

Aquatic invasives – problems and control options

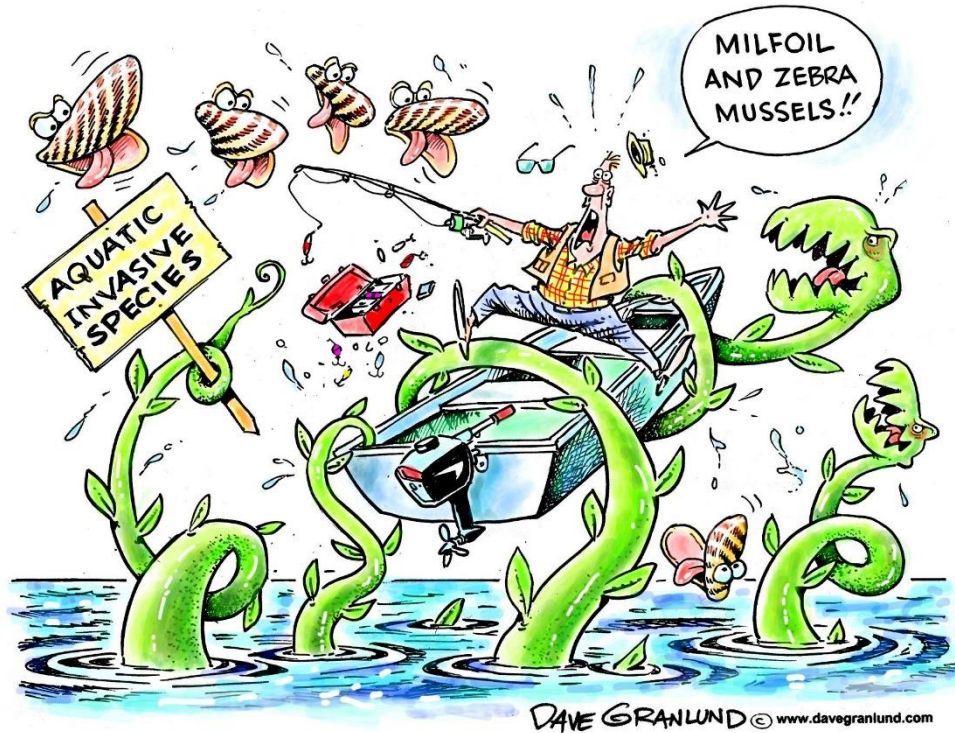
Alex Brook

Ebsford Environmental Ltd



<https://www.ebsford.co.uk/>

What are Invasive Non-Native Species?



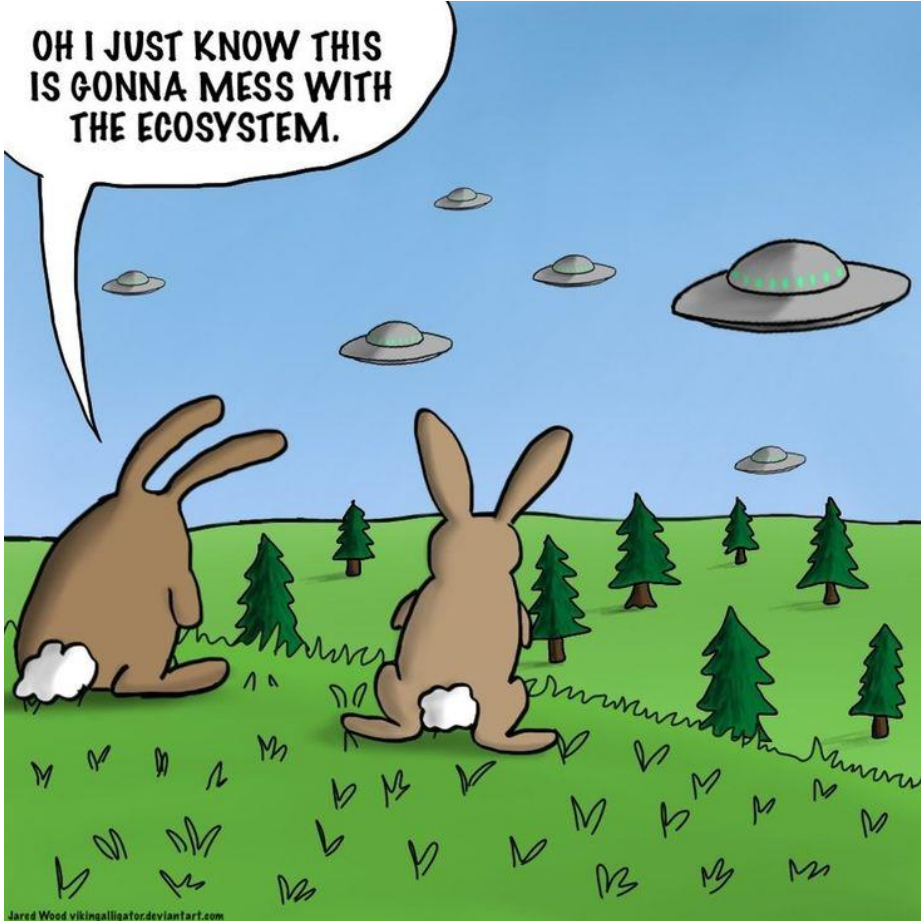
A species whose introduction and / or spread threaten biological diversity or have other unforeseen impacts...

