycota	Leotiomycetes	Erysiphe	euonymi-japonici			Y	Y			Y					T
Ascomycota	Leotiomycetes	Erysiphe	necator			Y	Y	Y		Y		Y			T
Basidiomycota	Leotiomycetes	Erysiphe	vaccinii				Y								T
Basidiomycota	Agaricomycetes	Ganoderma	tsugae				Y								T
Basidiomycota	Agaricomycetes	Geastrum	morganii				Y								T
Ascomycota	Pezizomycetes	Geopora	sumneriana			Y	Y	Y	Y	Y		Y	Y		T
Ascomycota	Sordariomycetes	Gibberella	circinata				Y								T
Basidiomycota	Exobasidiomycetes	Graphiola	phoenicis			Y	Y			Y					T
Ascomycota	Dothideomycetes	Guignardia	bidwellii				Y								T
Basidiomycota	Agaricomycetes	Gymnopilus	hispidellus				Y								T
Basidiomycota	Agaricomycetes	Gymnopilus	humicola				Y								T
Basidiomycota	Agaricomycetes	Hydnangium	carneum			Y	Y		Y	Y					T
Basidiomycota	Basidiomycetes	Irpex	brownei				Y								T
Ascomycota	Dothideomycetes	Kabatiella	zeae			Y	Y	Y							T

Basidiomycota	Ustilaginomycetes	Kochmania	oxalidis				Y							T
Basidiomycota	Agaricomycetes	Laccaria	lateritia			Y	Y							T
Basidiomycota	Agaricomycetes	Laccocephalum	hartmannii				Y							T
Basidiomycota	Basidiomycetes	Lactocollybia	cycadicola				Y							T
Basidiomycota	Basidiomycetes	Lactocollybia	variicystis				Y							T
Basidiomycota	Agaricomycetes	Lepiota	elaiophylla				Y							T
Basidiomycota	Agaricomycetes	Lepiota	rubella			Y	Y			Y				T
Basidiomycota	Agaricomycetes	Leptocorticium	utribasidiatum				Y							T
Ascomycota	Dothideomycetes	Leptosphaerulina	trifolii			Y	Y		Y	Y				T
Basidiomycota	Agaricomycetes	Leucoagaricus	bresadolae				Y							T
Basidiomycota	Agaricomycetes	Leucoagaricus	brunnescens				Y							T
Basidiomycota	Agaricomycetes	Leucoagaricus	cupresseus				Y							T
Basidiomycota	Agaricomycetes	Leucoagaricus	marginatus				Y							T
Basidiomycota	Agaricomycetes	Leucocoprinus	birnbaumii			Y	Y	Y	Y	Y		Y	Y	T
Basidiomycota	Agaricomycetes	Leucocoprinus	heinemannii				Y							T
Basidiomycota	Agaricomycetes	Leucocoprinus	ianthinus			Y	Y			Y				T
Basidiomycota	Agaricomycetes	Leucocoprinus	straminellus			Y	Y			Y				T
Basidiomycota	Agaricomycetes	Lycoperdon	umbrinoides				Y							T
Basidiomycota	Agaricomycetes	Lysurus	cruciatus			Y	Y			Y				T
Ascomycota	Sordariomycetes	Magnaporthe	grisea				Y							T
Ascomycota	Sordariomycetes	Magnaporthe	salvinii				Y							T
Basidiomycota	Agaricomycetes	Melanotus	eccentricus				Y							T
Ascomycota	Ascomycetes	Monilinia	fructicola			Y	Y		Y	N			Y	T
Basidiomycota	Agaricomycetes	Mutinus	elegans				Y		Y				Y	T
Basidiomycota	Agaricomycetes	Mutinus	ravenelii			Y	Y	Y	Y	Y		Y	Y	T
Basidiomycota	Basidiomycetes	Mycena	alphitophora			Y	Y		Y	Y			N	T
Ascomycota	Dothideomycetes	Mycosphaerella	linicola			Y	Y		Y	Y				T
Ascomycota	Dothideomycetes	Mycovellosiella	fulva			Y	Y			Y				T
Ascomycota	Sordariomycetes	Myrothecium	roridum			Y	Y			Y				T
Ascomycota	Ascomycetes	Oidium	hortensiae			Y	Y			Y				T
Basidiomycota	Agaricomycetes	Panaeolus	antillarum			Y	Y	Y		N		Y		T
Basidiomycota	Agaricomycetes	Perenniporia	ochroleuca			Y	Y			Y				T
Basidiomycota	Agaricomycetes	Phallus	indusiatus				Y							T
Ascomycota	Dothideomycetes	Phoma	exigua			Y	Y			Y				T
Basidiomycota	Agaricomycetes	Phallus	indusiatus				Y							T
Ascomycota	Dothideomycetes	Phoma	exigua			Y	Y			Y				T
Ascomycota	Dothideomycetes	Phoma	tracheiphila				Y							T
Ascomycota	Sordariomycetes	Phyllachora	pomigena			Y	Y			Y				T
Basidiomycota	Agaricomycetes	Pleurotus	citrinopileatus				Y	Y						T
Basidiomycota	Agaricomycetes	Pluteus	variabilicolor				Y							T
Basidiomycota	Agaricomycetes	Psilocybe	cyanescens			Y	Y	Y	Y	Y		Y	Y	T
Basidiomycota	Agaricomycetes	Psilocybe	mexicana				Y							T
Basidiomycota	Urediniomycetes	Puccinia	antirrhini			Y	Y			Y				T
Basidiomycota	Urediniomycetes	Puccinia	chrysanthemi			Y	Y			Y				T
Basidiomycota	Urediniomycetes	Puccinia	helianthi				Y							T
Basidiomycota	Urediniomycetes	Puccinia	horiana			Y	Y			Y				T
Basidiomycota	Urediniomycetes	Puccinia	oxalidis			Y	Y	Y		Y		Y		T
Basidiomycota	Urediniomycetes	Puccinia	pelargonii-zonalis			Y	Y	Y		Y		N		T
Basidiomycota	Urediniomycetes	Puccinia	sorghi			Y	Y			Y				T
Basidiomycota	Urediniomycetes	Puccinia	tasmanica				Y							T
Basidiomycota	Agaricomycetes	Pycnoporellus	fulgens				Y				N			T
Ascomycota	Ascomycetes	Pycnostysanus	azaleae			Y	Y	Y	Y	Y		Y	Y	T
Basidiomycota	Agaricomycetes	Ramaria	murrillii				Y							T
Basidiomycota	Basidiomycetes	Rhizopogon	villosulus			Y	Y	Y		Y	Y	Y		T
Basidiomycota	Basidiomycetes	Rhizopogon	vinicolor				Y							T
Basidiomycota	Agaricomycetes	Sclerotium	hydrophilum				Y		Y					T
Basidiomycota	Microbotryomycetes	Sphacelotheca	reiliana				Y							T
Ascomycota	Sordariomycetes	Sporophagomyces	chrysostomus				Y							T
Basidiomycota	Agaricomycetes	Stropharia	rugosoannulata			Y	Y		Y	Y				T
Chytridiomycota	Chytridiomycetes	Synchytrium	endobioticum			Y	Y			Y				T
Basidiomycota	Exobasidiomycetes	Tilletia	controversa				Y							T
Basidiomycota	Ustilaginomycetes	Urocystis	cepulae			Y	Y			N				T
Basidiomycota	Urediniomycetes	Uromyces	appendiculatus			Y	Y	Y		Y		Y		T
Basidiomycota	Urediniomycetes	Uromyces	transversalis				Y							T
Basidiomycota	Ustilaginomycetes	Ustilago	maydis			Y	Y	Y	Y	Y	N	Y	Y	T
Basidiomycota	Agaricomycetes	Xenasma	umbonatum				Y							T
Heterokontophyta	Oomycetes	Aphanomyces	raphani				Y							T
Heterokontophyta	Oomycetes	Basidiophora	entospora				Y							T

Heterokontophyta	Oomycetes	Peronospora	grisea			Y	Y			Y				T
Heterokontophyta	Oomycetes	Peronospora	manshurica			Y	Y			Y				T
Heterokontophyta	Oomycetes	Peronospora	sparsa			Y	Y			Y				T
Heterokontophyta	Oomycetes	Phytophthora	infestans			Y	Y			Y				T
Heterokontophyta	Oomycetes	Phytophthora	nicotianae			Y	Y		Y	N				T
Heterokontophyta	Oomycetes	Phytophthora	palmivora				Y							T
Heterokontophyta	Oomycetes	Plasmopara	viticola			Y	Y			Y				T
Heterokontophyta	Oomycetes	Pseudoperonospora	cannabina				Y							T
Heterokontophyta	Oomycetes	Pseudoperonospora	cubensis			Y	Y			Y				T
Heterokontophyta	Oomycetes	Pythium	prolatum				Y							T
Heterokontophyta	Oomycetes	Pythium	splendens			Y	Y	Y		Y				T
Nematoda	Adenophorea	Xiphinema	index				Y							T
Nematoda	Secernentea	Cactodera	cacti						Y					T
Ascomycota	Leotiomycetes	Arthrocladiella	mougeotii			Y	Y	Y		Y	N	Y		T
Basidiomycota	Agaricomycetes	Aseroë	rubra			Y				Y				T
Ascomycota	Dothideomycetes	Aulographina	eucalypti			Y				Y				T
Basidiomycota	Pucciniomycetes	Chrysomyxa	ledi			Y				N				T
Basidiomycota	Agaricomycetes	Clathrus	ruber			Y	Y	Y	Y	Y		Y	Y	T
Basidiomycota	Basidiomycetes	Collybia	biformis			Y								T
Basidiomycota	Exobasidiomycetes	Entyloma	calendulae			Y	Y			Y				T
Ascomycota	Ascomycetes	Eupropolella	arundinariae			Y				N				T
Basidiomycota	Agaricomycetes	Gastrosporium	simplex			Y				N				T
Basidiomycota	Agaricomycetes	Geastrum	floriforme			Y		Y	Y	Y		Y	N	T
Ascomycota	Leotiomycetes	Golovinomyces	orontii			Y	Y			Y	N			T
Basidiomycota	Pucciniomycetes	Gymnosporangium	juniperi-virginianae			Y				N				T
Basidiomycota	Pucciniomycetes	Gymnosporangium	sabinae			Y	Y	Y	Y	Y		Y	Y	T
Basidiomycota	Pucciniomycetes	Ileodictyon	cibarium			Y				Y				T
Ascomycota	Exobasidiomycetes	Microstroma	juglandis			Y			Y	Y				T
Ascomycota	Pezizomycetes	Paurocotylis	pila			Y				N				T
Ascomycota	Sordariomycetes	Pseudonectria	pachysandricola			Y			Y	Y				T
Basidiomycota	Urediniomycetes	Puccinia	kusanoi			Y				Y				T
Basidiomycota	Urediniomycetes	Puccinia	longicornis			Y				Y				T
Basidiomycota	Urediniomycetes	Puccinia	prostii			Y				Y				T
Basidiomycota	Ustilaginomycetes	Sporisorium	sorghi			Y								T
Basidiomycota	Agaricomycetes	Stropharia	percevalii			Y				Y				T
Basidiomycota	Agaricomycetes	Suillus	amabilis			Y								T
Basidiomycota	Exobasidiomycetes	Tilletia	caries			Y	Y			Y				T
Basidiomycota	Ustilaginomycetes	Urocystis	eranthidis			Y				Y				T
Basidiomycota	Ustilaginomycetes	Urocystis	occulta			Y				Y				T
Basidiomycota	Ustilaginomycetes	Ustilago	tritici			Y	Y			Y				T
Nematoda	Secernentea	Meloidogyne	incognita			Y								T
Marchantiophyta	Jungermanniopsida	Lophocolea	bispinosa			Y								T
Marchantiophyta	Marchantiopsida	Riccia	rhenana			Y	Y	Y	Y	Y				T
Bryophyta	Polytrichopsida	Atrichum	crispum			Y				Y				T
Bryophyta	Eudicotyledoneae	Acrophyllum	dentatum			Y								T
Bryophyta	Bryopsida	Calyptrochaeta	apiculata			Y				Y				T
Bryophyta	Bryopsida	Hennediella	macrophylla			Y				Y				T
Bryophyta	Bryopsida	Hennediella	stanfordensis			Y	Y							T
Bryophyta	Bryopsida	Bryum	apiculatum			Y				Y				T
Bryophyta	Bryopsida	Bryum	valparaisense			Y				Y				T
Bryophyta	Bryopsida	Tortula	amplexa			Y								T
Bryophyta	Bryopsida	Tortula	bolanderi				Y							T
Marchantiophyta	Jungermanniopsida	Lophozia	herzogiana			Y								T
Bryophyta	Bryopsida	Oedopodiella	australis				Y							T
Bryophyta	Bryopsida	Ephemerum	spinulosum			Y								T
Bryophyta	Bryopsida	Scopelophila	cataractae			Y	Y	Y	Y	Y	N	Y	N	T
Bryophyta	Bryopsida	Didymodon	australasiae			Y	Y	Y						T
Bryophyta	Bryopsida	Orthodontium	pelucens				Y							T
Marchantiophyta	Marchantiopsida	Lunularia	cruciata			Y	Y	Y	Y	Y	N	Y	Y	T
Rhodophyta	not assigned	Corallina	elongata			nat	nat	Y	Y			Y	Y	M
Heterokontophyta	Phaeophyceae	Saccharina	latissima			nat	nat	Y	Y			Y	Y	M
Mollusca	Bivalvia	Lyrodus	pedicellatus		Blacktip Shipworm	Y	Y			Y	Y			M
Mollusca	Gastropoda	Cyclope	neritea				Y				N			M
Mollusca	Gastropoda	Fusinus	rostratus				Y				N			M
Arthropoda	Malacostraca	Odontodactylus	scyllarus				Y							M
Heterokontophyta	Bacillariophyceae	Pseudo-nitzschia	multistriata				Y							M

Rhodophyta	not assigned	Hypnea	musciformis			Y	Y		Y	N	N			M
Rhodophyta	not assigned	Polyopes	lancifolius				Y							M
Dinoflagellata	Dinophyceae	Karenia	brevisulcata				Y							M
Dinoflagellata	Dinophyceae	Karenia	papilionacea				Y				N			M
Dinoflagellata	Dinophyceae	Karenia	umbella				Y							M
Dinoflagellata	Dinophyceae	Alexandrium	affine				Y				N			M
Dinoflagellata	Dinophyceae	Takayama	tasmanica				Y							M
Bryozoa	Gymnolaemata	Caulibugula	zanzibarensis				Y							M
Bryozoa	Gymnolaemata	Watersipora	subovoidea				Y							M
Mollusca	Gastropoda	Xeropicta	derbentina				Y				N			T
Pteridophyta	Psilotopsida	Botrychium	simplex				Y	Y			N	Y		T
Pteridophyta	Pteridopsida	Cyrtomium	falcatum			Y	Y	Y	Y	Y	Y	Y	Y	T
Pteridophyta	Pteridopsida	Cyrtomium	fortunei			Y	Y	Y			Y	Y		T
Pteridophyta	Pteridopsida	Salvinia	natans				Y	Y	Y		N	Y	Y	T
Pteridophyta	Pteridopsida	Salvinia	auriculata				Y	Y			?	?		T
Pteridophyta	Pteridopsida	Rumohra	adiantiformis					Y						T
Pteridophyta	Pteridopsida	Pteris	multifida			Y	Y	Y		Y	N	Y		T
Pteridophyta	not assigned	Polypodium	hesperium					Y						T
Pteridophyta	Pteridopsida	Pteris	vittata			Y	Y			Y	N			T
Pteridophyta	Pteridopsida	Dicksonia	antarctica			Y				Y				T
Chordata	Aves	Nettapus	auritus		African Pygmy Goose	Y		Y		Y		N		F+T
Chordata	Aves	Mycteria	ibis		Yellow-billed Stork			Y	Y			N	Y	F+T
Chordata	Aves	Buteo	auguralis		Red-necked Buzzard			Y				Y		T
Chordata	Aves	Himantopus	mexicanus		Black-necked Stilt			Y	Y			Y	Y	F+T
Chordata	Aves	Chloephaga	melanoptera		Andean Goose	Y		Y	Y	Y		Y	N	F+T
Chordata	Aves	Ninox	connivens		Barking Owl			Y				Y		T
Chordata	Aves	Ceryle	rudis		Pied Kingfisher			Y	Y			Y	Y	F+T
Chordata	Aves	Quiscalus	major		Boat-tailed Grackle			Y				Y		T+M
Chordata	Aves	Excalfactoria	chinensis		King Quail			Y	Y			Y	Y	T
Chordata	Aves	Grus	japonensis		Red-crowned Crane			Y	Y			N	Y	F+T
Chordata	Aves	Agapornis	fischeri		Fischer's Lovebird		Y	Y	Y		N	Y	Y	T
Chordata	Aves	Phoenicopterus	roseus		Greater Flamingo	Y	Y	Y	Y	Y	N	Y	Y	F+T
Chordata	Aves	Chrysomus	icterocephalus		Yellow-hooded Blackbird		Y	Y	Y			N	Y	T
Chordata	Aves	Amazona	ochrocephala		Yellow-crowned Amazon			Y				Y		T
Chordata	Aves	Agapornis	canus		Grey-headed Lovebird			Y				Y		T
Chordata	Aves	Porphyrio	poliocephalus		Purple Swamphen			Y	Y			N	Y	F+T
Chordata	Aves	Bostrychia	hagedash		Hadeda Ibis			Y	Y			N	Y	T
Chordata	Aves	Scopus	umbretta		Hamerkop			Y	Y			Y	Y	F+T
Chordata	Aves	Carduelis	spinoides		Yellow-breasted Greenfinch			Y				Y		T
Chordata	Aves	Cereopsis	novaehollandiae		Cape Barren Goose	Y		Y	Y	Y		Y	Y	F+T+M
Chordata	Aves	Ploceus	jacksoni		Golden-backed Weaver			Y				Y		T
Chordata	Aves	Lonchura	domestica		Society Finch			Y				Y		T
Chordata	Aves	Pluvianus	aegyptius		Egyptian Plover			Y	Y			N	Y	F+T
Chordata	Aves	Sturnia	sinensis		White-shouldered Starling			Y				Y		T
Chordata	Aves	Vanellus	miles		Masked Lapwing			Y				N		T
Chordata	Aves	Carpodacus	mexicanus		House Finch	Y		Y	Y			Y	Y	T
Chordata	Aves	Crithagra	mozambica		Yellow-fronted Canary			Y	Y			Y	Y	T
Chordata	Aves	Euplectes	afer		Yellow-crowned Bishop			Y	Y			Y	N	T
Chordata	Aves	Acridotheres	ginginianus		Bank Myna			Y				Y		T
Chordata	Aves	Amazona	amazonica		Orange-winged Amazon			Y	Y			Y	Y	T
Chordata	Aves	Psephotus	haematonotus		Red-rumped Parrot			Y	Y			N	Y	T
Chordata	Aves	Coracias	abyssinicus		Abyssinian Roller			Y				N		T
Chordata	Aves	Corvus	albus		Pied Crow			Y				N		T
Chordata	Aves	Estrilda	astrild		Common Waxbill	Y		Y	Y			Y	Y	T
Chordata	Aves	Vanellus	armatus		Blacksmith Lapwing			Y	Y			N	N	T
Chordata	Aves	Vanellus	spinosus		Spur-winged Lapwing	Y		Y		?		Y		F+T
Chordata	Aves	Hippollais	rama		Sykes' Warbler			Y				Y		T
Chordata	Aves	Onychognathus	tristramii		Tristram's Starling			Y	Y			N	N	T
Chordata	Aves	Rhodospiza	obsoleta		Desert Finch			Y	Y			Y	Y	T
Chordata	Aves	Anas	poecilorhyncha		Spot-billed Duck			Y	Y			Y	Y	F+T
Chordata	Aves	Grus	vipio		White-naped Crane			Y	Y			Y	N	T
Chordata	Aves	Eudocimus	albus		American White Ibis			Y	Y			Y	Y	F+T
Chordata	Aves	Taeniopygia	guttata		Zebra Finch			Y	Y			Y	Y	T
Chordata	Aves	Bucorvus	leadbeateri		Southern Ground Hornbill			Y	Y			Y	Y	T
Chordata	Aves	Turdus	dissimilis		Black-breasted Thrush			Y				N		T
Chordata	Aves	Dendrocygna	autumnalis		Black-bellied Whistling Duck	Y	Y	Y	Y	Y	?	Y	Y	F+T

