

Invasive Alien Species in UK and Ireland



John Houston

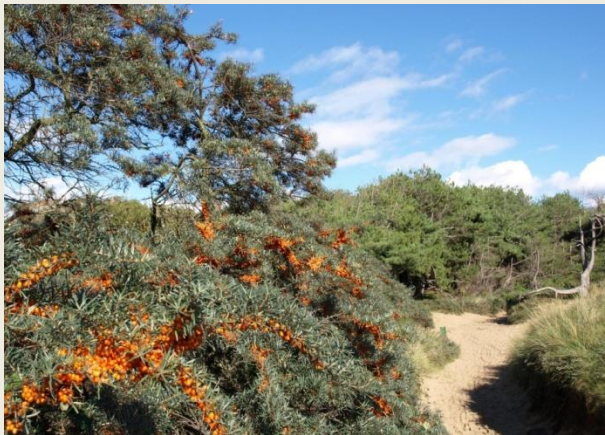
In collaboration with: Jodey Peyton, Centre for Ecology and Hydrology,
Graham Weaver, Natural England and Phil Smith, Sefton Coast

Scope of presentation

- History of conifer plantations in UK and Ireland –all alien
- *Hippophae rhamnoides* – both native and alien
- Other woody species – both native and alien
- Current invasive species of wider concern on dunes - *Acaena novae-zelandicae* and *Rosa rugosa*
- Other alien species – mainly garden escapes which may be of concern at specific sites
- Future concerns

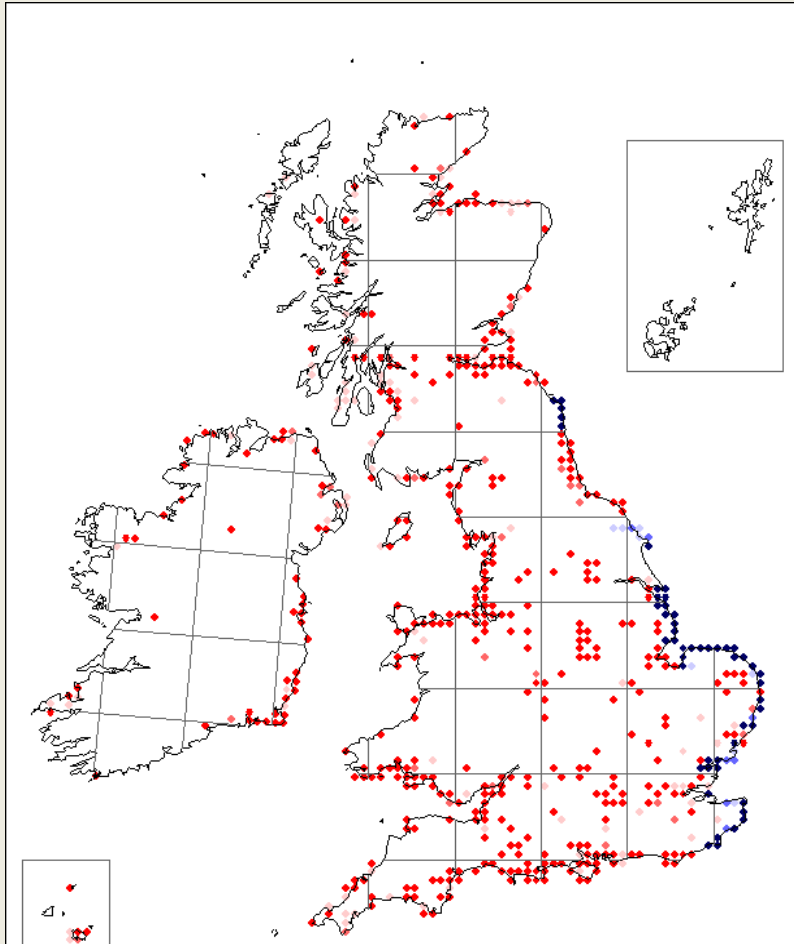
Not covered are the nationally widespread IAS which are usually occasional or rare in dune sites including *Crassula helmsii*, *Impatiens glandulifera*, *Fallopia japonica*, *Heracleum mantegazzianum* and *Rhododendron ponticum*. Where they arise managers can obtain guidance on how to control these species, e.g. through LIFE16 NAT UK 000582 RAPID LIFE good practice management handbooks

Pine plantations



- 19th Century plantations in Ireland and Great Britain— primarily to stabilise dunes and based on French experience
- Sea buckthorn introduced
- 20th Century plantations – added focus on commercial timber
- Experimental removal in a few sites from 1990s
- Removal now involving national forestry bodies in UK and Ireland
- LIFE INSULAR (LIFE20 NAT ES 001007) removing forests from fixed dunes in Ireland

