



Developing a priority list of alien invasive invertebrate species

Version 2, updated December 2014
Margaret Palmer and Craig Macadam

Saving the small things that run the planet

Developing a priority list of alien invasive invertebrate species

Original version 6th October 2014. Updated December 2014
Margaret Palmer and Craig Macadam

The new EU regulation

Invasive alien species pose one of the greatest threats to biodiversity. In recognition of this, the European Union regulation on *The prevention and management of the introduction and spread of invasive alien species* will come into force on 1st January 2015. It will be based on lists of invasive species of EU, Regional and Member State concern. It will require member States to put in place measures aimed at preventing the introduction of species of EU concern, eradicating them where feasible and, if both these fail, managing populations. Species on the EU list may not be transported, kept, bred, grown, cultivated or released into the environment and Member States must prevent their unintentional introduction or spread. The list will contain only species alien to the EU as a whole and will be issued in 2016.

Member States may (but are not obliged to) establish lists of invasive alien species of concern within their own territories, and put in place appropriate control measures. They must notify the Commission of these lists and the associated restrictions. Member States may also identify from their national lists species that need enhanced regional cooperation. The Commission will facilitate this cooperation and may require concerted action by the Member States concerned.

A national priority list of alien invertebrates

Buglife has produced a method for specifying which invertebrates should be considered priorities for inclusion in the UK (Member State) list of species of concern. This method is based on reliable and up-to-date information and it aims to identify which of the many alien invertebrates that are already established in the UK, or are likely to arrive here in the near future, pose the greatest threat to the environment or to biodiversity. The resulting list is far from exhaustive and will need to be revised as more knowledge becomes available and new invasions occur. The 'Buglife' method can also be applied to plants and other animal groups.

The 546 invasive alien invertebrate species that satisfy at least one of the five following criteria are regarded as priority and are shown in the spreadsheet. The criteria apply to Great Britain (i.e. England, Scotland and Wales) but reference is also made to species of concern in Ireland. A separate list will be needed for Northern Ireland because of its isolation and less species-rich native biota.

For each species on Buglife's list, actual or possible pathways of invasion are indicated, as well as suggestions for means of preventing introductions, eradicating populations, or managing their spread. Measures that may be applied against most species but are not repeatedly specified in the spreadsheet include:

- strict implementation of legislation (e.g. Wildlife and Countryside Act 1981; Wildlife and Natural Environment (Scotland) Act 2011; EU legislation) prohibiting the release of non-native species to the wild
- strict inspection of imported goods at borders
- detecting and monitoring the spread of invasive alien species
- educating the public about the problems caused by invasive species
- creating special safeguards against invasion for high value wildlife sites.

Buglife's criteria for drawing up a priority list of invertebrates for Great Britain

- 1) Non-native animals currently on Schedule 9 of the Wildlife and Countryside Act 1981: see <http://naturenet.net/law/sched9.html>.

[In England and Wales, species on Schedule 9 (as well as any animal of a kind not normally resident in or a regular visitor to these countries in a wild state) may not be released or allowed to escape to the wild without a licence. (In Scotland, it is an

offence to release or allow to escape from captivity any animal to a place outwith its native range.)

All the invertebrate species on Schedule 9 are included in Buglife's list, apart from the Noble crayfish *Astacus astacus*. This is globally red listed (Vulnerable), included in Annex V of the Habitats Directive, rated by GBNNSS and UKTAG as Low Risk, and possibly now extinct in Britain.]

- 2) All invertebrate species that have been assessed up to November 2014 by the GB Non-Native Species Secretariat (GBNNSS) as high or moderate risk: see risk assessments at <http://www.nonnativespecies.org>
[If species are also assessed as posing a major risk in Ireland this is noted: see www.nonnativespecies.ie.]
- 3) The highest risk species listed in Roy *et. al.* 2014. Horizon scanning for invasive alien species with the potential to threaten biodiversity in Great Britain. *Global Change Biology*. See <http://nora.nerc.ac.uk/507334/1/Horizon%20scanning%20Published.pdf>.
[Of the 'Top 30' species (listed in order of the likelihood of their arrival and the threat that they pose) eighteen are invertebrates. Seventeen of these are included in the Buglife list. The omission is the Oriental chestnut gall moth *Dryocosmus kuriphilus*, which, being confined to sweet chestnut, is not considered to be as great a threat to biodiversity in Britain as the other species that are listed.]
- 4) All invertebrate species classified as having a high or moderate impact in the 2014 classification of aquatic alien species by the UK Technical Advisory Group (UKTAG) on the Water Framework Directive: see <http://www.wfduk.org>.
[Invertebrates also on the provisional alien species list for Ireland are noted.]
- 5) A limited number of other species for which there is good evidence that they pose a substantial risk to the environment or to biodiversity. Supporting information was obtained from:
 - a. GB Non-Natives Factsheets Editor - produced by the Biological Records Centre (BRC): http://www.brc.ac.uk/gbnn_admin/index.php?q=gbnn_search
 - b. Centre for Agricultural Bioscience International's (CABI's) Invasive Species Compendium: see www.cabi.org/isc
 - c. Scottish Natural Heritage horizon scanning workshop, November 3rd 2014.
(This led to the addition of two extra species to Buglife's list of October 2014.)