Chordata	Aves	Gracupica	nigricollis		Black-collared Starling			Y				Y		T
Chordata	Aves	Dendrocygna	arcuata		Wandering Whistling Duck			Y				Y		F+T+M
Chordata	Aves	Ciconia	abdimii		Abdim's Stork				Y				N	T
Chordata	Aves	Bubo	africanus		Spotted Eagle-Owl				Y				N	T
Chordata	Aves	Oriolus	auratus		African Golden Oriole				Y				Y	T
Chordata	Aves	Anas	sparsa		African Black Duck	Y			Y	Y			N	F+T+M
Chordata	Aves	Amazonetta	brasiliensis		Brazilian Teal				Y				N	F+T
Chordata	Aves	Cinnyricinclus	leucogaster		Violet-backed Starling				Y				Y	T
Chordata	Aves	Alisterus	scapularis		Australian King Parrot				Y				N	T
Chordata	Aves	Ocyphaps	lophotes		Crested Pigeon				Y				Y	T
Chordata	Aves	Aythya	australis		Hardhead				Y				Y	F+T+M
Chordata	Aves	Ploceus	baglafecht		Baglafecht Weaver				Y				Y	T
Chordata	Aves	Cyanopica	cooki		Azure-winged Magpie				Y				Y	T
Chordata	Aves	Platycercus	adscitus		Pale-headed Rosella				Y				N	T
Chordata	Aves	Vidua	obtusa		Broad-tailed Paradise Whydah				Y				N	T
Chordata	Aves	Callipepla	californica		California Quail				Y				Y	T
Chordata	Aves	Milvago	chimango		Chimango Caracara				Y				N	T
Chordata	Aves	Dendrocygna	arborea		West Indian Whistling Duck	Y			Y	Y			N	F+T+M
Chordata	Aves	Yuhina	diademata		White-collared Yuhina				Y				N	T
Chordata	Aves	Lamprotornis	superbus		Superb Starling				Y				Y	T
Chordata	Aves	Eclectus	roratus		Eclectus Parrot				Y				N	T
Chordata	Aves	Dromaius	novaehollandiae		Emu				Y				Y	T
Chordata	Aves	Lophura	ignita		Crested Fireback				Y				N	T
Chordata	Aves	Dendrocygna	guttata		Spotted Whistling Duck	Y			Y	Y			Y	F+T
Chordata	Aves	Cacatua	goffiniana		Tanimbar Corella				Y				N	T
Chordata	Aves	Erythrura	gouldiae		Gouldian Finch				Y				Y	T
Chordata	Aves	Pycnonotus	barbatus		Common Bulbul				Y				Y	T
Chordata	Aves	Lamprotornis	caudatus		Long-tailed Glossy Starling				Y				Y	T
Chordata	Aves	Tauraco	persa		Guinea Turaco		Y		Y				N	T
Chordata	Aves	Anas	wyvilliana		Hawaiian Duck				Y				N	F+T+M
Chordata	Aves	Emberiza	sahari		House Bunting				Y				N	T
Chordata	Aves	Necrosyrtes	monachus		Hooded Vulture				Y				Y	T
Chordata	Aves	Anas	laysanensis		Laysan Duck	Y			Y	?			Y	F+T+M
Chordata	Aves	Malacorhynchus	membranaceus		Pink-eared Duck				Y				Y	F+T
Chordata	Aves	Psittacula	derbiana		Lord Derby's Parakeet				Y				Y	T
Chordata	Aves	Nandayus	nenday		Nanday Parakeet				Y				Y	T
Chordata	Aves	Rhea	americana		Greater Rhea	Y			Y	Y			N	T
Chordata	Aves	Lophura	leucomelanos		Kalij Pheasant		Y		Y				N	T
Chordata	Aves	Euplectes	franciscanus		Northern Red Bishop				Y				Y	T
Chordata	Aves	Spilopelia	senegalensis		Laughing Dove				Y				Y	T
Chordata	Aves	Lamprotornis	splendidus		Splendid Starling				Y				N	T
Chordata	Aves	Anas	puna		Puna Teal				Y				N	F+T
Chordata	Aves	Aramides	ypecaha		Giant Wood Rail				Y				Y	T
Chordata	Aves	Lonchura	oryzivora		Java Sparrow				Y				N	T
Chordata	Aves	Streptopelia	tranquebarica		Red Turtle Dove				Y				Y	T
Chordata	Aves	Amblyramphus	holosericeus		Scarlet-headed Blackbird				Y				N	T
Chordata	Aves	Minla	ignotincta		Red-tailed Minla				Y				N	T
Chordata	Aves	Garrulax	poecilorhynchus		Rusty Laughingthrush				Y				N	T
Chordata	Aves	Eolophus	roseicapilla		Galah				Y				N	T
Chordata	Aves	Gyps	rueppellii		Rüppell's Vulture				Y				Y	T
Chordata	Aves	Porphyrio	madagascariensis		Purple Swamphen				Y				N	T
Chordata	Aves	Plectropterus	gambensis		Spur-winged Goose				Y				N	F+T
Chordata	Aves	Haliaeetus	pelagicus		Steller's Sea Eagle				Y				Y	T+M
Chordata	Aves	Neophema	pulchella		Turquoise Parrot				Y				Y	T
Chordata	Aves	Coracias	caudatus		Lilac-breasted Roller				Y				N	T
Chordata	Aves	Trachyphonus	erythrocephalus		Red-and-yellow Barbet				Y				N	T
Chordata	Aves	Garrulax	albogularis		White-throated Laughingthrush				Y				N	T
Chordata	Aves	Corvus	albicollis		White-necked Raven		Y		Y				N	T
Chordata	Aves	Pycnonotus	leucotis		White-eared Bulbul				Y				Y	T
Chordata	Aves	Threskiornis	melanocephalus		Black-headed Ibis				Y				Y	F+T
Chordata	Aves	Ciconia	boyciana		Oriental Stork				Y				N	F+T
Angiospermae	Eudicotyledoneae	Rhus	hirta		Essigbaum			Y						T
Angiospermae	Eudicotyledoneae	Acacia	decurrens				Y							T
Angiospermae	Eudicotyledoneae	Acacia	farnesiana				Y		Y					T
Angiospermae	Eudicotyledoneae	Acacia	karroo				Y							T
Angiospermae	Eudicotyledoneae	Acacia	longifolia				Y							T

Angiospermae	Eudicotyledoneae	Acacia	mearnsii		Australian acacia		Y				N			T
Angiospermae	Eudicotyledoneae	Acacia	saligna		Golden wreath wattle		Y				?			T
Angiospermae	Eudicotyledoneae	Acanthospermum	hispidum				Y							T
Arthropoda	Insecta	Acrolepiopsis	assectella			Y	Y	Y	Y					T
Angiospermae	Monocotyledoneae	Aegilops	cylindrica			Y	Y	Y	Y					T
Angiospermae	Eudicotyledoneae	Ageratina	adenophora				Y							T
Angiospermae	Eudicotyledoneae	Ageratum	conyzoides			Y	Y		Y					T
Angiospermae	Eudicotyledoneae	Albizia	julibrissin			Y	Y							T
Ascomycota	Dothideomycetes	Alternaria	triticina				Y							T
Angiospermae	Eudicotyledoneae	Anthemis	cotula			Y	Y	Y	Y					T
Angiospermae	Magnoliopsida	Argemone	mexicana			Y	Y							T
Angiospermae	Monocotyledoneae	Asparagus	asparagoides				Y							T
Angiospermae	Monocotyledoneae	Asparagus	densiflorus				Y							T
Arthropoda	Maxillopoda	Austrominius	modestus				Y	Y	Y					M
Angiospermae	Monocotyledoneae	Avena	fatua			Y	Y	Y	Y					T
Vira	not assigned	Avipoxvirus				Y			Y					T
Arthropoda	Insecta	Bactrocera	oleae				Y							T
Chytridiomycota	Chytridiomycetes	Batrachochytrium	dendrobatidis			Y	Y	Y	Y					F
Angiospermae	Magnoliopsida	Berberis	thunbergii			Y			Y					T
Vira	not assigned	Bluetongue			Bluetongue	Y	Y	Y	Y					T
Angiospermae	Monocotyledoneae	Bromus	diandrus			Y	Y	Y						T
Angiospermae	Monocotyledoneae	Bromus	madritensis			Y	nat							T
Angiospermae	Monocotyledoneae	Bromus	rubens			Y	nat							T
Angiospermae	Monocotyledoneae	Bromus	tectorum			Y	Y	Y	Y					T
Arthropoda	Insecta	Bruchophagus	roddi				Y							T
Angiospermae	Eudicotyledoneae	Casuarina	equisetifolia				Y							T
Angiospermae	Eudicotyledoneae	Celastrus	orbiculatus			Y								T
Angiospermae	Eudicotyledoneae	Centaurea	diffusa			Y	Y							T
Angiospermae	Eudicotyledoneae	Centaurea	melitensis			Y	nat							T
Angiospermae	Eudicotyledoneae	Centaurea	solstitialis			Y	nat							T
Angiospermae	Eudicotyledoneae	Centaurea	stoebe			Y	Y	Y	Y					T
Ascomycota	Sordariomycetes	Ceratocystis	fimbriata			Y	Y							T
Arthropoda	Malacostraca	Charybdis	hellerii				Y							M
Arthropoda	Malacostraca	Cherax	quadricarinatus				Y							F
Arthropoda	Insecta	Chionaspis	pinifoliae			Y								T
Angiospermae	Eudicotyledoneae	Chromolaena	odorata		Bitter bush		Y		Y		?		?	T
Angiospermae	Eudicotyledoneae	Chrysanthemoides	monilifera				Y							T
Basidiomycota	Pucciniomycetes	Chrysomyxa	rhododendri			Y	nat	nat	nat					T
Angiospermae	Monocotyledoneae	Chrysopogon	aciculatus				Y							T
Ascomycota	Ascomycetes	Ciborinia	allii			Y			Y					T
Angiospermae	Magnoliidae	Cinnamomum	camphora				Y							T
Angiospermae	Eudicotyledoneae	Conyza	bonariensis				Y		Y					T
Arthropoda	Insecta	Cryptococcus	fagisuga			Y	Y	Y	Y					T
Angiospermae	Monocotyledoneae	Cynodon	dactylon			Y	Y		Y					T
Ascomycota	Dothideomycetes	Didymella	fabae			Y	Y		Y					T
Angiospermae	Monocotyledoneae	Digitaria	longiflora				Y							T
Angiospermae	Eudicotyledoneae	Elaeagnus	pungens						Y					T
Angiospermae	Eudicotyledoneae	Elaeagnus	umbellata			Y	Y		Y					T
Angiospermae	Monocotyledoneae	Eleusine	indica			Y	Y		Y					T
Proteobacteria	Gamma Proteobacteria	Erwinia	amylovora			Y	Y	Y	Y					T
Arthropoda	Insecta	Eulachnus	rileyi			Y	Y		Y					T
Angiospermae	Eudicotyledoneae	Gleditsia	triacanthos			Y	Y							T
Angiospermae	Eudicotyledoneae	Hieracium	aurantiacum			Y	nat	Y						T
Angiospermae	Eudicotyledoneae	Hieracium	caespitosum			Y	nat	Y	Y					T
Angiospermae	Monocotyledoneae	Hydrilla	verticillata		Florida Elodea	Y	Y		N	Y	?		N	F
Angiospermae	Eudicotyledoneae	Jatropha	curcas				Y							T
Ascomycota	Leotiomycetes	Lachnellula	willkommii			Y	Y	Y	Y					T
Angiospermae	Monocotyledoneae	Lemna	perpusilla			Y	Y							F
Ascomycota	Sordariomycetes	Leptographium	procerum			Y								T
Angiospermae	Eudicotyledoneae	Ligustrum	sinense			Y	Y							T
Arthropoda	Malacostraca	Litopenaeus	vannamei						Y					M
Angiospermae	Monocotyledoneae	Lolium	multiflorum			Y	nat	Y	Y					T
Angiospermae	Monocotyledoneae	Lolium	rigidum				Y							T
Angiospermae	Monocotyledoneae	Lolium	temulentum			Y	nat	Y	Y					T
Angiospermae	Eudicotyledoneae	Melia	azedarach			Y	Y							T
Angiospermae	Monocotyledoneae	Miscanthus	sinensis			Y	Y							T

Ascomycota	Ascomycetes	Monilinia	fructigena			Y	Y	Y	Y					T
Arthropoda	Insecta	Mythimna	unipuncta			Y	Y		Y					T
Angiospermae	Monocotyledoneae	Nassella	trichotoma			Y	Y							T
Angiospermae	Eudicotyledoneae	Opuntia	stricta				Y							T
Chordata	Actinopterygii	Oreochromis	mossambicus		Mozambique tilapia	Y	Y	Y, N	Y	?	?	?	?	F
Angiospermae	Eudicotyledoneae	Orobanche	ramosa			Y	nat	Y	Y					T
Arthropoda	Insecta	Orthotomicus	erosus			Y	nat							T
Angiospermae	Monocotyledoneae	Panicum	repens				Y							T
Angiospermae	Eudicotyledoneae	Parthenium	hysterophorus					Y						T
Angiospermae	Eudicotyledoneae	Paulownia	tomentosa			Y	Y	Y						T
Angiospermae	Monocotyledoneae	Pennisetum	macrourum			Y	Y							T
Arthropoda	Insecta	Phenacoccus	solenopsis						Y					T
Angiospermae	Monocotyledoneae	Phoenix	canariensis				Y							T
Arthropoda	Insecta	Phoracantha	recurva				Y							T
Angiospermae	Eudicotyledoneae	Pittosporum	undulatum				Y							T
Arthropoda	Insecta	Pityokteines	curvidens				Y	Y						T
Vira	not assigned	Plum	pox			Y	Y	Y	Y					T
Angiospermae	Eudicotyledoneae	Portulaca	oleracea			Y	Y	Y	Y					T
Heterokontophyta	Dictyochophyceae	Pseudochattonella	verruculosa						Y					M
Angiospermae	Eudicotyledoneae	Psidium	cattleianum		C attley guava	Y	Y		N	?	?		N	T
Basidiomycota	Urediniomycetes	Puccinia	gladioli			Y	Y							T
Angiospermae	Eudicotyledoneae	Ricinus	communis				Y							T
Bryozoa	Gymnolaemata	Schizoporella	errata			Y								M
Angiospermae	Eudicotyledoneae	Sicyos	angulatus				Y							T
Angiospermae	Eudicotyledoneae	Solanum	elaeagnifolium				Y							T
Angiospermae	Eudicotyledoneae	Soliva	sessilis			Y	Y							T
Angiospermae	Monocotyledoneae	Sorghum	halepense			Y	Y							T
Chordata	Ascidiacea	Styela	plicata			Y								M
Angiospermae	Eudicotyledoneae	Tagetes	minuta				Y							T
Angiospermae	Eudicotyledoneae	Taraxacum	officinale			Y	Y	Y	Y					T
Arthropoda	Insecta	Tetropium	fuscum			Y	nat	nat	nat					T
Angiospermae	Monocotyledoneae	Tradescantia	fluminensis				Y							T
Basidiomycota	Ustilaginomycetes	Urocystis	agropyri			Y	Y		Y					T
Arthropoda	Insecta	Wasmannia	auropunctata			Y	Y							T
Mollusca	Bivalvia	Mytilus	galloprovincialis		Blue mussel	Y, nat	nat	Y, nat	Y, nat	Y, nat	nat	Y, nat	Y, nat	M
Heterokontophyta	Bacillariophyceae	Chaetoceros	calcitrans			Y								M
Platyhelminthes	Trematoda	Cercaria	sensifera			Y								M
Annelida	Polychaeta	Scolelepis	cf. bonnieri						Y					M
Arthropoda	Malacostraca	Hemigrapsus	penicillatus				Y	Y	Y		Y	Y	Y	M
Angiospermae	Eudicotyledoneae	Bidens	pilosa		Spanish Needle	Y	Y	Y						T
Angiospermae	Eudicotyledoneae	Eupatorium	cannabinum		Hemp-agrimony		Y	Y	Y					T
Angiospermae	Eudicotyledoneae	Miconia	calvescens		velvet tree	Y		Y	Y					T
Angiospermae	Eudicotyledoneae	Solanum	sisymbriifolium		Sticky Nightshade	Y	Y	Y	Y					T
Angiospermae	Eudicotyledoneae	Verbena	rigida		Slender vervain	Y	Y	Y						T
Angiospermae	Monocotyledoneae	Agave	americana		Century plant		Y		Y					T
Angiospermae	Monocotyledoneae	Canna	indica		Indian shot				Y					T
Angiospermae	Eudicotyledoneae	Acacia	retinodes		Retinodes	Y	Y							T
Angiospermae	Eudicotyledoneae	Alternanthera	philoxeroides		Alligator weed		Y							F
Angiospermae	Monocotyledoneae	Cyperus	rotundus		coco-grass		Y							T
Angiospermae	Monocotyledoneae	Imperata	cylindrica		blady grass		Y							T
Angiospermae	Monocotyledoneae	Cenchrus	echinatus				Y							T
Angiospermae	Eudicotyledoneae	Psidium	guajava		apple guava		Y							T
Angiospermae	Eudicotyledoneae	Merremia	tuberosa		Hawaiian wood rose	Y	Y							T
Angiospermae	Eudicotyledoneae	Nicotiana	glauca		tree tobacco	Y	Y							T
Angiospermae	Eudicotyledoneae	Macfadyena	unguis-cati		Cats Claw Creeper		Y							T
Angiospermae	Eudicotyledoneae	Melaleuca	quinquenervia		broad-leaved paperbark		Y							T
Angiospermae	Eudicotyledoneae	Senecio	angulatus		Creeping groundsel		Y							T
Angiospermae	Eudicotyledoneae	Sesbania	punicea		Spanish gold		Y							F+T
Angiospermae	Monocotyledoneae	Trachycarpus	fortunei		Chusan Palm		Y		Y					T
Angiospermae	Eudicotyledoneae	Triadica	sebifera		Chinese tallow tree		Y							T
Angiospermae	Eudicotyledoneae	Ziziphus	mauritiana		Chinee Apple		Y							T
Angiospermae	Eudicotyledoneae	Cirsium	arvense		Creeping Thistle	Y								T
Proteobacteria	Gamma Proteobacteria	Vibrio	cholerae			Y	nat	nat	nat					T
Angiospermae	Monocotyledoneae	Zizania	latifolia		Wild rice	Y								T
Cercozoa	Ascetosporea	Haplosporidium	nelsoni				Y							M
Cnidaria	Myxosporea	Myxobolus	artus			Y								F