Other broadly equivalent terms include:

- 'non-native species'
- 'alien species'
- 'invasive alien species'

Why are they Invasive?

OH I JUST KNOW THIS IS GONNA MESS WITH THE ECOSYSTEM.



Put very simply

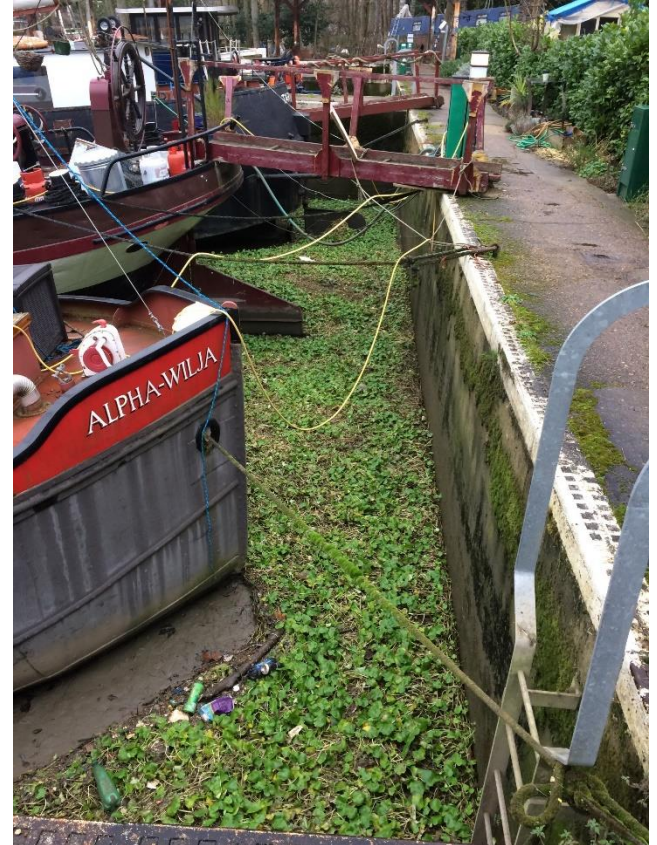
when an organism is moved to a new geographic location it can be freed from its enemies...

Invasive species then outcompete native species because native species are not free of their traditional enemies...

Aquatic Invasive Plants

Focus will be on

- *Invasive Non-Native Species*
- *within aquatic freshwater environments*
- *selection of species in the UK*
- *their impact on the environment*
- *management - similarities/differences to terrestrial*



Submerged...



Canadian waterweed & Nuttall's waterweed

1842 & 1966

North America

Curly Waterweed

1944

Southern Africa

Elodea canadensis & E. nuttallii
Lagrosiphon major

Emergent...



Parrot's feather

1960

Central South America

Myriophyllum aquaticum

Free floating...



Waterfern – Azolla

1883

Central / North America

Floating Pennywort

1980s

America

Azolla filiculoides

Hydrocotyle ranunculoides

Marginal / Amphibious...



