

## Buglife's Top 50 invasive non-native invertebrate species (revised December 2017)

Buglife's 'Top 50' Invasive non-native species		Estab in GB	Selection criteria satisfied					
Scientific name	English name		1	2	3	4	5	6
!Amphibalanus improvisus	Bay/Acorn barnacle	Yes						xD
!Arthurdendyus triangulatus	New Zealand flatworm	Yes		x				
Astacus leptodactylus	Narrow-clawed crayfish	Yes		x	Low		Low	
Australoplana sanguinea	Australian flatworm	Yes		x				
Bombus terrestris terrestris, Bombus terrestris dalmatinus	All Buff-tailed bumblebee subspecies not native to Britain	Yes			xM			
!Caprella mutica	Japanese skeleton shrimp	Yes		pr	xM		xM	
Celtodoryx ciocalyptoides	Cauliflower sponge	No				x		
!Cercopagis pengoi	Fish-hook water-flea	No						xD
Chelicorophium curvispinum	Caspian mud-shrimp	Yes						xPC
Corbicula fluminalis	Asian clam	No		pr		x		
!Corbicula fluminea	Asian clam	Yes		pr	xH		xH	D
!Crepidula fornicata	Slipper limpet	Yes		x	xH		xH	D
!Didemnum vexillum	Carpet sea- squirt	Yes		pr	xH		xH	
Dikerogammarus haemobaphes	Demon shrimp	Yes		pr	xH		xH	
Dikerogammarus villosus	Killer shrimp	Yes		pr	xH		xH	PC D
Dreissena polymorpha	Zebra mussel	Yes		pr	xH		xH	D
Dreissena rostriformis bugensis	Quagga mussel	Yes		pr	xH	x	xH	PC
Echinogammarus ischnus	Bald urchin-shrimp	No				x		
Echinogammarus trichiatus	Curly-haired urchin-shrimp	No				x		
!Eriocheir sinensis	Chinese mitten crab	Yes	x	x	xH		xH	D
!Ficopotamus enigmaticus	A fanworm	Yes					xH	D
!Harmonia axyridis	Harlequin ladybird	Yes						xD
!Hemigrapsus sanguineus	Asian shore crab	Yes			xH	x	xH	
!Hemigrapsus takanoi	Brush-clawed shore crab	Yes				x	xH	
Hemimysis anomala	Bloody-red / Carrion shrimp	Yes		pr			xH	PC
!Homarus americanus	American lobster	?			xH	x	xH	
Kontikia andersoni	A flatworm	Yes		x				
Kontikia ventrolineata	A flatworm	Yes		x				
Lasius neglectus	Invasive garden / Super ant	Yes			dr			x
!Linepithema humile	Argentinian ant	No			dr	x		D
!Mnemiopsis leidyi	American comb-jelly/Sea walnut	?				x		D
!Musculista senhousia	Asian date mussel	No						xD
Obama nungara	Brazilian flatworm	No						x
!Ocenebra inornata	Japanese sting-winkle	?				x		
Orconectes immunis	Calico / Papershell crayfish	No		pr				x
!Orconectes limosus	Spiny-cheeked crayfish	Yes	x	x	xM		xM	
!Orconectes rusticus	Rusty crayfish	No		pr	xM			
!Orconectes virilis	Virile crayfish	Yes	x	pr	xM		xH	
!Pacifastacus leniusculus	Signal crayfish	Yes	x	x	xH		xH	
!Paralithodes camtschaticus	Red king crab	No			xM			D
Platydemus manokwari	New Guinea flatworm	No			dr			x
!Potamopyrgus antipodarum	New Zealand mud-snail	Yes			xM		xM	
Procambarus acutus acutus	White river crayfish	Yes		pr	xM			
!Procambarus clarkii	Red swamp crayfish	Yes	x	x	xH		xH	D
!Procambarus fallax f. virginalis	Marbled crayfish /Marmorkrebs	No	x	pr	xM		xM	
!Rangia cuneata	Gulf wedge clam	Yes			xM			D
!Rapana venosa	Veined / Asian rapa whelk	No			xH	x		D
!Styela clava	Leathery sea-squirt	Yes		pr			xH	D
!Urosalpinx cinerea	American tingle /oyster drill	Yes		x	dr		xH	
!Vespa velutina	Asian / Yellow-legged hornet	?	x		xM	x		

x = criterion satisfied      pr = proposed for Schedule 9 Part 1 in 2016      dr = GBNNSS risk assessment in draft  
H = high risk/impact      M = medium/moderate risk/impact  
PC = highest risk Ponto-Caspian species (Gallardo & Aldridge 2013)      D = DAISIE '100 of the worst'  
! = included in prioritised list of candidates for EU list of Species of Concern (Carbonares *et al.* 2017).