Sea buckthorn



Source of all maps: BSBI New Atlas of the British and Irish Flora. Preston, Pearman and Dines 2002

- Native only on east coast (blue dots)
- Elsewhere regarded as alien (red dots)
- Introduced to stabilise dunes and deter trespassers
- Found in habitats throughout the dune system
- Alters soils through nitrogen fixation
- Listed as a species of medium impact risk in Ireland*
- All Ireland survey to be completed in 2022

* Main reference used in presentation is O'Flynn, Kelly and Lysaght 2014 Ireland's invasive and non-native species: trends in introductions. National Biodiversity Data Centre Series No.2

Sea buckthorn



2009 workshop
and publication



- '*Hippophae* Study Group' reported in 1972
- Recommendations: prevent establishment of new sites but control it where already present
- Survey repeated in 1980s by Dr Pat Doody
- Dune network workshop held in 2009 on east coast of England
- Management underway at numerous sites

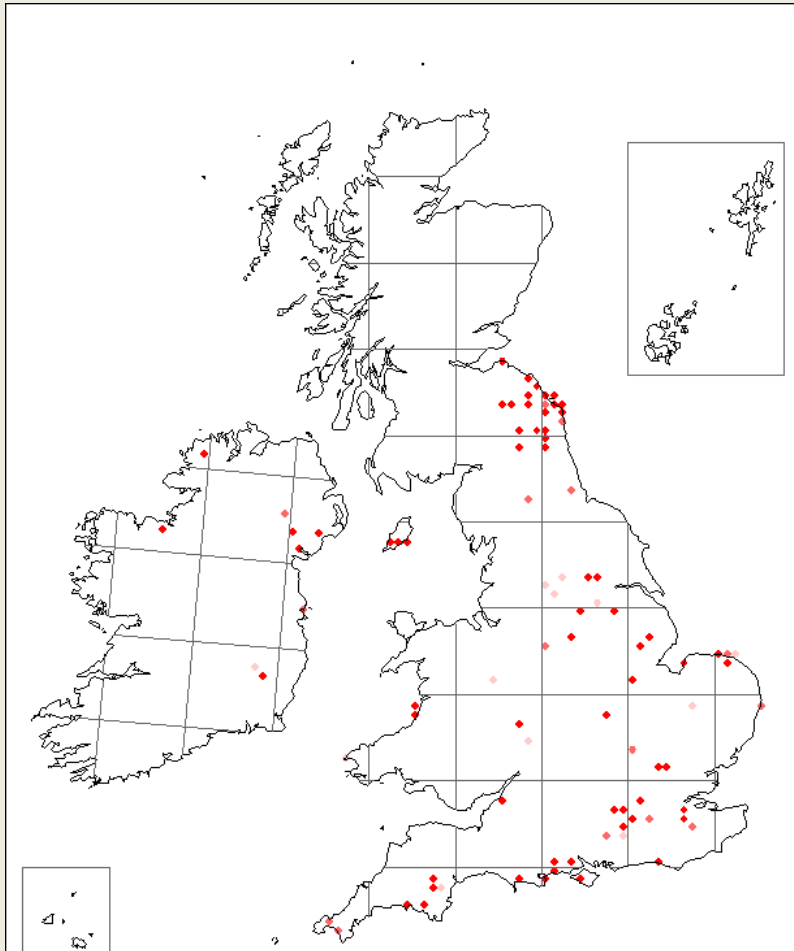
Other woody species-dune scrub and woodland



White poplar *Populus alba* invading mobile dune habitat, Sefton Coast

- Native species such as alder, birches, willows, hawthorn and gorse can be invasive
- Non-native species include sycamore and poplars
- Neither UK or Ireland have EU habitat type 2180 dune woodland
- Usually about 5% woodland cover is a target in condition monitoring
- Network conference on scrub and woodland 2012 to discuss attitudes and perceptions
- Managers find it difficult to get public support for some woodland and scrub removal projects.