*New Zealand
Pygmyweed /
Australian Swamp
Stonecrop*

1927

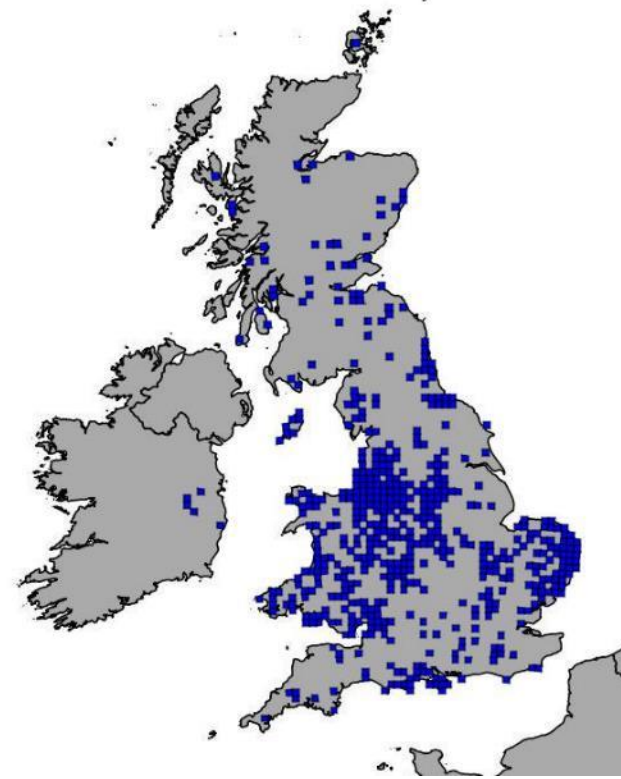
Australia / NZ

Crassula helmsii



New Zealand Pygmyweed

- *Perennial*
- *Not always obvious*
- *Rooted to sediment*
- *Frost tolerant*
- *Slow water – ponds, lakes, rivers & canals*
- *Spreads via fragments*
- *Problems with fishing & reduces biodiversity*



NBN Atlas website at <http://www.nbnatlas.org>



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New Zealand Pygmyweed

- *Management difficult*
- *Small ponds can be scraped clear, but expect ongoing management.*
- *Large lakes difficult due to submerged and emergent nature*
- *Limits use of herbicides / mechanical*
- *Spreads via small fragments*
- *Biological control*



New Zealand Pygmyweed



Serious quantities

- *Yellow areas are visible Pygmyweed infestations*
- *32 Hectares*
- *65,000m³*



Image Landsat / Copernicus

Google Earth

Tour Guide

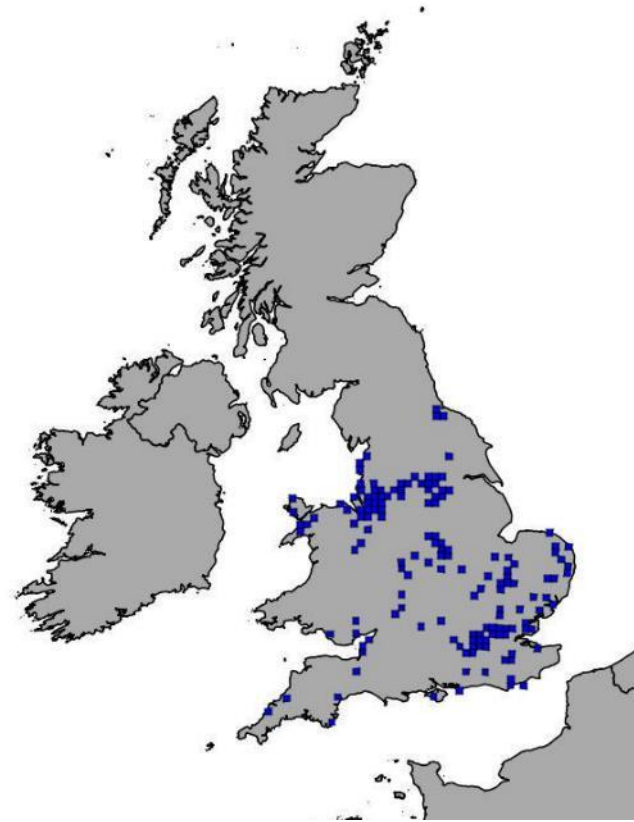
1984

Imagery Date: 4/8/2017 51°30'04.75" N 0°08'29.47" W elev 0 m eye alt 79 m

Floating Pennywort

- *Perennial*
- *Obvious*
- *Rooted to sediment*
- *Frost tolerant*
- *Slow water – ponds, lakes, rivers & canals*
- *Spreads via fragments*
- *Problems with fishing & reduces biodiversity*

| J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|--------------------|-----------|---|---|---|---|---|---|
| | | | | Growing / Emergent | | | | | | | |
| | | | | | Flowering | | | | | | |



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Floating Pennywort



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Pennywort Biological Control