## Buglife's criteria for drawing up a priority list of invertebrate INNS

The Top 50 list of INNS is has been drawn up for Britain and would need to be modified for Northern Ireland. The list is based on existing well-documented sources and comprises invertebrate species that satisfy at least one of the following six criteria. Numbers 1 to 6 in the table indicate these criteria, with 'x' indicating that a criterion is satisfied. As statutory species lists (e.g. the EU List of IAS of Union Concern, Schedule 9 of the Wildlife and Countryside Act 1981) change and new information becomes available, Buglife's Top 50 list will be revisited.

- 1) All invertebrates on the List of Invasive Alien Species of Concern in the EU.
- 2) Invertebrates on Schedule 9 Part 1 of the Wildlife and Countryside Act 1981 (see [www.legislation.gov.uk](http://www.legislation.gov.uk)). Species proposed for addition to this Schedule in the 2016 review, led by JNCC, are indicated.  
NB. The Noble crayfish *Astacus astacus* is not included because it 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.
- 3) All invertebrate species assessed by the GB Non-Native Species Secretariat as very high, high or moderate risk (see assessments at [www.nonnativespecies.org](http://www.nonnativespecies.org)). 20 species on Buglife's Top 50 list do not have a final or draft GBNNSS risk assessment by 2017.
- 4) 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* **20, Issue 12**, 3859 – 3871. Of the 'Top 30' species, eighteen are invertebrates, at least six of which have arrived in Britain since the paper was published. Thirteen are included in the Buglife 'Top 50' list, the omissions being species covered by animal and plant health regulations (see below).
- 5) UK Technical Advisory Group Water Framework Directive. 2015. *Revised classification of aquatic alien species according to their level of impact*. (see [www.wfduk.org](http://www.wfduk.org)).
- 6) Species not qualifying under Criteria 1 to 5, but for which there is good evidence that they pose a substantial risk to the environment or to biodiversity. Some of these species had GBNNSS risk assessments in draft in December 2017. Supporting information was obtained from:
  - Non-native Species Information Portal (NNSIP) (see [www.nonnativespecies.org](http://www.nonnativespecies.org))
  - Centre for Agricultural Bioscience International's (CABI's) Invasive Species Compendium datasheets (see [www.cabi.org/isc](http://www.cabi.org/isc))
  - Scottish Natural Heritage. Horizon scanning for non-native species in Scotland. Workshop November 2014.
  - DAISIE (Delivering Alien Invasive Species Inventories for Europe). '100 of the worst' (see [www.europe-aliens.org](http://www.europe-aliens.org)).
  - Gallardo & Aldridge. 2013. *Review of the ecological impact and invasion potential of Ponto Caspian invaders in Great Britain*.

Buglife's list has been checked against Carbonares *et al.* 2017. A prioritised list of invasive alien species to assist the effective implementation of EU legislation. *Journal Applied Ecology* 12997.

Damaging non-native invertebrates listed on animal or plant health<sup>1</sup> or aquaculture<sup>2</sup> regulations are not included in Buglife's 'Top 50' because they are covered by these other pieces of legislation. The following such species are considered by Buglife to be of particular concern because of the threat they pose to the environment:

<i>Aethina tumida</i>	Small hive beetle
<i>Agilus planipennis</i>	Emerald ash-borer
<i>Anoplophora glabripennis</i>	Asian longhorn beetle
<i>Crassostrea gigas</i>	Pacific oyster
<i>Dryocosmus kuriphilus</i>	Chestnut gall wasp
<i>Gyrodactylus salaris</i>	Salmon fluke
<i>Thaumetopoea pityocampa</i>	Pine processionary moth
<i>Thaumetopoea processionea</i>	Oak processionary moth

<sup>1</sup> See [www.gov.uk/government/organisations/animal-and-plant-health-agency](http://www.gov.uk/government/organisations/animal-and-plant-health-agency)

<sup>2</sup> EC Regulation No. 708/2007 concerning use of alien and locally absent species in aquaculture