Heterokontophyta	Oomycetes	Phytophthora	cinnamomi			Y	Y	Y	Y					T
Heterokontophyta	Oomycetes	Phytophthora	kernoviae			Y								T
Heterokontophyta	Oomycetes	Phytophthora	ilicis			Y			Y					T
Heterokontophyta	Oomycetes	Phytophthora	quercina			Y	Y	Y						T
Heterokontophyta	Oomycetes	Phytophthora	syringae			Y	Y	Y	Y					T
Heterokontophyta	Oomycetes	Phytophthora	alni			Y	Y	Y	Y					T
Heterokontophyta	Oomycetes	Phytophthora	capsici				Y							T
Heterokontophyta	Oomycetes	Phytophthora	erythroseptica				Y							T
Heterokontophyta	Oomycetes	Phytophthora	fragariae				Y							T
Heterokontophyta	Oomycetes	Phytophthora	megasperma				Y							T
Heterokontophyta	Oomycetes	Phytophthora	sojae				Y							T
Heterokontophyta	Oomycetes	Phytophthora	hibernalis				Y							T
Chordata	Actinopterygii	Ameiurus	catus		White catfish	Y				?				F
Chordata	Actinopterygii	Hypostomus	plecostomus		Suckermouth catfish	Y				Y				F
Mollusca	Gastropoda	Candidula	gigaxii			Y	nat	nat	Y, nat	Y	N	nat	Y, nat	T
Mollusca	Gastropoda	Viviparus	acerosus						Y				Y	F
Mollusca	Gastropoda	Lauria	cylindracea		Common chrysalis snail	nat	nat	nat	Y, nat	nat	nat	nat	Y, nat	T
Mollusca	Gastropoda	Oxychilus	draparnaudi		Dark-bodied Glass-snail	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	T
Mollusca	Gastropoda	Oxychilus	navarricus			Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	Y, nat	T
Mollusca	Gastropoda	Monacha	cartusiana		Carthusian Snail	Y	nat	nat	Y, nat	Y	nat	nat	Y, nat	T
Mollusca	Gastropoda	Monacha	cantiana		Kentish snail	Y	nat	Y	Y	Y	nat	Y	Y	T
Chordata	Aves	Balearica	pavonina		Black Crowned Crane	Y	Y			?	?			F+T
Chordata	Aves	Anas	platyrhynchos		Mallard	Y, nat	nat	nat	nat	Y, nat	nat	nat	nat	F+T

ANNEX C
Focus Lists

SPECIES NAME						RISK ASSESSMENT BY EXPERTS (see description of scores in report, Table 5)							SPECIES CHARACTERISTICS			WORST INS' LISTS CONSULTED (Y- included in list)													
Phylum	Group/Order	Informal Group	**Genera**	**species**	English Name	Ecological impact	Invasive potential	Management difficulty	Economic impact	Total Score	Scoring Experts	Number of scores	Environment	Functional role	Native Range Continent	Black list of Europe	DAISIE 2012	SEBI 2010	NOBANIS	Great Britain NNSS	Parrot et al. 2009	Great Britain - top 10	BFIS Harmonia	Netherlands - Waarnemingen	Nentwig et al. 2010, Kumschick and Nentwig 2010	WGITMO	ISSG-100 worst	Gallardo and Aldridge (2013)	Panov et al. 2009	Number of list the species is included in	Top 12 Alert INS
Arthropoda	Coleoptera	beetle	**Agrilus**	**planipennis**	Emerald ash borer	3.3	3.3	3.7	3.3	3.4	Dirk Jan Van der Gaag, Belinda Gallardo, Alexandra Zieritz	3	Terrestrial Animal	Herbivore	Asia	Y				Y										2	Y
Chordata	Mammalia	mammal	**Ammotragus**	**lervia**	Barbary sheep	1.0	1.0	1.0	1.0	1.0	Belinda Gallardo, Simon Baker	2	Terrestrial Animal	Herbivore	Africa	Y		Y							Y					3	
Mollusca	Bivalvia	bivalve	**Anadara**	**spp. Inaequivalvis/ demiri**	Inequivalve ark	2.5	1.5	2.5	1.0	1.9	Belinda Gallardo, Alexandra Zieritz	2	Marine	Filter-feeder	Asia	Y		Y												2	
Arthropoda	Diptera	insect	**Anopheles**	**quadrimaculatus**	Malaria mosquito	1.0	1.0	2.5	2.5	1.8	Ernst-Jan Scholte, Belinda Gallardo	2	Terrestrial Animal	Omnivore	North America	Y											Y			2	
Arthropoda	Hymenoptera	ant	**Anoplolepis**	**gracilipes**	Yellow crazy ant	2.0	1.3	2.0	1.7	1.8	Belinda Gallardo, Ben Hoffman, Alexandra Zieritz	3	Terrestrial Animal	Omnivore	Africa												Y			1	
Chordata	Osteichthyes	fish	**Aphanius**	**dispar**	Arabian killifish	1.0	1.0	2.0	1.0	1.3	Belinda Gallardo, Alexandra Zieritz	2	Aquatic Inland	Omnivore	Asia	Y														1	
Angiospermae	Primulales	plant	**Ardisia**	**elliptica**	Shoebutton ardisia	3.0	2.0	3.0	1.0	2.3	Céline Bellard, Belinda Gallardo	2	Terrestrial Plant	Primary producer	Asia												Y			1	
Nematoda	Nematoda	worm	**Ashworthius**	**sidemi**	Asiatic parasite	2.0	2.0	2.0	1.0	1.8	Belinda Gallardo, Alexandra Zieritz	2	Terrestrial Animal	Parasite	Asia	Y		Y												2	
Algae - Rhodophyta	Bonnemaisoniaceae	algae	**Asparagopsis**	**taxiformis**	Limu kohu	1.0	1.0	0.0	1.0	0.8	Belinda Gallardo	1	Marine	Primary producer	Europe	Y														1	
Echinodermata	Forcipulatida	sea star	**Asterias**	**amurensis**	Japanese seastar	3.0	1.5	3.0	2.5	2.5	Belinda Gallardo, Alexandra Zieritz	2	Marine	Predator	Asia												Y			1	Y
Chordata	Mammalia	mammal	**Axis**	**axis**	Indian spotted deer	2.5	1.0	4.0	2.5	2.5	Belinda Gallardo, Simon Baker	2	Terrestrial Animal	Herbivore	Asia										Y					1	
Chordata	Mammalia	mammal	**Bison**	**bison**	American bison	1.0	1.0	2.0	1.0	1.3	Belinda Gallardo, Simon Baker	2	Terrestrial Animal	Herbivore	North America										Y					1	
Chordata	Reptilia	reptile	**Boiga**	**irregularis**	Brown tree snake	3.0	1.0	3.0	3.0	2.5	Fred Kraus, Belinda Gallardo	2	Terrestrial Animal	Predator	Australia												Y			1	
Chordata	Mammalia	mammal	**Callosciurus**	**finlaysonii**	Finlayson's squirrel	3.0	1.7	2.3	2.0	2.3	Simon Baker, François Moutou, Belinda Gallardo	3	Terrestrial Animal	Herbivore	Asia	Y		Y					Y	Y	Y					5	
Chordata	Mammalia	mammal	**Castor**	**canadensis**	Canadian beaver	3.3	2.3	2.7	2.3	2.7	Simon Baker, François Moutou, Belinda Gallardo	3	Terrestrial Animal	Herbivore	North America	Y		Y	Y		Y				Y	Y				5	Y
Angiospermae	Rosales	plant	**Cecropia**	**peltata**	Trumpet tree	1.0	1.0	1.0	1.0	1.0	Belinda Gallardo	1	Terrestrial Plant	Primary producer	Unknown												Y			1	
Angiospermae	Cyperales	plant	**Cenchrus**	**incertus**	Coastal sandbur	1.0	1.0	1.0	2.0	1.3	Belinda Gallardo	1	Terrestrial Plant	Primary producer	North America	Y														1	
Arthropoda	Amphipoda	crustacean	**Cercopagis**	**pengoi**	Fish-hook waterflea	3.0	2.7	3.3	2.0	2.8	Belinda Gallardo, Alexandra Zieritz, Pieter Boets	3	Aquatic Inland	Predator	Asia	Y	Y	Y	Y								Y			5	
Angiospermae	Gentianales	plant	**Cinchona**	**pubescens**	Red cinchona	2.0	1.0	1.0	1.0	1.3	Belinda Gallardo	1	Terrestrial Plant	Primary producer	South America												Y			1	
Chordata	Osteichthyes	fish	**Clarias**	**batrachus**	Walking catfish	1.0	1.0	3.5	1.0	1.6	Rob Briton, Belinda Gallardo	2	Aquatic Inland	Omnivore	Asia												Y			2	
Angiospermae	Myrtales	plant	**Clidemia**	**hirta**	Koster's curse	1.0	1.0	1.0	1.0	1.0	Belinda Gallardo	1	Terrestrial Plant	Primary producer	South America												Y			1	
Arthropoda	Isoptera	termite	**Coptotermes**	**formosanus**	Formosan subterranean termite	2.0	1.0	2.0	4.0	2.3	Belinda Gallardo	1	Terrestrial Animal	Herbivore	Asia												Y			1	
Arthropoda	Amphipoda	crustacean	**Chaetogammarus**	**warpachowski**	Ponto-Caspian shrimp	2.5	2.5	4.0	1.0	2.5	Belinda Gallardo,Ronaldo Sousa	2	Aquatic Inland	Omnivore	Europe													Y		1	
Arthropoda	Decapoda	crustacean	**Charybdis**	**longicollis**	Erythrean swimming crab	1.5	1.0	4.0	1.5	2.0	Belinda Gallardo, Alexandra Zieritz	2	Marine	Omnivore	Europe	Y														1	
Arthropoda	Decapoda	crustacean	**Chionoecetes**	**opilio**	Queen crab	1.0	1.0	0.0	1.0	0.8	Belinda Gallardo	1	Marine	Predator	Asia				Y											1	
Chordata	Reptilia	amphibian	**Chrysemys**	**picta**	Painted turtle	3.0	3.0	3.0	1.0	2.5	Belinda Gallardo, Alexandra Zieritz	2	Terrestrial Animal	Omnivore	North America	Y					Y									2	
Chordata	Anura	amphibian	**Eleutherodactylus**	**coqui**	Caribbean tree frog	3.0	2.0	2.5	1.5	2.3	Céline Bellard, Belinda Gallardo	2	Terrestrial Animal	Predator	South America												Y			1	
Mollusca	Gastropoda	gastropod	**Euglandina**	**rosea**	Cannibal snail	3.0	1.0	3.7	2.0	2.4	Belinda Gallardo, Ronaldo Sousa, Fred Kraus	3	Terrestrial Animal	Predator	North America												Y			1	
Chordata	Mammalia	mammal	**Felis**	**bengalensis**	Leopard cat	2.7	1.3	2.0	1.3	1.8	Simon Baker, François Moutou, Belinda Gallardo	3	Terrestrial Animal	Predator	Asia															1	
Chordata	Osteichthyes	fish	**Fistularia**	**commersoni**	Blue-spotted cornetfish	2.0	1.0	4.0	1.5	2.1	Belinda Gallardo, Alexandra Zieritz	2	Marine	Predator	Asia	Y	Y	Y												3	
Arthropoda	Amphipoda	crustacean	**Gammarus**	**fasciatus**	Freshwater shrimp	3.0	2.5	4.0	1.0	2.6	Belinda Gallardo, Alexandra Zieritz	2	Aquatic Inland	Omnivore	North America														Y	1	
Angiospermae	Alismatales	plant	**Halophila**	**stipulacea**	Halophila seagrass	2.0	1.0	1.0	0.0	1.0	Belinda Gallardo	1	Marine	Primary producer	Asia	Y	Y													2	
Angiospermae	Angiospermae	plant	**Heracleum**	**sosnowskyi**	Sosnowski's hogweed	3.0	4.0	3.0	3.0	3.3	Johan Valkenburg, Belinda Gallardo	2	Terrestrial Plant	Primary producer	Europe	Y		Y	Y											3	
Chordata	Mammalia	mammal	**Herpestes**	**javanicus**	Javan mongoose	2.0	1.0	2.0	1.0	1.5	François Moutou, Belinda Gallardo	2	Terrestrial Animal	Predator	Asia	Y		Y												2	
Chordata	Carnivora	mammal	**Herpestes**	**auropunctatus**	Small Asian mongoose	3.0	1.0	2.0	2.0	2.0	Belinda Gallardo	1	Terrestrial Animal	Predator	Asia												Y			1	
Angiospermae	Angiospermae	plant	**Hiptage**	**benghalensi**	Helicopter flower	2.5	1.5	3.5	1.0	2.1	Alexandra Zieritz, Belinda Gallardo	1	Terrestrial Plant	Primary producer	Asia												Y			1	
Chordata	Mammalia	mammal	**Hystrix**	**brachyura**	Hodgson's porcupine	2.0	1.0	2.0	3.0	2.0	Simon Baker	1	Terrestrial Animal	Omnivore	Asia															1	
Angiospermae	Poales	plant	**Imperata**	**cylindrica**	Blady grass	4.0	3.7	2.3	4.0	3.5	Johan Valkenburg, Alan Tye, Belinda Gallardo	3	Terrestrial Plant	Primary producer	Asia												Y			1	Y
Arthropoda	Mysida	crustacean	**Katamysis**	**warpachowsky**	Katamysis	2.0	2.0	4.0	1.0	2.3	Alexandra Zieritz, Belinda Gallardo	2	Aquatic Inland	Omnivore	Europe														Y	1	
Angiospermae	Angiospermae	plant	**Lantana**	**camara**	Ach man	3.7	3.3	3.0	3.3	3.3	Johan Valkenburg, Alan Tye, Rieks van Klinken	3	Terrestrial Plant	Primary producer	South America												Y			1	
Chordata	Perciformes	fish	**Lates**	**niloticus**	Nile perch	3.0	1.5	2.5	2.5	2.4	Céline Bellard, Belinda Gallardo	2	Aquatic Inland	Predator	Africa												Y			1	
Angiospermae	Lamiales	plant	**Ligustrum**	**robustum**	Ceylon privét	4.0	1.0	3.0	1.0	2.3	Belinda Gallardo	1	Terrestrial Plant	Primary producer	Asia												Y			1	
Angiospermae	Eudicotyledoneae	plant	**Lupinus**	**nootkatensis**	Nootka lupin	4.0	1.0	1.0	1.0	1.8	Belinda Gallardo	1	Terrestrial Plant	Primary producer	North America				Y											1	
Chordata	Primates	mammal	**Macaca**	**fascicularis**	Crab-eating macaque	3.0	1.5	3.0	1.0	2.1	Céline Bellard, Belinda Gallardo	2	Terrestrial Animal	Predator	Asia												Y			1	
Angiospermae	Angiospermae	plant	**Melaleuca**	**quinquenervia**	Melaleuca	4.0	3.5	3.0	3.0	3.4	Rieks van Klinken, Belinda Gallardo	2	Terrestrial Plant	Primary producer	Australia												Y			1	Y
Angiospermae	Magnoliophyta	plant	**Miconia**	**calvescens**	Bush currant	4.0	2.5	2.5	2.5	2.9	Alan Tye, Belinda Gallardo	2	Terrestrial Plant	Primary producer	South America												Y			1	
Angiospermae	Angiospermae	plant	**Mikania**	**micrantha**	American rope	3.5	3.0	3.0	2.5	3.0	Alan Tye, Belinda Gallardo	2	Terrestrial Plant	Primary producer	South America												Y			1	
Angiospermae	Fabales	plant	**Mimosa**	**pigra**	Bashful plant	4.0	1.0	3.0	3.0	2.8	Belinda Gallardo	1	Terrestrial Plant	Primary producer	South America												Y			1	
Chordata	Mammalia	mammal	**Muntiacus**	**muntjak**	Indian Muntjac	2.3	1.3	1.7	1.3	1.7	Alexandra Zieritz, Simon Baker, Belinda Gallardo	3	Terrestrial Animal	Herbivore	Asia									Y						1	
Chordata	Osteichthyes	fish	**Neogobius**	**gymnotrachelus**	Racer goby	3.0	3.3	3.7	2.0	3.0	Rob Briton, Joerg Brandner, Ronaldo Sousa	3	Aquatic Inland	Predator	Europe													Y		1	Y
Arthropoda	Amphipoda	crustacean	**Obesogammarus**	**obesus**	Ponto-Caspian shrimp	2.0	2.7	4.0	1.5	2.5	Joerg Brandner, Ronaldo Sousa, Karolina Bacela	3	Aquatic Inland	Omnivore	Europe													Y		1	
Arthropoda	Decapoda	crustacean	**Paralithodes**	**camtschaticus**	Red king crab	2.5	1.0	2.0	2.0	1.9	Alexandra Zieritz, Belinda Gallardo	2	Marine	Omnivore	North America	Y	Y	Y	Y		Y									5	
Chordata	Osteichthyes	fish	**Perccottus**	**glenii**	Amur sleeper	3.3	3.3	4.0	1.7	3.1	Rob Briton, Belinda Gallardo, Alexandra Zieritz	3	Aquatic Inland	Predator	Asia	Y		Y					Y	Y						4	Y
Arthropoda	Decapoda	crustacean	**Percnon**	**gibbesi**	Sally lightfoot crab	2.0	1.0	3.0	1.0	1.8	Alexandra Zieritz, Belinda Gallardo	2	Marine	Omnivore	North America	Y	Y	Y												3	
Platyhelminthes	Tricladida	worm	**Platydemus**	**manokwari**	Snail-eating flatworm	3.0	1.5	3.5	1.0	2.3	Céline Bellard, Belinda Gallardo	2	Terrestrial Animal	Predator	Unknown												Y			1	
Cnidaria	Cnidaria	hydroid	**Polypodium**	**hydriforme**		2.0	3.0	not evaluated	2.0	2.3	Alexandra Zieritz	1	Aquatic Inland	Parasite	Europe	Y		Y												2	
Mollusca	Gastropoda	snail	**Pomacea**	**canaliculata**	Apple snail	3.0	2.0	3.5	4.0	3.1	Belinda Gallardo, Alexandra Zieritz	2	Aquatic Inland	Herbivore	South America												Y			1	Y
Arthropoda	Amphipoda	crustacean	**Pontogammarus**	**maeoticus**	Ponto-Caspian shrimp	1.0	3.0	3.5	1.0	2.1	Alexandra Zieritz, Belinda Gallardo	2	Aquatic Inland	Omnivore	Europe														Y	1	
Arthropoda	Amphipoda	crustacean	**Pontogammarus**	**robustoides**	Ponto-Caspian shrimp	2.3	3.0	4.0	2.0	2.8	Joerg Brandner, Ronaldo Sousa, Karolina Bacela	3	Aquatic Inland	Omnivore	Europe	Y			Y									Y	Y	4	
Arthropoda	Decapoda	crustacean	**Portunus**	**pelagicus**	Blue swimming crab	1.0	1.0	0.0	1.0	0.8	Belinda Gallardo	1	Marine	Omnivore	Asia	Y	Y													2	
Mollusca	Bivalvia	bivalve	**Potamocorbula**	**amurensis**	Amur clam	4.0	2.7	4.0	2.7	3.3	Belinda Gallardo, Ronaldo Sousa, Alexandra Zieritz	3	Marine	Filter-feeder	Asia												Y			1	Y
Angiospermae	Angiospermae	plant	**Prosopis**	**glandulosa**	Honey mesquite	4.0	2.7	3.0	3.0	3.2	Johan Valkenburg, Rieks van Klinken, Belinda Gallardo	3	Terrestrial Plant	Primary producer	North America												Y			1	
Angiospermae	Angiospermae	plant	**Pueraria**	**lobata montana**	Kudzu	4.0	3.5	3.0	3.0	3.4	Johan Valkenburg, Belinda Gallardo	2	Terrestrial Plant	Primary producer	Asia	Y											Y			2	Y
Cnidaria	Cnidaria	hydroid	**Rhopilema**	**nomadica**	Nomad jellyfish	3.0	1.0	3.5	3.5	2.8	Alexandra Zieritz, Belinda Gallardo	2	Marine	Predator	Africa	Y	Y	Y												3	Y
Angiospermae	Angiospermae	plant	**Rubus**	**ellipticus**	Asian wild raspberry	3.7	3.0	3.0	2.3	3.0	Johan Valkenburg, Alan Tye, Belinda Gallardo	3	Terrestrial Plant	Primary producer	Asia												Y			1	
Chordata	Osteichthyes	fish	**Saurida**	**undosquamis**	True lizardfish	1.7	1.0	3.7	1.0	1.8	Rob Briton, Alexandra Zieritz, Belinda Gallardo	3	Marine	Predator	Asia	Y	Y	Y												3	
Angiospermae	Sapindales	plant	**Schinus**	**terebinthifolius**	Brazilian holly	3.0	2.0	3.0	3.0	2.8	Alexandra Zieritz, Belinda Gallardo	1	Terrestrial Plant	Primary producer	South America												Y			1	