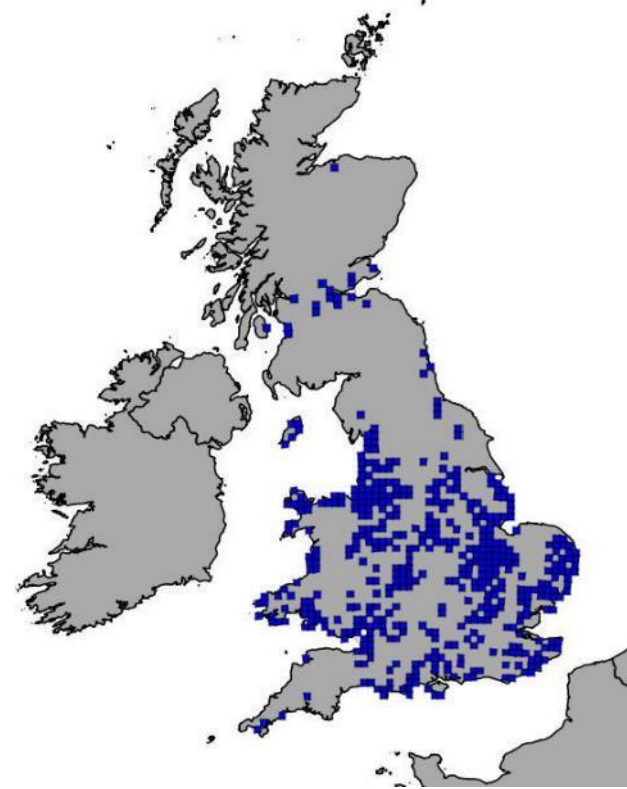
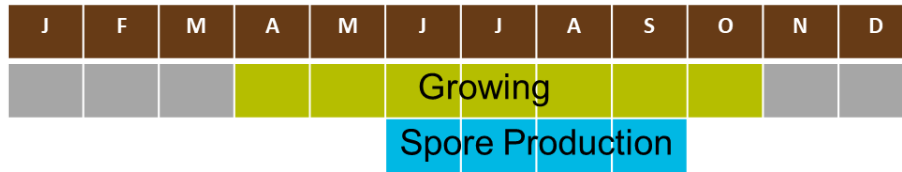


Listronotus elongatus

– Djami Djeddour, CABI

Waterfern

- *Perennial*
- *Obvious*
- *Free floating*
- *Slow water – ponds & lakes*
- *Spreads via individuals & spores*
- *Problems with fishing & reduces biodiversity*



NBN Atlas website at <http://www.nbnatlas.org>

Waterfern



Waterfern Biological Control

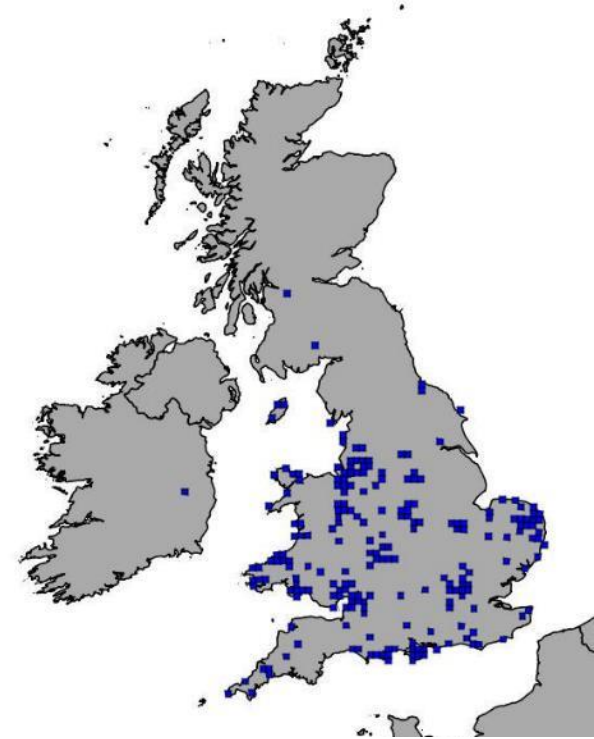
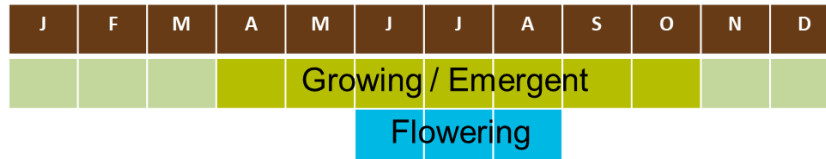