Explanation of terms used in the spreadsheet

Sch 9	N/A = not applicable because the animal is not resident in a wild state in Great Britain, so is not eligible for listing on Schedule 9
Roy <i>et al.</i>	Groupings in the 'Top 30' list - species in descending order of risk: HHHH = 1 (rated the highest risk); HHH = 2-10; HH = 11-20; H = 21-30.
UK TAG	[Ireland] = also on a provisional invasive alien list for the Island of Ireland
BRC/CABI	En = negative impact on the environmental or on biodiversity Hu = negative impact on human welfare or on the economy
Wild in GB	Yes = established in the wild by November 2014 No = believed absent Rec = recorded but no proof of establishment E = England; S = Scotland; W = Wales
Habitat type	T = terrestrial; F = fresh water; M = marine; Tr = transitional (e.g. estuaries)
Prevention, Eradication, Management	The entries in these columns reflect the situation in November 2014. If a species was not present in the UK by that date, x indicates that preventing entry and establishment is the most appropriate measure. However, should this fail, eradication would be attempted where feasible, and if that is unsuccessful, management measures would be required.

Preliminary list of alien species of EU concern

In November 2014, a preliminary list of invasive alien species of concern across the EU was produced by the Centre for Ecology and Hydrology, under contract to the EU (Report ENV.B.2ETU/2013/0026). Species native to any country within the EU were excluded from consideration, as laid down in the Regulation. This preliminary EU list contains thirteen invertebrate species that have been fully assessed for risk and a further five that are currently being assessed and will probably be included (see table below). Species on the EU list will not be listed separately for the UK because measures to control them must be taken by all Member States. All eighteen of the proposed invertebrate species are included in Buglife's priority list. Buglife recommends that the other 38 species on its list (fourteen of which are native to Europe) are included in a UK list of invasive alien species of concern and that action is taken to control them.

Invertebrate species proposed for the preliminary EU list

Scientific name	Common name	Native range	Assessment
<i>Caprella mutica</i>	Japanese skeleton shrimp	Eastern Pacific	Full
<i>Corbicula fluminea</i>	Asian clam	E. Asia	Draft
<i>Crassostrea gigas</i>	Pacific oyster	Asian Pacific	Full
<i>Crepidula fornicata</i>	Slipper limpet	E. coast North America	Full
<i>Didemnum vexillum</i>	Carpet sea-squirt	NW Pacific?	Full
<i>Dreissena (rostriformis) bugensis</i>	Quagga mussel	Ukraine	Draft
<i>Eriocheir sinensis</i>	Chinese mitten crab	Western Pacific	Full
<i>Homarus americanus</i>	American lobster	North America	Draft
<i>Orconectes limosus</i>	Spiny-cheeked crayfish	USA	Full
<i>Orconectes rusticus</i>	Rusty crayfish	E. United States	Draft
<i>Orconectes virilis</i>	Virile crayfish	Canada & USA	Full
<i>Pacifastacus leniusculus</i>	Signal crayfish	USA	Full
<i>Paralithodes camtschaticus</i>	Red king crab	N. Pacific - Bering Sea	Draft
<i>Potamopyrgus antipodarum</i>	New Zealand mud-snail	New Zealand	Full
<i>Procambarus clarkii</i>	Red swamp crayfish	USA	Full
<i>Procambarus fallax f. virginalis</i>	Marbled crayfish / Marmorkrebs	USA	Full
<i>Rapana venosa</i>	Veined / Asian rapa whelk	W. Pacific	Full
<i>Vespa velutina</i>	Asian / Yellow-legged hornet	Asia	Full