Chordata	Perciformes	fish	**Seriola**	**fasciata**	Lesser amberjack	2.0	1.0	4.0	2.0	2.3	Alexandra Zieritz	1	Marine	Predator	North America	Y		Y											2	
Chordata	Perciformes	fish	**Siganus**	**rivulatus**	Dusky spinefoot	3.0	1.0	3.5	1.0	2.1	Alexandra Zieritz, Belinda Gallardo	2	Marine	Herbivore	Asia	Y	Y	Y											3	
Arthropoda	Hymenoptera	ant	**Solenopsis**	**invicta**	Red fire ant	2.7	1.7	3.0	4.0	2.8	Belinda Gallardo, Alexandra Zieritz, Ben Hoffmann	3	Terrestrial Animal	Predator	South America												Y			1	Y
Angiospermae	Asterales	plant	**Solidago**	**nemoralis**	Gray goldenrod	2.5	4.0	3.0	2.0	2.9	Alexandra Zieritz, Belinda Gallardo	2	Terrestrial Plant	Primary producer	North America	Y													1	
Angiospermae	Lamiales	plant	**Spathodea**	**campanulata**	African tulip tree	3.0	1.0	3.0	2.5	2.4	Alexandra Zieritz, Belinda Gallardo	1	Terrestrial Plant	Primary producer	Africa												Y			1	
Angiospermae	Asterales	plant	**Sphagneticola**	**trilobata**	Creeping ox-eye	3.0	1.5	3.0	2.5	2.5	Alexandra Zieritz, Belinda Gallardo	1	Terrestrial Plant	Primary producer	South America												Y			1	
Algae - Ochrophyta	Ochrophyta	algae	**Stypopodium**	**schimperi**		3.0	1.0	4.0	2.0	2.5	Alexandra Zieritz	1	Marine	Primary producer	Europe	Y													1	
Angiospermae	Angiospermae	plant	**Tamarix**	**ramosissima**	Salt cedar	4.0	3.0	3.0	3.0	3.3	Johan Valkenburg, Alexandra Zieritz, Belinda Gallardo	3	Terrestrial Plant	Primary producer	Asia												Y			1	
Mollusca	Gastropoda	gastropod	**Theodoxus**	**danubialis**	Danube snail	1.0	2.0	3.0	1.0	1.8	Alexandra Zieritz, Belinda Gallardo	1	Aquatic Inland	Herbivore	Europe														Y	1	
Chordata	Diprotodontia	mammal	**Trichosurus**	**vulpecula**	Brushtail possum	3.0	2.0	2.5	1.0	2.1	Alexandra Zieritz, Belinda Gallardo	2	Terrestrial Animal	Herbivore	Australia												Y			1	
Entropocta	Entoprocta	entoproct	**Urnatella**	**gracilis**	Freshwater globlet worm	1.0	3.0	not evaluated	1.0	1.7	Alexandra Zieritz	1	Aquatic Inland	Filter-feeder	North America														Y	1	