Stenopelmus rufinusus

– Corin Pratt, CABI

Parrot's Feather

- *Perennial*
- *Usually obvious*
- *Rooted to sediment*
- *Frost tolerant*
- *Slow water – ponds or lakes*
- *Spreads via fragments*
- *Problems with fishing & reduces biodiversity*



Parrot's Feather



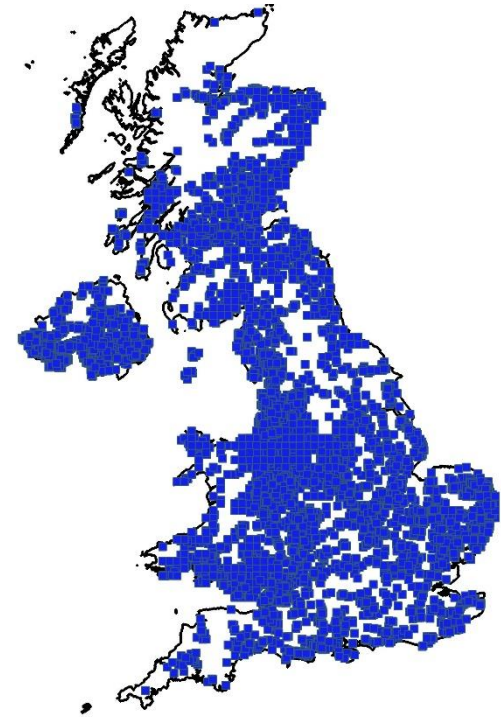
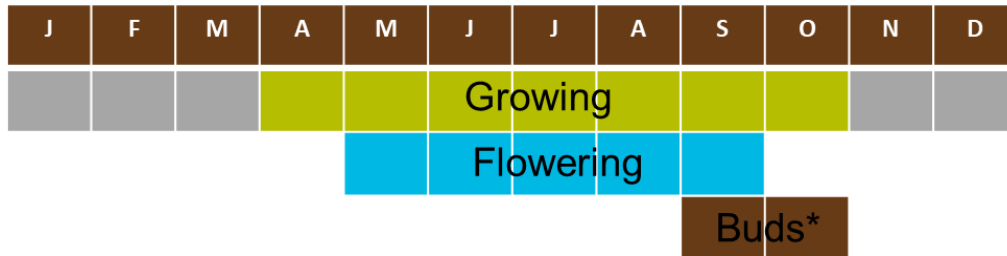
Parrot's Feather

- *Herbicides approved for use on / near water*
 - *Only treats top 1/3 of plant*
 - *Under weight of spray can fall back into water*
- *No specific biological control*
- *Mechanical / Cutting / Shade*
- *Ongoing management*



Canadian Pondweed (Nuttall's & Curly)

- *Not obvious*
- *Rooted in sediment*
- *Only female plant present in GB*
- *Slow water – ponds or lakes*
- *Spreads via fragments*
- *Problems with fishing & reduces biodiversity*



Canadian Pondweed (Nuttall's & Curly)



Canadian Pondweed (Nuttall's & Curly)

- *No herbicides available*
- *No specific biological control*
- *Mechanical / Cutting / Shade*
- *Ongoing management*
- *Can be controlled with Grass Carp (requires agreements from EA)*

- *Expect ongoing management*



Biosecurity

Whenever you leave the water, remember to **Check Clean Dry**

CHECK

Check your gear after leaving the water for mud, aquatic animals or plant material. Remove anything you find and leave it at the site.

CLEAN

Clean everything thoroughly as soon as you can, paying attention to nets, waders, and areas that are damp and hard to access. Use hot water if possible.

DRY

Dry everything for as long as possible before using elsewhere as some invasive plants and animals can survive for two weeks in damp conditions.

Going abroad?

It's even more important to **Check Clean Dry** if you're taking your kit abroad to make sure you don't bring any plants or animals back with you. Make sure everything is clean and has been dried thoroughly before you use it again at home.

Thank you for listening

And thank you to

Corin Pratt & Djami Djeddour for updates on current biocontrol & photos www.cabi.org

Trevor Renals for the sheep in pennywort photo

Aquatic Solutions UK for the use of some of their photos <https://aquatic-solutions.co.uk/>

GBNNS photo resources <https://www.nonnativespecies.org/>

NBN Atlas species maps <https://nbnatlas.org/>