SPECIES NAME						PRESENCE IN RINSE COUNTRIES					SPECIES CHARACTERISTICS			WORST INS' LISTS CONSULTED (Y- included in list)																
Phylum	Group/order	Informal Group	Genera	species	English Name	Great Britain	France	Belgium	Netherlands	Number of Countries	Environment	Functional role	Native Range Continent	Black List of Europe	DAISIE 2012	SEBI 2010	NOBANIS	Great Britain NNSS	Parrot et al. 2009	Roy et al. 2012	Great Britain top 10	IBFIS Harmonia	Netherlands - Waarnemingen	Nentwig et al. 2010, Kumschick and Nentwig 2010	WGITMO	ISSG 100 worst	Gallardo and Aldridge 2013	Panov et al. 2009	EPPO List of Invasive Plants	Number of checklist the species is included in	% votes received in public poll	Top 12 INS
Angiospermae	Angiospermae	plant	**Acacia**	**dealbata**	Silver wattle		Y		N	1	Terrestrial plants	Primary producer	Australia	Y	Y														Y	4	0.0	
Angiospermae	Fabales	plant	**Acacia**	**mearnsii**	Black wattle		Y		N	1	Terrestrial plants	Primary producer	Australia													Y				2	0.0	
Angiospermae	Angiospermae	plant	**Acacia**	**saligna**	Golden wreath wattle		Y		N	1	Terrestrial plants	Primary producer	Australia	Y		Y														3	0.0	
Arthropoda	Copepoda	zooplankton	**Acartia**	**tonsa**	Acartia	Y	Y	Y	Y	4	Marine	Filter-feeder	Australia	Y		Y	Y													4	0.0	
Angiospermae	Eudicotyledoneae	plant	**Acer**	**negundo**	Ashleaf maple	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America	Y		Y	Y													1	22.2	
Angiospermae	Eudicotyledoneae	plant	**Acer**	**pseudoplatanus**	Sycamore	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	Europe	Y			Y			Y										5	11.1	
Chordata	Aves	plant	**Acridotheres**	**tristis**	Common myna	Y	Y	Y	Y	4	Terrestrial animals	Omnivore	Asia	Y		Y			Y				Y		Y					2	0.0	
Angiospermae	Eudicotyledoneae	plant	**Acroptilon**	**repens**	Russian knapweed	Y	Y	Y		3	Terrestrial plants	Primary producer	Europe	Y															Y	4	0.0	
Algae - Rhodophyta	Rhodophyta	alga	**Acrothamnion**	**preisii**	Brown alga		Y			1	Marine	Primary producer	Australia	Y		Y														1	0.0	
Mollusca	Gastropoda	snail and slug	**Achatina**	**fulica**	Giant African land snail	Y	N	N	N	1	Terrestrial animals	Herbivore	Africa													Y				3	0.0	
Arthropoda	Diptera	true fly	**Aedes**	**albopictus**	Asian tiger mosquito	N	Y	Y	Y	3	Terrestrial animals	Omnivore	Asia	Y									Y			Y				5	28.6	
Angiospermae	Angiospermae	plant	**Ailanthus**	**altissima**	Tree of heaven	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	Australia		Y					Y		A2							Y	2	55.6	
Chordata	Aves	bird	**Aix**	**galericulata**	Mandarin duck	Y	Y	Y	Y	4	Aquatic inland	Herbivore	Asia																	2	0.0	
Angiospermae	Angiospermae	plant	**Akebia**	**quinata**	Five-leaf	Y	Y	Y	N	3	Terrestrial plants	Primary producer	Asia										Y							2	0.0	
Dinoflagellata	Dinoflagellata	zooplankton	**Alexandrium**	**catenella**	Red tide dinoflagellate	Y	Y		Y	3	Marine	Primary producer	North America	Y	Y	Y														0.0	
Dinoflagellata	Dinophyceae	zooplankton	**Alexandrium**	**minutum**	Red tide dinoflagellate		Y	Y		2	Marine	Primary producer	Unknown	Y		Y														2	0.0	
Dinoflagellata	Dinophyceae	zooplankton	**Alexandrium**	**tamarense**	Red tide dinoflagellate	Y	Y	Y	Y	4	Marine	Primary producer	Europe	Y		Y														2	0.0	
Chordata	Mammalia	mammal	**Alopex**	**lagopus**	Arctic fox	Y, Eradicated	Y	Y		2	Terrestrial animals	Predator	Artic					Y												2	0.0	
Chordata	Aves	bird	**Alopochen**	**aegyptiacus**	Egyptian goose	Y	Y	Y	Y	4	Aquatic inland	Herbivore	Africa			Y		Y	Y			A3								3	42.9	
Angiospermae	Angiospermae	plant	**Ambrosia**	**artemissifolia**	Ragweed	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America	Y	Y	Y													Y	1	11.1	
Chordata	Osteichthyes	fish	**Ameiurus**	**nebulosus**	Black and brown bullhead	Y	Y	Y	Y	4	Aquatic inland	Omnivore	North America	Y		Y														2	0.0	
Chordata	Osteichthyes	fish	**Ameiurus**	**melas**	Black bullhead	Y	Y	Y	Y	4	Aquatic inland	Omnivore	North America															Y		3	0.0	
Angiospermae	Angiospermae	plant	**Amelanchier**	**lamarckii/spicata**	Juneberry	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America	Y			Y		Y										Y	3	0.0	
Nematoda	Nematoda	worm	**Anguillicola**	**crassus**	Eel swim bladder nematode	Y	Y	Y	Y	4	Aquatic inland	Parasite	Asia	Y	Y	Y	Y		Y											2	18.8	
Arthropoda	Coleoptera	beetle	**Anoplophora**	**chinensis**	Citrus longhorn beetle	N	Y, Eradicated	Y	Y	2	Terrestrial animals	Herbivore	Asia	Y	Y	Y		Y					Y							4	0.0	
Arthropoda	Coleoptera	beetle	**Anoplophora**	**glabripennis**	Asian longhorn beetle	Y	Y	Y, Eradicated	Y, Eradicated	2	Terrestrial animals	Herbivore	Asia	Y	Y	Y		Y					Y			Y				1	14.3	
Chordata	Aves	bird	**Anser**	**caerulescens**	Snow goose	Y	Y		Y	1	Aquatic inland	Herbivore	North America																	4	0.0	
Chordata	Aves	bird	**Anser**	**indicus**	Bar-headed goose	Y	Y	Y	Y	4	Aquatic inland	Herbivore	Asia																	4	0.0	
Fungi - Oomycetes	Oomycetes	parasite	**Aphanomyces**	**astaci**	Crayfish plague	Y	Y	Y	Y	4	Aquatic inland	Parasite	North America	y	Y	Y	Y									Y				1	37.5	
Arthropoda	Hemiptera	true bug	**Aphis**	**gossypii**	Cotton aphid	Y	Y	Y	Y	4	Terrestrial animals	Herbivore	Africa	Y					Y											2	0.0	
Mollusca	Gastropoda	snail and slug	**Arion**	**vulgaris / lusitanicus**	Lusitanian slug	Y	Y	Y	Y	4	Terrestrial animals	Herbivore	Europe	Y	Y	Y	Y													3	0.0	
Platyhelminthes	Turbellaria	worm	**Arthurdendyus**	**triangulatus**	New Zealand flatworm	Y	N	N	N	1	Terrestrial animals	Predator	Australia	Y		Y	Y													3	14.3	
Angiospermae	Angiospermae	plant	**Arundo**	**donax**	Giant reed	Y	Y		N	2	Terrestrial plants	Primary producer	Asia													Y				3	0.0	
Algae - Rhodophyta	Rhodophyta	alga	**Asparagopsis**	**armata**	Harpoon weed	Y	Y		Y	3	Marine	Primary producer	Australia	Y		Y														3	0.0	
Angiospermae	Angiospermae	plant	**Aster**	**novi-belgii agg.**	Narrow-leaved daisy	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America						Y			A2								7	22.2	
Pteridophyta	Pteridopsida	plant	**Azolla**	**filiculoides**	Water fern	Y	Y	Y	Y	4	Aquatic inland	Primary producer	North America	Y		Y	Y		Y										Y	2	37.5	
Angiospermae	Angiospermae	plant	**Baccharis**	**halimifolia**	Salt bush	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America	Y								A1							Y	1	33.3	
Arthropoda	Cirripedia	crustacean	**Balanus**	**improvisus**	Acorn barnacle	Y		Y	Y	3	Marine	Filter-feeder	North America	Y			Y								Y			Y		2	0.0	
Arthropoda	Hemiptera	true bug	**Bemisia**	**tabaci**	Tobacco whitefly	N	Y	Y	Y	3	Terrestrial plants	Herbivore	Asia	Y	Y											Y				5	0.0	
Ctenophora	Ctenophora	comb jelly	**Beroe**	**cucumis**	Comb jelly	Y		Y	Y	3	Marine	Predator	North Sea	Y																2	0.0	
Ctenophora	Beroida	comb jelly	**Bidens**	**frondosa**	Beggarticks	Y		Y	Y	3	Marine	Predator	North America	Y			Y													7	0.0	
Angiospermae	Eudicotyledoneae	plant	**Blackfordia**	**virginica**	Hydrozoan	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America	Y															Y	4	0.0	
Algae- Rhodophyta	Bonnemaisoniales	algae	**Bonnemaisonia**	**hamifera**	Pink cotton wool		Y			1	Marine	Primary producer	Pacific	Y																4	0.0	
Algae - Rhodophyta	Rhodophyta	alga	**Brachidontes**	**pharaonis**	Bivalve	Y	Y		Y	3	Marine	Primary producer	Asia	Y	Y															1	0.0	
Mollusca	Bivalvia	bivalve	**Branta**	**canadensis**	Canada goose		Y			1	Aquatic inland	Herbivore	North America	Y	Y																57.1	Y
Chordata	Aves	bird	**Bubo**	**bubo**	Eagle owl	Y	Y	Y	Y	4	Terrestrial animals	Herbivore	North America	Y	Y	Y				Y		A3		15/21						6	0.0	
Angiospermae	Lamiales	plant	**Buddleja**	**davidii**	Buddleia	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	Asia					Y	Y											6	33.3	
Angiospermae	Eudicotyledoneae	plant	**Bufo**	**marinus**	Cane toad	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	Asia	Y						Y									Y	2	12.5	
Chordata	Amphibia	amphibian	**Bunias**	**orientalis**	Warty cabbage			Y		1	Aquatic inland	Predator	South America						Y							Y				1	0.0	
Angiospermae	Eudicotyledoneae	plant	**Bursaphelenchus**	**xylophilus**	Pinewood nematode	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	Europe	Y		Y	Y													5	0.0	
Nematoda	Nematoda	worm	**Cabomba**	**caroliniana**	Carolina water-shield	Y				1	Terrestrial animals	Parasite	South America	Y	Y	Y			Y											9	12.5	
Angiospermae	Angiospermae	plant	**Cairina**	**moschata**	Muscovy duck	Y	Y	Y	Y	4	Aquatic inland	Primary producer	South America	Y									Y						Y	6	0.0	
Arthropoda	Decapoda	crustacean	**Callinectes**	**sapidus**	Blue crab	Y		Y	Y	3	Marine	Omnivore	South America																	2	0.0	
Arthropoda	Malacostraca	crustacean	**Callosciurus**	**erythraeus**	Pallas's squirrel	Y, Eradicated	Y	Y	Y	3	Terrestrial animals	Predator	Asia				Y													2	28.6	
Chordata	Mammalia	mammal	**Cameraria**	**ohridella**	Horse chestnut leaf miner		Y	Y	Y	3	Terrestrial animals	Parasite	Asia									A1								4	0.0	
Bryophyta	Bryopsida	moss	**Campylopus**	**introflexus**	Heath star moss	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	South America		Y		Y													8	11.1	
Chordata	Mammalia	mammal	**Capra**	**hircus**	Feral goat	Y	Y	Y	Y	4	Terrestrial animals	Herbivore	Asia						Y							Y				8	0.0	
Arthropoda	Malacostraca	crustacean	**Caprella**	**mutica**	Japanese skeleton shrimp	Y	Y	Y	Y	4	Marine	Detritivore	Asia				Y													2	0.0	
Chordata	Osteichthyes	fish	**Carassius**	**auratus gibelio**	Goldfish	Y	Y	Y	Y	4	Aquatic inland	Omnivore	Asia	Y		Y														4	12.5	
Chordata	Osteichthyes	fish	**Carassius**	**gibelio**	Prussian carp		Y	Y	Y	3	Aquatic inland	Omnivore	Asia									A3								1	6.3	
Angiospermae	Angiospermae	plant	**Carpobrotus**	**edulis**	Hottentot fig	Y	Y	Y		3	Terrestrial plants	Primary producer	Africa	Y	Y	Y				Y		A0	Y						Y	4	11.1	
Algae - Chlorophyta	Chlorophyta	alga	**Caulerpa**	**racemosa**	Grape alga	N	Y		Y	2	Marine	Primary producer	Unknown	Y	Y	Y														2	50.0	
Algae - Chlorophyta	Chlorophyta	alga	**Caulerpa**	**taxifolia**	Caulerpa	Y	Y		Y	3	Marine	Primary producer	Pacific, Indian and Red Sea	Y	Y	Y											Y				3	100.0	Y
Angiospermae	Monocotyledoneae	plant	**Cenchrus**	**longispinus**	Sandburn	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America	Y		Y														1	0.0	
Arthropoda	Diptera	true fly	**Ceratitis**	**capitata**	Mediterranean fruit fly	Y	Y	Y	Y	4	Terrestrial animals	Herbivore	Africa	Y																1	0.0	
Chordata	Mammalia	mammal	**Cervus**	**canadensis**	Wapiti	Y				1	Terrestrial animals	Herbivore	North America											7/13							0.0	
Chordata	Mammalia	mammal	**Cervus**	**nippon**	Sika deer	Y	Y	Y	Y	4	Terrestrial animals	Herbivore	Asia	Y	Y	Y				Y		A0	Y	14/17		Y				5	0.0	
Arthropoda	Hemiptera	true bug	**Cinara**	**cupressi**	Cypress aphid	Y	Y	Y	Y	4	Terrestrial animals	Herbivore	Europe		Y															3	0.0	
Algae - Chlorophyta	Chlorophyta	alga	**Codium**	**fragile**	Green sea fingers	Y		Y	Y	1	Marine	Primary producer	Asia	Y																3	100.0	Y
Algae - Chlorophyta	Chlorophyta	alga	**Codium**	**fragile fragile**	Green sea-fingers	Y		Y	Y	3	Marine	Primary producer	Asia	Y	Y	Y				Y					Y						50.0	
Mollusca	Bivalvia	bivalve	**Corbicula**	**fluminea**	Asiatic clam	Y	Y	Y	Y	4	Aquatic inland	Filter-feeder	Asia	Y	Y					Y									Y	5	0.0	
Mollusca	Bivalvia	bivalve	**Corbicula**	**fluminalis**	Asiatic clam		Y	Y	Y	3	Aquatic inland	Filter-feeder	Asia															Y	Y	3	12.5	
Cnidaria	Cnidaria	cnidaria	**Cordylophora**	**caspia**	Freshwater hydroid	Y	Y	Y	Y	4	Aquatic inland	Filter-feeder	Europe	Y	Y	Y				Y									Y	1	0.0	
Angiospermae	Angiospermae	plant	**Cornus**	**sericea**	Red-osier dogwood	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America							Y		A2								7	44.4	
Angiospermae	Angiospermae	plant	**Cortaderia**	**selloana**	Pampas grass	Y	Y	Y		3	Terrestrial plants	Primary producer	South America	Y	Y	Y							Y							Y	1	0.0	
Chordata	Aves	bird	**Corvus**	**splendens**	Indian house crow	Y	Y	Y	Y	4	Terrestrial animals	Omnivore	Asia	Y				Y	Y				Y							6	14.3	
Arthropoda	Hemiptera	beetle	**Corythucha**	**arcuata**	Oak lace bug		Y			1	Terrestrial animals	Herbivore	North America	Y		Y															4	0.0	
Algae - Bacillariophyceae	Bacillariophyceae	alga	**Coscinodiscus**	**wailesii**	Diatom	Y	Y	Y	Y	4	Marine	Primary producer	Pacific and Indian Ocean	Y	Y	Y			Y												6	50.0	
Angiospermae	Angiospermae	plant	**Cotoneaster**	**horizontalis**	Wall cotoneaster	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	Asia						Y			A2								4	11.1	
Cnidaria	Hydrozoa	hydroid	**Craspedacusta**	**sowerbyi**	Freshwater jellyfish	Y	Y	Y	Y	4	Aquatic inland	Predator	Asia	Y			Y													2	0.0	
Mollusca	Bivalvia	bivalve	**Crassostrea**	**gigas**	Pacific oyster	Y	Y	Y	Y	4	Marine	Filter-feeder	Asia	Y			Y								Y					2	0.0	
Angiospermae	Angiospermae	plant	**Crassula**	**helmsii**	New Zealand pigmyweed	Y	Y	Y	Y	4	Aquatic inland	Primary producer	Australia	Y	Y	Y				Y	Y	A1							Y	5	81.3	Y
Mollusca	Gastropoda	limpet	**Crepidula**	**fornicata**	Slipper limpet	Y	Y	Y	Y	4	Marine	Filter-feeder	North America	Y	Y	Y	Y			Y					Y					3	0.0	
Fungi - Ascomycota	Ascomycota	fungi	**Cryphonectria**	**parasitica**	Chestnut blight	Y	Y	Y	Y	3	Terrestrial plants	Parasite	Asia													Y				7	0.0	
Chordata	Aves	bird	**Cygnus**	**atratus**	Black swan	Y	Y	Y	Y	4	Aquatic inland	Herbivore	Australia											6/3						2	0.0	
Chordata	Mammalia	mammal	**Cynomys**	**ludovicianus**	Black-tailed prairie dog	Y			Y	2	Terrestrial animals	Herbivore	North America					Y												1	0.0	
Chordata	Osteichthyes	fish	**Cyprinus**	**carpio**	Carp	Y	Y	Y	Y	4	Aquatic inland	Omnivore	Asia	Y												Y				5	6.3	
Arthropoda	Amphipoda	crustacean	**Chaetogammarus**	**ischnus**	Ponto-Caspian amphipod		Y		Y	2	Aquatic inland	Omnivore	Europe															Y	Y	2	0.0	
Algae - Heterokontophyta	Dictyochophyceae	alga	**Chattonella**	**verruculosa**	Chattonella				Y	1	Marine	Primary producer	Asia	Y	Y	Y	Y													2	50.0	
Arthropoda	Amphipoda	crustacean	**Chelicorophium**	**robustum**	Ponto-Caspian amphipod				Y	1	Aquatic inland	Omnivore	Europe															Y		2	0.0	
Arthropoda	Amphipoda	crustacean	**Cheliorophium**	**curvispinum**	Caspian mud shrimp	Y	Y	Y	Y	4	Aquatic inland	Filter-feeder	Europe	Y		Y												Y	Y	5	0.0	
Chordata	Reptilia	reptile	**Chelydra**	**serpentina**	Common snapping turtle	Y			Y	2	Terrestrial animals	Predator	North America						Y											2	0.0	
Angiospermae	Asterales	plant	**Chromolaena**	**odorata**	Siam weed		Y		N	1	Terrestrial plants	Primary producer	Central America													Y				2	0.0	
Chordata	Mammalia	mammal	**Dama**	**dama**	Fallow deer	Y	Y	Y	Y	4	Terrestrial animals	Herbivore	Europe							Y				9/16						3	0.0	
Arthropoda	Coleoptera	beetle	**Diabrotica**	**virgifera**	Western corn rootworm	Y, Eradicated	Y	Y	Y	3	Terrestrial animals	Herbivore	Central America	Y	Y								Y							4	0.0	
Chordata	Tunicata	tunicate	**Didemnum**	**vexillum**	Carpet sea squirt	Y	Y	Y	Y	3	Marine	Filter-feeder	Asia					Y	Y	Y										5	0.0	
Arthropoda	Amphipoda	crustacean	**Dikerogammarus**	**villosus**	Killer shrimp	Y	Y	Y	Y	4	Aquatic inland	Omnivore	Europe	Y	Y	Y		Y		Y								Y	Y	6	68.8	Y
Arthropoda	Amphipoda	crustacean	**Dikerogammarus**	**bispinosus**	Ponto-Caspian amphipod				Y	1	Aquatic inland	Omnivore	Europe															Y		3	12.5	
Arthropoda	Amphipoda	crustacean	**Dikerogammarus**	**haemobaphes**	Ponto-Caspian amphipod	Y	Y	Y	Y	4	Aquatic inland	Omnivore	Europe															Y		5	0.0	
Mollusca	Bivalvia	mollusc	**Dreissena**	**bugensis**	Quagga mussel	N	Y	Y	Y	2	Aquatic inland	Filter-feeder	Europe	Y		Y												Y	Y	3	31.3	
Mollusca	Bivalvia	mollusc	**Dreissena**	**polymorpha**	Zebra mussel	Y	Y	Y	Y	4	Aquatic inland	Filter-feeder	Asia	Y	Y	Y			Y							Y		Y		2	56.3	
Angiospermae	Angiospermae	plant	**Echinocystis**	**lobata**	Wild cucumber		Y		N	1	Terrestrial plants	Primary producer	North America	Y	Y								Y							4	0.0	
Arthropoda	Amphipoda	crustacean	**Echinogammarus**	**trichiatus**	Ponto-Caspian amphipod			Y	Y	2	Aquatic inland	Omnivore	Europe															Y			0.0	
Angiospermae	Angiospermae	plant	**Egeria**	**densa**	Brazilian waterweed	Y	Y	Y	Y	4	Aquatic inland	Primary producer	South America	Y						Y		A1							Y	2	25.0	
Angiospermae	Angiospermae	plant	**Eichhornia**	**crassipes**	Water hyacinth	Y	Y	Y	Y	4	Aquatic inland	Primary producer	South America													Y				2	0.0	
Arthropoda	Maxillopoda	crustacean	**Elminius**	**modestus**	New Zealand barnacle	Y	Y	Y	Y	4	Marine	Filter-feeder	Australia	Y	Y	Y														1	0.0	
Angiospermae	Monocotyledoneae	plant	**Elodea**	**callitrichoides**	South American waterweed	Y	Y			2	Aquatic inland	Primary producer	North America			Y														4	0.0	
Angiospermae	Angiospermae	plant	**Elodea**	**canadensis**	Canadian pondweed	Y	Y	Y	Y	4	Aquatic inland	Primary producer	North America	Y	Y	Y				Y		A3								2	6.3	
Angiospermae	Angiospermae	plant	**Elodea**	**nuttallii**	Esthwaite waterweed	Y	Y	Y	Y	4	Aquatic inland	Primary producer	North America	Y		Y				Y		A3							Y	2	6.3	
Mollusca	Bivalvia	bivalve	**Ensis**	**americanus**	American jack knife clam	Y	Y	Y	Y	4	Marine	Filter-feeder	North America	Y	Y	Y														3	0.0	
Angiospermae	Eudicotyledoneae	plant	**Epilobium**	**ciliatum**	American willowherb	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America	Y		Y														6	11.1	
Arthropoda	Decapoda	crustacean	**Eriocheir**	**sinensis**	Chinese mitten crab	Y	Y	Y	Y	4	Aquatic inland	Omnivore	Asia	Y	Y	Y	Y	Y	Y		Y					Y		Y		1	43.8	
Angiospermae	Angiospermae	plant	**Euphorbia**	**pseudovirgata**	Russian spurge	Y	Native			1	Terrestrial plants	Primary producer	Europe													Y				1	22.2	
Angiospermae	Angiospermae	plant	**Fallopia**	**bohemica**	Bohemian knotweed	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	Unknown	Y		Y	Y					A2							Y	1	22.2	
Angiospermae	Angiospermae	plant	**Fallopia**	**japonica**	Japanese knotweed	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	Asia	Y		Y	Y			Y	Y	A3				Y			Y	3	100.0	Y
Angiospermae	Angiospermae	plant	**Fallopia**	**sachalinensis**	Giant knotweed	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	Asia	Y		Y	Y			Y		A2							Y	8	22.2	
Chordata	Mammalia	mammal	**Felis**	**catus**	Feral cat	Y	Y	Y	Y	4	Terrestrial animals	Omnivore	Africa							Y						Y				3	0.0	
Annelida	Polychaeta	worm	**Ficopomatus**	**enigmaticus**	Trumpet worm	Y	Y	Y	Y	4	Marine	Detritivore	Unknown	Y		Y	Y			Y										5	0.0	
Arthropoda	Thysanoptera	thrips	**Frankliniella**	**occidentalis**	Western flower thrips	Y	Y	Y	Y	4	Terrestrial animals	Herbivore	North America	Y	Y					Y										5	0.0	
Angiospermae	Eudicotyledoneae	plant	**Galinsoga**	**quadriradiata**	Shaggy soldier	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	South America	Y			Y													3	0.0	
Chordata	Osteichthyes	fish	**Gambusia**	**affinis**	Topminnow		Y			1	Aquatic inland	Predator	North America	Y		Y										Y				2	0.0	
Arthropoda	Amphipoda	crustacean	**Gammarus**	**tigrinus**	Side swimmer	Y	Y	Y	Y	4	Aquatic inland	Omnivore	North America	Y		Y	Y			Y								Y		2	6.3	
Algae - Rhodophyta	Algae	alga	**Grateloupia**	**filicina**	Brown alga	Y	Y			2	Marine	Primary producer	Pacific, Indian and Atlantic ocean	Y		Y														1	0.0	
Angiospermae	Eudicotyledoneae	plant	**Grindelia**	**squarrosa**	Curlycup gumweed	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America	Y		Y														3	0.0	
Platyhelminthes	Trematoda	trematode	**Gyrodactylus**	**salaris**	Salmon fluke	N	Y	Y		2	Aquatic inland	Parasite	Europe	Y	Y	Y	Y													1	6.3	
Arthropoda	Coleoptera	beetle	**Harmonia**	**axyridis**	Harlequin ladybird	Y	Y	Y	Y	4	Terrestrial animals	Predator	Asia	Y	Y	Y				Y		A3								1	57.1	Y
Angiospermae	Angiospermae	plant	**Hedychium**	**gardnerianum**	Kahili ginger	Y			N	1	Terrestrial plants	Primary producer	Asia	Y	Y	Y										Y				2	0.0	
Angiospermae	Angiospermae	plant	**Helianthus**	**tuberosus**	Jerusalem artichoke	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	North America	Y		Y						A3							Y	1	11.1	
Arthropoda	Mysida	crustacean	**Hemimysis**	**anomala**	Bloody-red mysid	Y	Y	Y	Y	4	Aquatic inland	Omnivore	Europe			Y												Y	Y	5	0.0	
Angiospermae	Angiospermae	plant	**Heracleum**	**mantegazzianum**	Giant hogweed	Y	Y	Y	Y	4	Terrestrial plants	Primary producer	Asia	Y	Y	Y	Y			Y	Y	A3							Y	2	88.9	Y
Arthropoda	Decapoda	crustacean	**Homarus**	**americanus**	American lobster	Y	Y			2	Marine	Predator	North America	Y		Y														2	0.0	
Angiospermae	Angiospermae	plant	**Hydrocotyle**	**ranunculoides**	Floating pennywort	Y	Y	Y	Y	4	Aquatic inland	Primary producer	North America	Y		Y				Y	Y	A2							Y	3	81.3	Y

Chordata	Mammalia	mammal	**Hydrochaeris**	**hydrochaeris**	Capybara	?		Y	Y		2	Terrestrial animals	Herbivore	South America					Y															0.0		
Annelida	Polychaeta	worm	**Hydroides**	**dianthus**	Tubeworm	Y	Y	Y			3	Marine	Filter-feeder	North America	Y		Y																	4	0.0		
Annelida	Polychaeta	worm	**Hydroides**	**elegans**	Tubeworm	Y, Eradicated	Y		Y		2	Marine	Filter-feeder	Australia	Y		Y																	5	0.0		
Annelida	Polychaeta	worm	**Hydroides**	**ezoensis**	Tubeworm	Y	Y	Y			3	Marine	Filter-feeder	Asia	Y		Y																	1	0.0		
Chordata	Mammalia	mammal	**Hydropotes**	**inermis**	Chinese water deer	Y	Y, Eradicated				1	Terrestrial animals	Herbivore	Asia						Y														2	14.3		
Arthropoda	Insecta	moth	**Hyphantria**	**cunea**	Fall webwor	Y	Y				2	Terrestrial animals	Herbivore	North America	Y		Y																	2	0.0		
Angiospermae	Angiospermae	plant	**Impatiens**	**glandulifera**	Himalayan balsam	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	Asia	Y	Y	Y	Y			Y	Y	A3								Y		2	100.0	Y	
Angiospermae	Eudicotyledoneae	plant	**Iva**	**xanthifolia**	Marsh elder	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America	Y		Y																	2	0.0		
Arthropoda	Amphipoda	crustacean	**Jaera**	**istri**	Ponto-Caspian amphipod		Y	Y	Y		3	Aquatic inland	Omnivore	Europe																	Y			2	0.0		
Dinoflagellata	Dinophyceae	zooplankton	**Karenia**	**mikimotoi**	Karenia	Y	Y		Y		3	Marine	Primary producer	North America	Y		Y																	1	0.0		
Angiospermae	Angiospermae	plant	**Lagarosiphon**	**major**	Curly waterweed	Y	Y	Y	Y		4	Aquatic inland	Primary producer	Africa	Y				Y				A1									Y		1	37.5		
Arthropoda	Insecta	wasps, bees and ants	**Lasius**	**neglectus**	Invasive garden ant	Y	Y		Y		3	Terrestrial animals	Herbivore	Europe	Y		Y				Y													2	0.0		
Arthropoda	Araneae	arachnid	**Latrodectus**	**geometricus**	Brown widow				Y		1	Terrestrial animals	Predator	Africa										Y										0.0		
Arthropoda	Araneae	arachnid	**Latrodectus**	**hasselti**	Redback spider				Y		1	Terrestrial animals	Predator	Australia										Y										0.0		
Chordata	Osteichthyes	fish	**Lepomis**	**gibbosus**	Pond-perch	Y	Y	Y	Y		4	Aquatic inland	Predator	North America	Y		Y	Y																6.3		
Arthropoda	Coleoptera	beetle	**Leptinotarsa**	**decemlineata**	Colorado beetle	Y	Y	Y	Y		4	Terrestrial animals	Herbivore	North America	Y	Y																		3	14.3		
Arthropoda	Mysida	crustacean	**Limnomysis**	**benedeni**	Ponto-Caspian mysid		Y	Y	Y		3	Aquatic inland	Omnivore	Europe																Y				2	0.0		
Arthropoda	Hymenoptera	wasps, bees and ants	**Linepithema**	**humile**	Argentine ant	Y	Y	Y	Y		4	Terrestrial animals	Omnivore	South America	Y	Y		Y										Y						2	14.3		
Arthropoda	Diptera	true fly	**Liriomyza**	**huidobrensis**	Pea leaf miner	N	Y	Y	Y		3	Terrestrial animals	Herbivore	South America	Y	Y																		5	0.0		
Chordata	Amphibia	amphibian	**Litobates**	**catesbeianus**	American bullfrog	Y	Y	Y	Y		4	Aquatic inland	Predator	North America		Y		Y	Y	Y			A1					Y						1	37.5		
Mollusca	Gastropoda	gastropod	**Lithoglyphus**	**naticoides**	Gravel snail		Y	Y	Y		3	Marine	Omnivore	Europe																	Y			1	0.0		
Chordata	Osteichthyes	fish	**Liza**	**haematocheila**	Hemafecia	Y	Y	Y	Y		4	Marine	Omnivore	Asia	Y		Y																	4	0.0		
Angiospermae	Angiospermae	plant	**Lonicera**	**japonica**	Japanese honeysuckle	Y	Y	Y			3	Terrestrial plants	Primary producer	Asia										Y										2	0.0		
Angiospermae	Angiospermae	plant	**Ludwigia**	**grandiflora**	Creeping water-primrose	Y	Y	Y	Y		4	Aquatic inland	Primary producer	North America	Y				Y		Y		A2							Y				1	50.0		
Angiospermae	Magnoliopsida	plant	**Ludwigia**	**peploides**	Floating water-primrose	Y	Y	Y	Y		4	Aquatic inland	Primary producer	North America	Y		Y						A1									Y		1	31.3		
Angiospermae	Eudicotyledoneae	plant	**Lupinus**	**polyphyllus**	Garden lupin	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America	Y			Y														Y		1	0.0		
Arthropoda	Lepidoptera	moth	**Lymantria**	**dispar**	Gypsy moth	Y	Y	Y	Y		4	Terrestrial animals	Herbivore	Europe					Y											Y				7	0.0		
Angiospermae	Monocotyledoneae	plant	**Lysichiton**	**americanus**	American skunk cabbage	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America				Y																1	0.0		
Angiospermae	Angiospermae	plant	**Mahonia**	**aquifolium**	Oregon grape	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America									A2											2	11.1		
Annelida	Polychaeta	worm	**Marenzelleria**	**neglecta**	Red-gilled mudworm	N		Y	Y		2	Aquatic inland	Filter-feeder	North America	Y	Y	Y										Y							1	50.0		
Arthropoda	Decapoda	crustacean	**Marsupenaeus**	**japonicus**	Caribbean mud crab	Y	Y				2	Marine	Predator	Australia	Y	Y	Y																	1	0.0		
Ascomycota	Pucciniomycetes	fungi	**Melampsoridium**	**hiratsukanum**	Alder rust	Y		Y	Y		3	Terrestrial plants	Parasite	Asia				Y																2	0.0		
Chordata	Tunicata	tunicate	**Microcosmus**	**squamiger**	Ascidian		Y				1	Marine	Filter-feeder	Australia	Y		Y																	2	0.0		
Chordata	Osteichthyes	fish	**Micropterus**	**salmoides**	Largemouth bass	Y, Eradicated	Y	Y	Y		3	Aquatic inland	Predator	North America	Y		Y													Y				1	0.0		
Angiospermae	Eudicotyledoneae	plant	**Mimulus**	**guttatus**	Monkeyflower	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America				Y																1	0.0		
Ctenophora	Ctenophora	comb jelly	**Mnemiopsis**	**leidyi**	Sea walnut	N	Y	Y	Y		3	Marine	Predator	South America	Y	Y	Y										Y	Y						7	0.0		
Chordata	Mammalia	mammal	**Muntiacus**	**reevesi**	Reeves's muntjac	Y	Y, Eradicated	Y	Y		3	Terrestrial animals	Herbivore	Asia	Y		Y			Y			A0	Y	11/14									1	42.9		
Chordata	Mammalia	mammal	**Mus**	**musculus**	House mouse	Y	Y	Y	Y		4	Terrestrial animals	Omnivore	Asia						Y										Y				4	0.0		
Mollusca	Bivalvia	bivalve	**Musculista**	**senhousia**	Asian date mussel		Y				1	Marine	Filter-feeder	Asia	Y	Y																		2	0.0		
Chordata	Mammalia	mammal	**Mustela**	**vison**	American mink	Y	Y	Y	Y		4	Terrestrial animals	Predator	North America	Y	Y	Y			Y	Y	Y	A0	Y	17/4									1	71.4	Y	
Mollusca	Bivalvia	bivalve	**Mya**	**arenaria**	Sand-gaper	Y	Y	Y	Y		4	Marine	Filter-feeder	North America				Y																2	0.0		
Chordata	Aves	bird	**Myiopsitta**	**monachus**	Monk parakeet	Y	Y	Y	Y		4	Terrestrial animals	Herbivore	South America					Y															2	0.0		
Chordata	Mammalia	mammal	**Myocastor**	**coypus**	Coypu	Y, Eradicated	Y	Y	Y		3	Aquatic inland	Herbivore	South America	Y	Y	Y			Y			A1		12/13			Y						1	25.0		
Angiospermae	Angiospermae	plant	**Myriophyllum**	**aquaticum**	Parrot's feather	Y	Y	Y	Y		4	Aquatic inland	Primary producer	South America	Y			Y		Y			A2									Y		2	50.0		
Angiospermae	Angiospermae	plant	**Myriophyllum**	**heterophyllum**	Twoleaf watermilfoil	N	Y	Y	Y		3	Aquatic inland	Primary producer	Unknown	Y								A1							Y				3	31.3		
Arthropoda	Maxillopoda	copepod	**Mytilicola**	**intestinalis**	Parasitic copepod	Y	Y	Y	Y		4	Marine	Parasite	Europe			Y																	1	0.0		
Mollusca	Bivalvia	mollusc	**Mytilopsis**	**leucophaeta**	Dark false mussel	Y	Y	Y	Y		4	Marine	Filter-feeder	North America					Y															1	0.0		
Chordata	Osteichthyes	fish	**Neogobius**	**melanostomus**	Round goby	N	Y	Y	Y		2	Aquatic inland	Predator	Asia	Y	Y	Y		Y				A1	Y						Y				3	6.3		
Chordata	Mammalia	mammal	**Nyctereutes**	**procyonoides**	Raccoon dog	Y	Y	Y	Y		4	Terrestrial animals	Omnivore	Asia	Y	Y	Y		Y				A1	Y	10/6									4	14.3		
Algae - Bacillariophyceae	Bacillariophyceae	alga	**Odontella**	**sinensis**	Chinese diatom	Y	Y	Y	Y		4	Marine	Primary producer	Asia	Y																			2	50.0		
Chordata	Osteichthyes	fish	**Oncorhynchus**	**mykiss**	Rainbow trout	Y	Y	Y	Y		4	Aquatic inland	Predator	Asia	Y		Y	Y			Y									Y				2	6.3		
Chordata	Mammalia	mammal	**Ondatra**	**zibethicus**	Muskrat	Y, Eradicated	Y	Y	Y		3	Aquatic inland	Herbivore	North America	Y	Y	Y		Y				A3		14/14									3	12.5		
Fungi - Ascomycota	Ascomycota	fungi	**Ophiostoma**	**novo-ulmi**	Dutch elm disease	Y	Y	Y	Y		4	Terrestrial plants	Parasite	Asia	Y	Y	Y													Y				6	33.3		
Angiospermae	Angiospermae	plant	**Opuntia**	**ficus-indica**	Prickly-pear cacti	N	Y	N	N		1	Terrestrial plants	Primary producer	Central America	Y	Y	Y																	2	0.0		
Angiospermae	Eudicotyledoneae	plant	**Opuntia**	**stricta**	Australian pest pear		Y				1	Terrestrial plants	Primary producer	North America																Y				9	0.0		
Arthropoda	Decapoda	crustacean	**Orconectes**	**limosus**	Spinycheek crayfish	Y	Y	Y	Y		4	Aquatic inland	Omnivore	North America	Y		Y			Y											Y			1	12.5		
Chordata	Osteichthyes	fish	**Oreochromis**	**mossambicus**	Mozambique tilapia	Y	Y	Y	Y		4	Aquatic inland	Omnivore	Africa																Y				7	0.0		
Chordata	Mammalia	mammal	**Oryctolagus**	**cuniculus**	Rabbit	Y	Y	Y	Y		4	Terrestrial animals	Herbivore	Europe	Y		Y													Y				8	0.0		
Angiospermae	Angiospermae	plant	**Oxalis**	**pes-caprae**	Bermuda buttercup	Y	Y		N		2	Terrestrial plants	Primary producer	Africa	Y	Y			Y													Y		8	0.0		
Chordata	Aves	bird	**Oxyura**	**jamaicensis**	Ruddy duck	Y	Y	Y	Y		4	Aquatic inland	Omnivore	South America	Y	Y	Y	Y			Y			Y	8/0									5	28.6		
Arthropoda	Decapoda	crustacean	**Pacifastacus**	**leniusculus**	Signal crayfish	Y	Y	Y	Y		4	Aquatic inland	Omnivore	North America	Y		Y	Y			Y	Y												7	43.8		
Angiospermae	Angiospermae	plant	**Paspalum**	**paspalodes**	Water finger grass	Y	Y	Y	Y		3	Terrestrial plants	Primary producer	Africa	Y	Y																Y		1	0.0		
Chordata	Amphibia	amphibian	**Pelophylax**	**ridibundus**	Marsh frog	Y, Eradicated	Y	Y	Y		3	Aquatic inland	Predator	Asia				Y					A2											3	0.0		
Mollusca	Bivalvia	snail and slug	**Petricola**	**pholadiformis**	American piddock	Y	Y	Y	Y		4	Marine	Filter-feeder	North America	Y		Y																	7	0.0		
Algae - Haptophyta	Haptophyta	alga	**Phaeocystis**	**pouchetii**	Yellow-green alga	Y	Y	Y	Y		4	Marine	Primary producer	Atlantic Ocean	Y		Y																	2	50.0		
Arthropoda	Hymenoptera	wasps, bees and ants	**Pheidole**	**megacephala**	Bigheaded ant	Y	Y				3	Terrestrial animals	Omnivore	Africa																Y				7	0.0		
Angiospermae	Angiospermae	plant	**Phytolacca**	**americana**	American pokeweed	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America										Y										2	22.2		
Fungi - Oomycetes	Oomycetes	fungi	**Phytophthora**	**cinnamomi**	Phytophthora crown	Y	Y	Y	Y		4	Terrestrial plants	Parasite	Asia	Y	Y	Y													Y				7	22.2		
Algae - Heterokontophyta	Oomycetes	alga	**Phytophthora**	**ramorum**	Ramorum dieback	Y	Y	Y	Y		4	Marine	Primary producer	North America				Y																3	50.0		
Annelida	Polychaeta	worm	**Pileolaria**	**berkeleyana**	Polychaete tubeworm	Y	Y				2	Marine	Filter-feeder	Asia	Y		Y																	2	0.0		
Mollusca	Bivalvia	bivalve	**Pinctada**	**radiata**	Gulf pearl oyster		Y				1	Marine	Filter-feeder	Africa	Y	Y																		5	0.0		
Pinophyta	Pinopsida	plant	**Pinus**	**mugo**	Mountain pine	Y	NATIVE	Y	Y		3	Terrestrial plants	Primary producer	Europe	Y			Y																2	0.0		
Pinophyta	Pinopsida	plant	**Pinus**	**pinaster**	Atlantic maritime pine	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	Europe					Y											Y				3	0.0		
Algae - Rhodophyta	Algae	alga	**Polysiphonia**	**morrowii**	Red seaweed		Y				1	Marine	Primary producer	Asia	Y		Y																	4	0.0		
Mollusca	Gastropoda	mollusc	**Potamopyrgus**	**antipodarum**	New Zealand Mudsnail	Y	Y	Y	Y		4	Aquatic inland	Detritivore	Australia	Y		Y	Y													Y			3	0.0		
Arthropoda	Decapoda	crustacean	**Procambarus**	**("Marmorkrebs")**	Marbled crayfish	N			Y		1	Aquatic inland	Omnivore	North America					Y											Y				8	6.3		
Arthropoda	Decapoda	crustacean	**Procambarus**	**clarkii**	Red swamp crayfish	Y	Y	Y	Y		4	Aquatic inland	Omnivore	North America	Y		Y																	1	6.3		
Chordata	Mammalia	mammal	**Procyon**	**lotor**	Raccoon	Y	Y	Y	Y		4	Terrestrial animals	Omnivore	North America	Y	Y	Y		Y				A2		9/10									2	28.6		
Dinoflagellata	Dinophyceae	dinoflagelate	**Prorocentrum**	**minimum**	Dinoflagellate	Y	Y		Y		3	Marine	Primary producer	Pacific Ocean	Y																			5	0.0		
Chordata	Osteichthyes	fish	**Proterorhinus**	**marmoratus**	Tubenose goby				Y		1	Aquatic inland	Omnivore	Europe					Y						Y									3	0.0		
Angiospermae	Angiospermae	plant	**Prunus**	**serotina**	Rum cherry	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America	Y	Y	Y			Y			A3									Y		7	33.3		
Platyhelminthes	Trematoda	trematode	**Pseudodactylogyrus**	**anguillae**	Eel parasite		Y				1	Aquatic inland	Parasite	Asia			Y	Y							Y									6	12.5		
Chordata	Osteichthyes	fish	**Pseudorasbora**	**parva**	Topmouth gudgeon	Y	Y	Y	Y		4	Aquatic inland	Predator	Asia	Y	Y	Y	Y			Y		A2											3	50.0		
Angiospermae	Myrtales	plant	**Psidium**	**cattleianum**	Cattley guava	Y	Y		N		2	Terrestrial plants	Primary producer	South America																Y				2	0.0		
Chordata	Aves	bird	**Psittacula**	**krameri**	Ring-necked parakeet	Y	Y	Y	Y		4	Terrestrial animals	Herbivore	Africa	Y										4/11									5	28.6		
Chordata	Aves	bird	**Pycnonotus**	**cafer**	Red-vented bulbul	Y	Y	Y	Y		3	Terrestrial animals	Omnivore	Asia														Y						2	0.0		
Mollusca	Gastropoda	gastropod	**Rapana**	**venosa**	Rapa whelk	Y	Y	Y	Y		4	Marine	Predator	Asia	Y	Y	Y																	1	0.0		
Chordata	Mammalia	mammal	**Rattus**	**norvegicus**	Brown rat	Y	Y	Y	Y		4	Terrestrial animals	Omnivore	Asia	Y				Y				A3		15/18									2	0.0		
Chordata	Mammalia	mammal	**Rattus**	**rattus**	Ship Rat	Y	Y	Y	Y		4	Terrestrial animals	Omnivore	Asia					Y									Y						5	0.0		
Arthropoda	Decapoda	crustacean	**Rhithropanopeus**	**harrisii**	Dwarf crab	Y	Y	Y	Y		4	Marine	Predator	North America					Y													Y		3	0.0		
Angiospermae	Angiospermae	plant	**Rhododendron**	**ponticum**	Rhododendron	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	Europe	Y	Y			Y				A2									Y		2	44.4		
Arthropoda	Insecta	beetle	**Rhynchophorus**	**ferrugineus**	Red palm weevil		Y				1	Terrestrial animals	Herbivore	Asia	Y																			2	0.0		
Angiospermae	Angiospermae	plant	**Robinia**	**pseudoacacia**	False acacia	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America	Y	Y			Y															2	0.0		
Angiospermae	Angiospermae	plant	**Rosa**	**rugosa**	Japanese rose	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	Asia	Y	Y	Y	Y			Y		A3												55.6		
Chordata	Osteichthyes	fish	**Salmo**	**salar**	Sebago salmon	Y	Y	Y	Y		4	Aquatic inland	Predator	North America	Y		Y	Y																1	0.0		
Chordata	Osteichthyes	fish	**Salvelinus**	**fontinalis**	American brook trout	Y	Y	Y	Y		4	Aquatic inland	Predator	North America	Y	Y	Y	Y																4	0.0		
Chordata	Osteichthyes	fish	**Sander**	**lucioperca**	Pikeperch	Y	Y	Y	Y		4	Aquatic inland	Predator	Europe	Y		Y	Y																2	6.3		
Algae - Heterokontophyta	Phaeophyceae	alga	**Sargassum**	**muticum**	Japanese brown alga	Y	Y	Y	Y		4	Marine	Primary producer	Asia				Y			Y													5	50.0		
Chordata	Mammalia	mammal	**Sciurus**	**carolinensis**	Grey squirrel	Y	N	Y	Y		3	Terrestrial animals	Herbivore	North America	Y	Y		Y			Y		A0	Y	17/7			Y						4	71.4	Y	
Fungi - Ascomycota	Ascomycota	fungi	**Seiridium**	**cardinale**	Cypress canker	Y	Y				2	Terrestrial plants	Parasite	Unknown	y	y																		1	0.0		
Angiospermae	Eudicotyledoneae	plant	**Senecio**	**inaequidens**	Narrow-leaved ragwort	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	Africa	Y		Y	Y															Y	4	0.0		
Angiospermae	Eudicotyledoneae	plant	**Sicyos**	**angulatus**	Bur cucumber		Y				1	Terrestrial plants	Primary producer	North America	Y		Y																	2	0.0		
Chordata	Osteichthyes	fish	**Silurus**	**glanis**	Catfish	Y	Y	Y	Y		4	Aquatic inland	Predator	Asia	Y																			5	0.0		
Mollusca	Bivalvia	bivalve	**Sinanodonta**	**woodiana**	Chinese pond mussel		Y	Y			2	Aquatic inland	Filter-feeder	Asia	Y		Y															Y		2	0.0		
Angiospermae	Eudicotyledoneae	plant	**Solanum**	**elaeagnifolium**	Silver-leaf nightshade		Y				1	Terrestrial plants	Primary producer	Central America	Y																		Y	4	0.0		
Angiospermae	Angiospermae	plant	**Solidago**	**canadensis**	Canadian goldenrod	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America	Y		Y	Y					A3										Y	6	22.2		
Angiospermae	Angiospermae	plant	**Solidago**	**gigantea**	Early goldenrod	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America			Y						A3										Y	4	33.3		
Angiospermae	Angiospermae	plant	**Spartina**	**townsendi / anglica**	Common cord-grass	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	Europe	Y	Y	Y	Y			Y							Y	Y						7	11.1		
Chordata	Osteichthyes	fish	**Sphoeroides**	**pachygaster**	Blunthead puffer	Y	Y				2	Marine	Predator	Atlantic Ocean	Y		Y																	4	0.0		
Angiospermae	Angiospermae	plant	**Spiraea**	**alba**	Pale bridewort	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America					Y				A2											1	11.1		
Angiospermae	Angiospermae	plant	**Spiraea**	**douglasii**	Steeplebush	Y	Y	Y	Y		4	Terrestrial plants	Primary producer	North America									A2											3	11.1		
Annelida	Polychaeta	worm	**Spirorbis**	**marioni**	Polychaete worm		Y				1	Marine	Detritivore	Europe	Y			Y																2	0.0		
Arthropoda	Lepidoptera	moth	**Spodoptera**	**littoralis**	African cotton leafworm	Y, Eradicated	Y	N	Y, Eradicated		1	Terrestrial animals	Herbivore	Africa	Y	Y																		1	0.0		
Chordata	Tunicata	tunicate	**Styela**	**clava**	Folded sea-squirt	Y	Y	Y	Y		4	Marine	Filter-feeder	Asia	Y	Y	Y		Y															3	0.0		
Chordata	Mammalia	mammal	**Tamias**	**sibiricus**	Siberian chipmunk	Y	Y	Y	Y		4	Terrestrial animals	Herbivore	Asia	Y	Y																		2	14.3		
Mollusca	Bivalvia	bivalve	**Tapes**	**philippinarum**	Manila clam	Y	Y	Y	Y		4	Marine	Filter-feeder	Asia	Y		Y																	4	0.0		
Mollusca	Bivalvia	worm	**Teredo**	**navalis**	Common shipworm	Y	Y	Y	Y		4	Marine	Filter-feeder	Asia	Y	Y		Y																4	0.0		
Arthropoda	Lepidoptera	moth	**Thaumetopoea**	**processionea**	Processionary moth	Y	Y	Y	Y		4	Terrestrial animals	Herbivore	Europe					Y															3	14.3		
Chordata	Aves	bird	**Threskiornis**	**aethiopicus**	Sacred ibis	Y	Y	Y	Y		4	Aquatic inland	Predator	Africa	Y		Y		Y	Y			A0	Y	9/0									0.0		
Chordata	Reptilia	reptile	**Trachemys**	**scripta**	Red-eared terrapin	Y	Y	Y	Y		4	Terrestrial animals	Omnivore	Central America	Y		Y	Y		Y								Y						3	14.3		
Bryozoa	Bryozoa	bryozoan	**Tricellaria**	**inopinata**	Bryozoan	Y	Y	Y	Y		4	Marine	Filter-feeder	Pacific	Y		Y	Y																4	0.0		
Arthropoda	Coleoptera	beetle	**Trogoderma**	**granarium**	Khapra beetle	Y					1	Terrestrial animals	Detritivore	Asia																Y				5	0.0		
Algae - Phaeophyceae	Phaeophyceae	alga	**Undaria**	**pinnatifida**	Japanese kelp	Y	Y	Y	Y		4	Marine	Primary producer	Asia	Y	Y	Y													Y	Y			4	50.0		
Arthropoda	Hymenoptera	wasps, bees and ants	**Vespa**	**velutina**	Asian hornet	N	Y	N	N		1	Terrestrial animals	Predator	Asia					Y					Y										2	42.9		
Bryozoa	Gymnolaemata	bryozoan	**Victorella**	**pavida**	Trembling sea-mat	Y	Y	Y	Y		4	Marine	Filter-feeder	Atlantic Ocean	Y		Y																	2	0.0		
Arthropoda	Insecta	ant	**Wasmannia**	**auropunctata**	Little fire ant	Y	Y				2	Terrestrial animals	Herbivore	Central America																Y				2	0.0		
Bryozoa	Bryozoa	bryozoan	**Watersipora**	**subtorquata**	Encrusting bryozoan	Y	Y	Y			3	Marine	Filter-feeder	Unknown					Y											Y				2	0.0		
Algae - Rhodophyta	Rhodophyta	alga	**Womersleyella**	**setacea**	Red alga		Y				1	Marine	Primary producer	Atlantic and Pacific Ocean	Y		Y																	4	0.0		
Chordata	Amphibia	amphibian	**Xenopus**	**laevis**	African clawed toad	N	Y	Y			2	Aquatic inland	Predator	Africa	Y		Y	Y	Y	Y														5	6.3		

	Experts participating in the prioritization of the Alert List	
Expert	**Affiliation**	**Country**
Alan Tye	Divisie Landbouw & Natuur	Cyprus
Alexandra Zieritz	Department of Zoology, University of Cambridge	UK
Belinda Gallardo	Department of Zoology, University of Cambridge	UK
Ben Hoffmann	Ecosystem Sciences, Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Australia
Céline Bellard	Systematic Ecology and Evolution Group, University Paris-Sud	France
Dirk Jan Van der Gaag	Plant Protection Service, EPPO	Netherlands
Ernst-Jan Scholte	Ministry of Agriculture, Nature and Food Quality	Netherlands
François Moutou	Laboratoire d'Etudes et de Recherches en Pathologie Animale et Zoonoses (AFSSA-LERPAZ)	France
François Moutou	French Mammal Society	France
Fred Kraus	National Wildlife Research Center (NWRC)	US
Joerg Brandner	Department of Biology, University of Innsbruck	Austria
Johan Valkenburg	Nederlandse Voedsel—en Warenautoriteit	Netherlands
Karolina Bacela	Department of Invertebrate Zoology and Hydrobiology, University of Lodz	Poland
Pieter Boets	Department of Applied Ecology and Environmental Biology, University of Ghent	Belgium
Rieks van Klinken	Ecosystem Sciences, Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Australia
Rob Briton	Center for Conservation Biology, Bournemouth University	UK
Ronaldo Sousa	Department of Biology, University of Minho	Portugal
Simon Baker	Norfolk Mink Control Steering Group	UK
	Experts participating in the prioritization of the Black List	
Expert	**Affiliation**	**Country**
Adrian Wood	Environment Agency	UK
Ans Mouton	Instituut voor Natuur (INBO)	Belgium
Aymeric Watterlot	Conservatoire botanique national de Bailleul (CRP/CBNBl)	France
Belinda Gallardo	Department of Zoology, University of Cambridge	UK
Carl Sayer	University College London (UCL)	UK
Caroline Laburn	Water Management Alliance (WMA)	UK
Céline Fontaine	Centre Permanent d'Initiation à l'Environnement Auxi-le-Château (CPIE) - Val d'Authie	France
Dieter Depraetere	INAGRO	Belgium
E Harris	Independent researcher	UK

Hugo Verreycken	Instituut voor Natuur (INBO)	Belgium
Jonathan Newman	Centre for Ecology and Hydrology	UK
Julia Stansfield	Environment Agency	UK
Matt Wilkinson	Royal Society for the Protection of Birds (RSPB)	UK
Mike Sutton-Croft	Norfolk County Council	UK
Simon Baker	Independent researcher	UK
Tim Adriaens	Instituut voor Natuur (INBO)	Belgium
Will Burchnall	Broads Authority	UK

ANNEX E
Modelling Statistics

Definition of terms (modified from MaxEnt's tutorial in http://www.cs.
Term
Training samples
Regularized training gain
Unregularized training gain
Training AUC
Test samples
Test gain
Test AUC
AUC SD
Background points
VAR permutation importance
Sum permutation importance
Entropy
Prevalence
Maximum training sensitivity plus specificity cumulative threshold
Minimum training presence logistic threshold (marine species only)
% RINSE where the species is predicted present according to maxTSS

princeton.edu/~schapire/maxent/) 5	
Definition	
number of presence records used for training the model (70% of the total)	
measure of goodness of fit of models. It represents the presence likelihood of training records in comparison with background records. Gain is regularized for the number of terms in the model to avoid overfitting	
model gain not compensating for the number of predictors in the model	
Area Under the ROC curve calculated using training data	
number of presence records used for testing the model (30% of the total)	
model gain calculated from presence records held out to test the model	
Area Under the ROC curve calculated using test data. A model that performs no better than random will have a test AUC of 0.5 whereas a model with perfect discrimination will score 1	
standard deviation of Test AUC	
number of random absence points used to model the presence/absence of the species	
% the variable contributed to the final model. Blanks identify variables that were dropped during model optimization (backwards stepwise selection)	
Sum of the permutation importance of all environmental and socio-economic variables respectively	
Measure of the disorder in the species distribution	
ratio of presence to background samples	
Maximum training sensitivity plus specificity threshold used for transforming continuous (0-100%) into binary (0-1) predictions	
threshold used for transforming continuous (0-100%) into binary (0-1) predictions in the marine environment	
percentage of RINSE countries where the species is predicted suitable	

Species	#Training samples	Regularized training gain	Unregularized training gain	Iterations	Training AUC	#Test samples	Test gain	Test AUC	AUC Standard Deviation	#Background points	Altitude permutation importance	Annual Precipitation permutation importance	Precipitation of Driest Month permutation importance	Precipitation seasonality permutation importance	Annual Mean Temperature permutation importance	Temperature Seasonality permutation importance	Maximum Temperature of Warmest Month permutation importance	Minimum Temperature of Coldest Month permutation importance	Geology permutation importance	Sum permutation importance of environmental variables	Human Influence Index permutation importance	Land-use permutation importance	Human Population Density permutation importance	Closeness to Ports permutation importance	Closeness to Roads permutation importance	Sum permutation importance of socio-economic variables	Entropy	Prevalence (average of logistic output over background sites)	Maximum training sensitivity plus specificity cumulative threshold	**% RINSE where the species is predicted present according to maxTSS**
ALERT LIST																													
I.cylindrica	573.00	1.84	2.06	500.00	0.95	1336.00	1.84	0.94	0.00	10568.00	2.79	3.71	1.79	4.86	56.75	10.99	8.99	0.43	0.16	90.47	1.95	2.78	0.29	3.93		8.95	7.55	0.09	9.58	9.10
L.camara	620.00	1.73	1.87	500.00	0.95	1446.00	1.79	0.94	0.00	10616.00	0.77	2.92	13.20	2.08	19.92	27.32	0.85	5.43	1.00	73.49	19.86	1.22	0.51	4.92	2.06	28.57	6.43	0.03	14.94	4.93
M.calvescens	80.00	2.78	3.25	500.00	0.99	184.00	3.13	0.98	0.00	10080.00	0.00	0.13	0.32	0.37	1.40	76.89	0.35	6.87	0.47	86.82	2.08	3.30	5.75	5.75	2.65	19.52	7.04	0.05	7.20	0.10
M.micrantha	232.00	2.21	2.44	500.00	0.97	539.00	2.17	0.96	0.00	10229.00	3.29	2.04	2.68	0.62	2.84	9.66	0.00	62.99	0.15	84.25	5.47	1.96	0.92	4.75		13.10	5.81	0.01	15.54	0.00
M.quinquenervia	118.00	3.43	3.77	500.00	0.99	273.00	3.60	0.99	0.00	10117.00	14.80	3.40	8.99	12.86	13.04	3.97	22.53		0.49	80.08	7.50		3.97	8.44	0.70	20.62	6.80	0.04	11.43	0.35
P.glandulosa	159.00	2.43	2.76	500.00	0.98	368.00	2.47	0.97	0.00	10159.00	2.90	6.43		4.03	32.07	5.60	2.76	18.50	0.53	72.82	13.14	3.52	3.88	5.94	5.78	32.25	6.52	0.03	8.21	1.27
P.montana	224.00	2.74	2.93	500.00	0.98	521.00	2.72	0.97	0.00	10224.00	0.88	56.41	3.27	2.70	7.71	12.49	1.06	0.46	0.17	85.14	2.25	4.54	0.20	2.10	56.95	66.04	6.94	0.05	53.25	6.22
R.ellipticus	24.00	2.27	3.54	500.00	0.99	55.00	3.10	0.98	0.01	10024.00	5.94	4.15	2.43	0.40	23.64	2.13	0.00		0.30	39.00	0.00	0.19	0.00	3.85	0.84	4.88	6.59	0.03	15.59	1.15
S.terebinthifolius	56.00	2.62	3.25	500.00	0.98	130.00	2.95	0.97	0.01	10055.00	3.69	0.55	0.72	0.00	17.57	65.84	0.00		0.44	88.81		0.00		10.35		10.35	8.09	0.16	11.94	27.10
T.ramosissima	196.00	1.14	1.39	500.00	0.91	455.00	1.30	0.90	0.01	10193.00	19.80					47.28			0.72	67.81				32.19	0.58	32.78	7.45	0.08	16.56	48.77
AVERAGE	228.20	2.32	2.73	500.00	0.97	530.70	2.51	0.96	0.00	10226.50	5.49	8.86	4.18	3.10	19.44	26.22	4.06	15.78	0.44	76.87	6.53	2.19	1.94	8.22	9.94	23.71	6.92	0.06	16.42	9.90
BLACK LIST																														
A.dealbata	261.00	2.77	2.98	500.00	0.98	607.00	3.00	0.98	0.00	10261.00	1.71	2.53	1.09	2.74	45.62	35.65	3.82	1.75	0.11	95.03	2.05	1.34	0.24	1.34		4.97	6.48	0.03	5.56	79.51
C.edulis	129.00	3.26	3.49	500.00	0.99	298.00	3.10	0.98	0.00	10129.00		0.07	1.11	0.99	17.51	4.78	1.52	69.15	0.02	95.15	1.66		0.05	3.09	0.04	4.85	5.98	0.02	4.66	72.03
C.selloana	156.00	2.92	3.16	500.00	0.98	362.00	2.83	0.97	0.00	10155.00	2.85	9.10	1.25	0.40	20.10	23.53	10.29	9.73	0.00	77.25	16.26	0.97	1.67	2.75	1.10	22.75	6.33	0.03	4.75	81.42
E.lobata	361.00	2.30	2.47	500.00	0.97	842.00	2.29	0.96	0.00	10358.00	1.38	3.47	6.72	3.56	41.81	4.03	1.29	20.71	1.26	84.23	5.42	1.55		3.31	5.49	15.77	6.95	0.05	2.30	5.90
H.gardnerianum	14.00	2.27	3.64	140.00	0.99	30.00	2.43	0.93	0.02	10014.00	1.90	0.00	0.00	0.00	0.00	23.71	0.00	20.81	0.00	46.43	0.22	1.21	0.00	17.24	34.90	53.57	6.94	0.05	15.26	91.63
O.ficusindica	78.00	2.67	3.07	500.00	0.98	181.00	2.81	0.97	0.00	10076.00	0.33	0.78	1.04	1.09	27.96	4.41	0.00	60.24	0.44	96.30	0.92	0.21	0.65	1.92		3.70	6.60	0.03	14.00	72.05
O.pescaprae	128.00	3.26	3.49	500.00	0.99	298.00	3.14	0.98	0.00	10128.00	0.19	1.23	10.12	0.81	33.05	6.92	0.20	28.34	0.56	81.40	15.70	0.44	0.75	1.70		18.60	5.96	0.02	10.03	38.76
AVERAGE	161.00	2.78	3.19	448.57	0.98	374.00	2.80	0.97	0.01	10160.14	1.39	2.46	3.05	1.37	26.58	14.72	2.44	30.10	0.34	82.26	6.03	0.95	0.56	4.48	10.39	17.74	6.46	0.03	8.08	63.04

Species	#Training samples	Regularized training gain	Unregularized training gain	Iterations	Training AUC	#Test samples	Test gain	Test AUC	AUC Standard Deviation	#Background points	Altitude permutation importance	Annual Precipitation permutation importance	Precipitation of Driest Month permutation importance	Precipitation seasonality permutation importance	Annual Mean Temperature permutation importance	Temperature Seasonality permutation importance	Maximum Temperature of Warmest Month permutation importance	Minimum Temperature of Coldest Month permutation importance	Geology permutation importance	Sum permutation importance of environmental variables	Human Influence Index permutation importance	Land-use permutation importance	Human Population Density permutation importance	Closeness to Ports permutation importance	Closeness to Roads permutation importance	Sum permutation importance of socio-economic variables	Entropy	Prevalence (average of logistic output over background sites)	Maximum training sensitivity plus specificity cumulative threshold	**% RINSE where the species is predicted present according to maxTSS**
ALERT LIST																														
A.gracilipes	79.00	3.07	3.35	500.00	0.98	183.00	2.90	0.98	0.00	10079.00	0.39	0.83				4.85	5.64	79.88	0.30	91.88	5.62	0.15	0.14	0.27	1.94	8.12	6.19	0.02	5.91	20.98
A.lervia	59.00	2.59	3.29	500.00	0.99	137.00	3.04	0.98	0.00	10058.00	3.88	4.49	4.77	0.00	26.22	27.65	6.17	24.37		97.56	0.25		0.20	1.99		2.44	6.65	0.04	20.07	2.83
B.bison	43.00	1.85	2.46	500.00	0.97	98.00	2.26	0.94	0.02	10043.00	18.31		31.01			10.28	13.29	7.63		80.51	4.34	3.77	2.65	5.81	2.92	19.49	7.36	0.08	13.47	2.57
B.irregularis	144.00	2.72	3.21	500.00	0.99	335.00	2.89	0.98	0.00	10144.00	12.57	32.02		2.59	16.36	8.21	9.93	0.30	1.39	83.38	2.75	2.49		9.30	2.09	16.62	6.56	0.03	17.01	
C.canadensis	183.00	1.76	2.11	500.00	0.96	427.00	1.88	0.94	0.00	10183.00	1.36	0.67	0.80	8.58		6.20	10.11	35.54	0.42	63.67	8.59	7.43	3.94	15.24	1.14	36.33	7.53	0.09	16.89	25.42
C.finlaysonii	9.00	0.79	1.61	80.00	0.97	19.00	1.66	0.97	0.01	10009.00		0.00	0.00	0.00		0.00		32.87	20.43	53.30	0.00		0.00	18.28	28.42	46.70	8.43	0.22	70.51	15.17
C.picta	277.00	2.39	2.65	500.00	0.97	645.00	2.49	0.97	0.00	10277.00	2.62	3.86	2.03	6.32	0.00	2.97	28.98	25.68		72.46	4.12	2.87	0.16	17.07	3.33	27.54	6.86	0.04	12.81	4.33
E.rosea	27.00	2.67	3.72	340.00	0.97	62.00	2.85	0.93	0.02	10027.00	3.14		16.86		63.91	0.00	0.00	0.33	0.12	84.36	12.10		0.00		3.54	15.64	6.54	0.03	28.50	24.12
M.muntjak	13.00	2.06	2.69	160.00	0.98	28.00	1.97	0.95	0.01	10013.00	1.50	2.17	0.00	3.61		65.20	0.00	0.00		72.48	11.13	6.39		6.74	3.26	27.52	7.15	0.06	30.72	14.79
P.canaliculata	49.00	1.80	2.31	480.00	0.96	112.00	2.27	0.95	0.01	10047.00	0.00	14.57	8.44	0.33			0.60	70.40	0.15	94.49	0.00			4.19	1.32	5.51	7.42	0.08	13.25	97.30
AVERAGE	88.30	2.17	2.74	406.00	0.97	204.60	2.42	0.96	0.01	10088.00	4.86	7.33	7.99	3.06	26.62	13.93	8.30	27.70	3.80	79.41	4.89	3.85	1.01	8.77	5.33	20.59	7.07	0.07	22.93	23.06
BLACK LIST																														
A.albopictus	428.00	1.75	1.92	500.00	0.95	996.00	1.72	0.93	0.00	10425.00	0.66	31.14		15.99	4.17	9.06	6.73	6.61	0.95	75.33	1.13	4.84	0.88	13.56	4.26	24.67	7.51	0.09	9.14	49.62
A.glabripennis	18.00	1.99	2.88	180.00	0.99	40.00	2.32	0.96	0.02	10018.00		10.14	0.00		0.00	41.31	24.64		1.28	77.38	0.08			22.54		22.62	7.22	0.07	28.07	2.36
B.tabaci	104.00	2.04	2.35	500.00	0.96	242.00	2.02	0.94	0.01	10104.00	0.01	0.54	0.11	3.33	3.28	10.83	3.04	61.60	0.64	83.37	10.55		0.05	3.93	2.10	16.63	7.20	0.06	10.10	11.83
C.capitata	166.00	1.89	2.20	500.00	0.96	385.00	1.92	0.94	0.01	10166.00	0.16	10.74	5.34	1.88	0.48	16.54	12.63	20.96	0.15	68.88	23.74	1.44	2.34	3.61		31.12	7.35	0.08	19.54	55.92
L.humile	243.00	2.61	2.82	500.00	0.98	567.00	2.59	0.97	0.00	10241.00	0.51		2.00	1.51	23.07	32.57	0.76		0.59	61.00	28.05	1.63		5.67	3.65	39.00	6.64	0.03	14.86	41.44
M.neglecta	62.00	3.92	4.19	500.00	0.99	143.00	3.96	0.99	0.00	10062.00	46.93	0.04	1.81	0.01	0.00	13.74	0.09	22.96		85.59		1.28	0.10	13.03		14.41	5.30	0.01	8.19	19.43
S.carolinensis	248.00	2.99	3.16	500.00	0.98	578.00	2.89	0.98	0.00	10247.00	9.94	7.88	20.08		5.06	5.09	3.65	22.20	1.75	75.64	4.96		1.23	18.16		24.36	6.27	0.02	5.51	82.93
T.processionea	115.00	3.24	3.52	500.00	0.99	267.00	3.10	0.98	0.00	10115.00	5.58	6.95	7.60		11.91	35.68	9.26			76.99	14.36		0.81	6.48	1.35	23.01	5.98	0.02	8.04	86.76
V.velutina	125.00	3.65	3.90	500.00	0.99	289.00	3.59	0.99	0.00	10125.00	1.40	28.61	1.09	22.08	0.12	37.50	1.14	3.82	0.51	96.27	2.97	0.74	0.02		0.00	3.73	5.57	0.01	9.90	60.07
AVERAGE	167.67	2.68	2.99	464.44	0.98	389.67	2.68	0.97	0.00	10167.00	8.15	12.01	4.75	7.47	5.34	22.48	6.88	23.03	0.84	77.83	10.73	1.99	0.77	10.87	2.27	22.17	6.56	0.04	12.59	45.60

Species	#Training samples	Regularized training gain	Unregularized training gain	Iterations	Training AUC	#Test samples	Test gain	**Test AUC**	AUC Standard Deviation	#Background points	Altitude permutation importance	Annual Precipitation permutation importance	Precipitation of Driest Month permutation importance	Precipitation seasonality permutation importance	Annual Mean Temperature permutation importance	Temperature Seasonality permutation importance	Maximum Temperature of Warmest Month permutation importance	Minimum Temperature of Coldest Month permutation importance	Geology permutation importance	Sum permutation importance of environmental variables	Human Influence Index permutation importance	Land-use permutation importance	Human Population Density permutation importance	Closeness to Ports permutation importance	Closeness to Roads permutation importance	Sum permutation importance of socio-economic variables	Entropy	Prevalence (average of logistic output over background sites)	Maximum training sensitivity plus specificity logistic threshold	**% RINSE where the species is predicted present according to maxTSS**
ALERT LIST																													
A.dispar	33.00	3.86	4.32	500.00	1.00	75.00	3.66	**0.99**	0.00	10033.00	0.00	29.75		0.61		4.63	0.00	23.01		58.01	2.42			39.51	0.06	41.99	5.35	0.01	0.17	**0.00**
C.batrachus	63.00	4.12	4.41	500.00	1.00	145.00	3.68	**0.98**	0.01	10063.00	2.86	13.68	0.00	1.63	33.21	2.19			1.93	55.51	0.05	0.00	0.15	44.01	0.29	44.50	5.10	0.01	0.03	**0.00**
C.pengoi	48.00	3.86	4.14	500.00	0.99	110.00	4.03	**0.99**	0.00	10048.00	9.06			1.43	36.32	20.72		30.50	0.79	98.83		1.17	0.00			1.17	5.35	0.01	0.04	**2.06**
C.warpachowski	24.00	2.92	3.47	260.00	0.99	54.00	3.60	**0.99**	0.00	10024.00	30.30	0.00	4.86	9.17	9.03	7.09	0.00	22.42		82.87	0.27	0.10			16.76	17.13	6.30	0.03	0.23	**23.48**
G.fasciatus	19.00	2.60	3.54	480.00	0.99	42.00	2.67	**0.96**	0.01	10018.00		1.50		25.13		6.59			1.02	34.25	7.39			58.36		65.75	6.61	0.04	0.16	**83.22**
L.niloticus	18.00	1.48	2.37	240.00	0.93	40.00	2.49	**0.94**	0.02	10018.00	1.98	2.67		3.65	80.08				1.09	89.47	3.81	4.16	2.55		0.00	10.53	7.73	0.12	0.31	**3.37**
N.gymnotrachelus	11.00	2.66	3.30	200.00	0.99	24.00	3.01	**0.98**	0.00	10011.00	37.50	2.65	0.00		19.28	0.19	0.00	36.25		95.86	0.15			3.99		4.14	6.56	0.03	0.31	**58.64**
O.obesus	26.00	2.69	3.34	420.00	0.99	59.00	3.44	**0.99**	0.00	10025.00	2.78	15.07	12.67	6.52		5.89		53.18	0.64	96.76	2.38	0.85				3.24	6.53	0.03	0.09	**73.06**
P.robustoides	54.00	3.43	3.85	500.00	0.99	123.00	3.57	**0.99**	0.00	10054.00	13.67	0.21	4.16	3.10	15.40	6.67	0.00	53.22	0.01	96.46	0.34	0.56		2.00	0.65	3.54	5.78	0.02	0.06	**32.93**
T.danubialis	11.00	2.75	3.48	160.00	0.99	24.00	2.89	**0.98**	0.01	10011.00		0.00	0.00		21.77		1.26	53.25	2.71	78.99	0.00	0.31	0.00	5.40	15.29	21.01	6.46	0.03	0.44	**62.46**
AVERAGE	30.70	3.04	3.62	376.00	0.99	69.60	3.31	**0.98**	0.01	10030.50	12.27	7.28	3.62	6.41	30.73	6.75	0.25	38.83	1.17	78.70	1.87	1.02	0.67	25.55	5.51	21.30	6.18	0.03	0.18	**33.92**
BLACK LIST																														
A.crassus	18.00	2.63	3.46	300.00	0.99	41.00	2.92	**0.98**	0.01	10018.00	3.83	0.00	0.07	0.00	0.74	0.00	0.00	8.05	0.00	12.69	0.00	0.75		80.67	5.89	87.31	35.66	0.45	0.03	47.02
C.caroliniana	138.00	2.95	3.18	500.00	0.98	322.00	2.92	**0.98**	0.00	10138.00	24.55	11.62		23.06	2.13	11.98	9.71	13.07	0.48	96.60	1.51			1.32	0.57	3.40	6.29	0.02	9.46	21.17
D.bugensis	108.00	2.78	3.12	500.00	0.98	251.00	3.01	**0.98**	0.00	10108.00	8.32	0.41	2.83	44.87	13.18	9.25	0.20		1.10	80.16	4.23	0.70		14.91		19.84	6.46	0.03	12.71	69.05
E.crassipes	411.00	2.02	2.20	500.00	0.96	956.00	2.06	**0.95**	0.00	10409.00	7.76	4.91	1.98	1.73	20.69	10.59	12.52	1.06		61.24	11.94	0.85	2.34	6.15	17.47	38.76	7.25	0.06	15.96	14.10
M.heterophyllum	191.00	2.08	2.35	500.00	0.96	445.00	2.28	**0.96**	0.00	10191.00	10.78			33.34			19.38			63.49		2.46		34.05		36.51	7.16	0.06	14.34	28.56
N.melanostomus	121.00	3.45	3.75	500.00	0.99	281.00	3.33	**0.98**	0.00	10121.00	19.97	20.47	7.36	23.05		18.00	5.13	0.10		94.09	1.78			4.13		5.91	5.78	0.01	7.31	0.00
P.marmoratus	21.00	3.35	3.90	500.00	0.99	47.00	3.27	**0.98**	0.00	10021.00	0.52	3.15	0.00	46.40	0.19	0.00	0.00	31.77	1.10	83.13	2.92	1.83	0.04	11.89	0.18	16.87	5.87	0.02	8.42	85.26
AVERAGE	144.00	2.75	3.14	471.43	0.98	334.71	2.83	**0.97**	0.00	10143.71	10.82	6.76	2.45	24.64	7.39	8.30	6.71	10.81	0.67	70.20	3.73	1.32	1.19	21.87	6.03	29.80	10.64	0.09	9.74	37.88

Species	#Training samples	Regularized training gain	Unregularized training gain	Iterations	Training AUC	#Test samples	Test gain	**Test AUC**	AUC Standard Deviation	#Background points	Calcite permutation importance	Maximum chlorophyll-a permutation importance	Minimum Chlorophyll-a permutation importance	Dissolved oxygen permutation importance	Nitrate permutation importance	Maximum PAR (photosynthetic active radiation) permutation importance	pH permutation importance	Phosphate permutation importance	Salinity permutation importance	Silicate permutation importance	Maximum Surface Sea Temperature permutation importance	Minimum Surface Sea Temperature permutation importance	Sum permutation importance of environmental variables	Marine Influence permutation importance	Entropy	Prevalence (average of logistic output over background sites)	Minimum training presence logistic threshold	**% RINSE where the species is predicted present according to minTSS**
ALERT LIST																											
A.amurensis	29.00	4.18	4.68	500.00	1.00	65.00	4.06	**0.99**	0.00	10029.00	0.67	0.00	1.65	2.46	40.75	0.76	0.00	3.73	0.96	1.86	2.09	45.08	100.00		5.07	0.01	0.01	**3.30**
A.inaequivalvis	14.00	3.01	4.21	240.00	1.00	32.00	3.55	**0.98**	0.01	10013.00	0.00	0.86	0.02	0.00	47.64	0.03	2.01	0.00	0.64	13.90	30.78	4.12	100.00		6.21	0.02	0.31	**0.00**
A.taxiformis	46.00	2.22	2.91	500.00	0.97	106.00	2.56	**0.96**	0.01	10046.00	7.75	1.49	8.41	0.00	43.50	8.92	3.25	0.00	1.15	0.29	1.23	21.56	97.55	2.45	7.00	0.05	0.00	**0.00**
C.longicollis	14.00	3.87	4.85	160.00	0.99	32.00	4.75	**0.99**	0.01	10014.00		5.67	0.00	0.00	18.36	39.34	0.00		0.00	0.00	11.37	25.26	100.00	0.00	5.35	0.01	0.01	**3.34**
C.opilio	408.00	2.94	3.01	500.00	0.98	951.00	2.99	**0.98**	0.00	10406.00	0.48	18.66	1.40	6.79	7.22		0.68	29.48	9.79	3.44	15.68	5.37	98.98	1.02	6.31	0.03	0.02	**2.10**
F.commersonii	260.00	2.11	2.43	500.00	0.97	604.00	2.11	**0.95**	0.00	10260.00	13.65		5.15	18.79	17.45	6.95	2.49	4.30	3.34	1.48		25.92	99.50	0.50	7.13	0.06	0.01	**0.00**
P.amurensis	10.00	3.35	4.93	500.00	1.00	22.00	4.47	**1.00**	0.00	10010.00	0.00	0.00	0.00	0.09	19.63	10.32			0.26	24.30	0.00	45.07	99.68	0.32	5.84	0.02	0.00	**0.00**
P.camtschaticus	216.00	3.27	3.43	500.00	0.99	503.00	3.29	**0.99**	0.00	10216.00	1.08	15.84	5.99	1.94	8.75	2.77	0.28	10.41	6.19	2.74	37.68	6.29	99.96	0.04	5.97	0.02	0.01	**5.53**
P.pelagicus	64.00	3.10	3.47	500.00	0.99	148.00	3.28	**0.99**	0.00	10062.00	0.27	5.91	4.41	0.70	74.62	10.21	1.15		0.08	1.47	0.55	0.59	99.96	0.04	6.11	0.02	0.00	**0.00**
S.fasciata	31.00	2.57	3.25	500.00	0.98	71.00	3.08	**0.97**	0.01	10031.00	2.91		1.09	0.00	21.24	0.94	0.94	1.47	0.00	26.05	38.66	6.30	99.60	0.41	6.64	0.04	0.00	**4.90**
S.rivulatus	129.00	3.75	3.97	500.00	0.99	301.00	3.76	**0.99**	0.00	10129.00	0.34	42.92	1.00	0.25	45.40	2.60	2.66		2.85	0.65	0.00	1.23	99.91	0.09	5.47	0.01	0.00	**0.00**
S.undosquamis	411.00	2.63	2.75	500.00	0.98	958.00	2.55	**0.97**	0.00	10411.00	0.98	30.05	2.18	0.43	40.97	10.52	1.85	1.09	0.14	5.42	1.52	4.83	99.98	0.02	6.63	0.03	0.00	**0.00**
AVERAGE VALUES	136.00	3.08	3.66	450.00	0.98	316.08	3.37	**0.98**	0.00	10135.58	2.56	12.14	2.61	2.62	32.13	8.49	1.39	6.31	2.12	6.80	12.69	15.92	99.59	0.49	6.14	0.03	0.03	**1.60**
											105.81	1.00			5.00	1.00		1.00			2.00	3.00						
BLACK LIST																												
A.catenella	31.00	1.88	2.86	360.00	0.98	70.00	2.96	**0.99**	0.00	10031.00	0.61	31.52	1.11	17.53		0.00	0.00	2.54	1.81		3.82	41.06	100.00		7.34	0.08	0.00	**99.26**
B.improvisus	109.00	3.63	3.84	500.00	0.99	254.00	3.81	**0.99**	0.00	10109.00	12.20	0.15	4.25	4.62	11.90		0.63	0.86	11.13	13.56	40.45		99.75	0.25	5.59	0.01	0.00	**19.58**
C.fragile	195.00	2.93	3.19	500.00	0.98	455.00	2.91	**0.98**	0.00	10195.00	1.63	6.60	64.91	9.42	4.37		0.74		3.76		1.91	6.55	99.88	0.12	6.31	0.02	0.00	**67.70**
C.taxifolia	78.00	2.58	3.03	500.00	0.96	182.00	2.84	**0.97**	0.01	10078.00	65.70		0.00	0.00	17.00	5.88	1.54		0.89	1.27	7.34		99.61	0.39	6.64	0.03	0.00	**0.00**
C.wailesii	375.00	2.62	2.82	500.00	0.98	873.00	2.60	**0.97**	0.00	10373.00	1.36	49.02	1.74	2.71	2.26	3.46	0.47	4.69	5.96	1.01	18.82	8.26	99.76	0.24	6.64	0.03	0.00	**99.56**
M.senhousia	34.00	3.80	4.42	500.00	1.00	78.00	3.73	**0.99**	0.00	10034.00	2.69	9.99		0.87	50.18	11.84	0.00	0.00	2.80	6.32	0.75	14.09	99.53	0.47	5.41	0.01	0.00	**12.45**
U.pinnatifida	42.00	3.42	3.95	500.00	0.99	95.00	3.87	**0.99**	0.00	10041.00	0.00	0.30	61.05	2.27	0.00	0.00	0.07	5.96	0.68	0.09	2.07	27.09	99.60	0.40	5.80	0.02	0.00	**18.56**
AVERAGE VALUES	123.43	2.98	3.44	480.00	0.98	286.71	3.25	**0.98**	0.00	10123.00	12.03	16.26	22.18	5.35	14.29	4.24	0.49	2.81	3.86	4.45	10.74	19.41	99.73	0.31	6.25	0.03	0.00	**45.30**