Species which should be of national concern 1- Pirri pirri bur *Acaena novae-zelandiae*

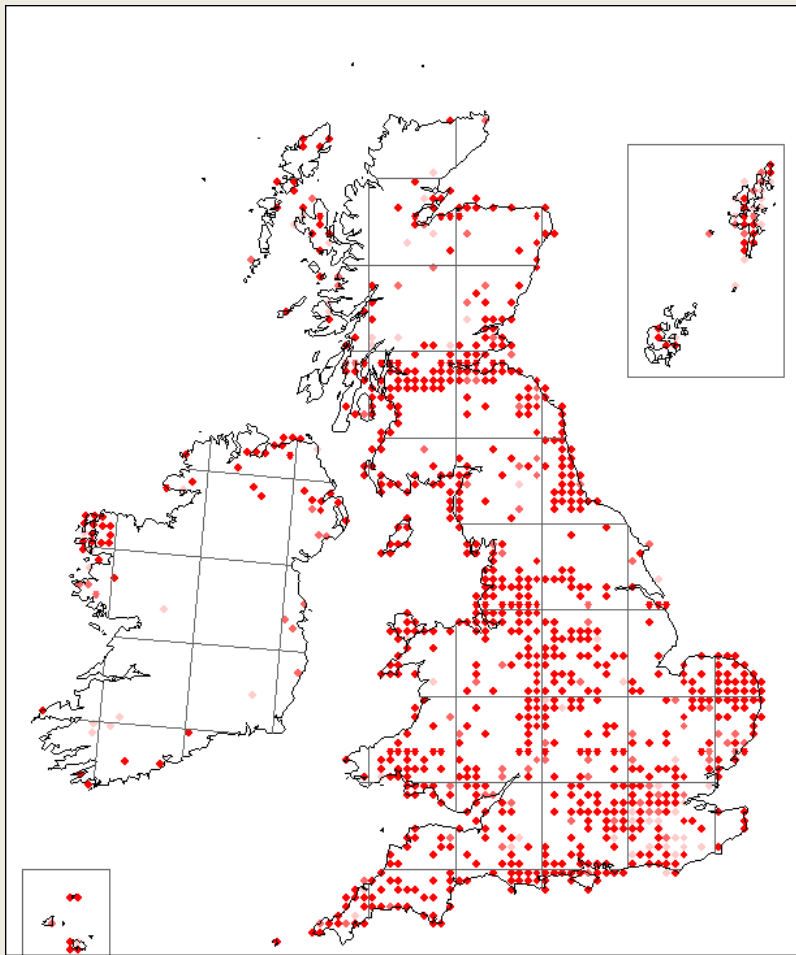


- Introduced to north east England in 1930s through wool imports
- Particularly affects Lindisfarne National Nature Reserve
- Spreads by rhizomes and seed
- Carried from site to site by visitors and animals
- Adaptive management studies assisted by Newcastle University. See: <https://pirripirriburmanagement.wordpress.com/>
- Some control work included in LIFE20 NAT UK 000277 LIFE WADER in north east England

Pirri-pirri bur at Lindisfarne National Nature Reserve



Species which should be of national concern 2- Japanese rose *Rosa rugosa*



- Introduced to Britain as a garden plant in 19th Century
- Sold as a garden plant- recommended for hedging
- Increases nutrient status of dune soils
- Concerns about spread on dunes raised in early 2000s
- Full survey of Sefton Coast in 2014
- Control works now underway at many sites
- Listed as medium risk in Ireland

Rosa rugosa on Sefton Coast, England

Volunteer survey in
2014 recorded 500
patches covering 6 ha

Control work
started in 2017



Herbicide trial 2020

Now major works through
Dynamic Dunescapes project

Other invasive species at site level



Canadian goldenrod *Solidago canadensis* may be a problem on the Sefton Coast (Smith P.H. 2020)

- Long list of species across many sites
- Common to have spreading patches from single sources
- Assessment needed at site level to assess invasiveness
- Most sites will prioritise action, e.g. *Lupinus arboreus* at Dawlish Warren
- Important to share experiences through networks of site managers
- Which will be the next problem species?

Non-native vascular plants of the Sefton Coast

- ❑ Sefton Coast (2100 ha) largest dune system in England
- ❑ By 2019 c. 1228 vascular taxa recorded of which 467 (38%) were introduced
- ❑ About half non-native plants are naturalised- remainder are casuals
- ❑ More native plants than aliens in dune wetlands, fixed dune, dune grassland and dune heath
- ❑ But more alien species associated with dune scrub and disturbed ground
- ❑ 24 non-native and 14 native plants show invasive characteristics - 5% of the alien and 2% of the native flora.
- ❑ Nine non-natives and six natives are woody plants
- ❑ The rest are garden escapes including *Lathyrus latifolius*, *Euphorbia cyparissias*, *Symphyotrichum* spp. and *Solidago canadensis*

Smith P.H. (2020). Increasing status of non-native vascular plants in the Sefton Coast sand-dune system, north Merseyside, UK. *British & Irish Botany* 2(2): 102-126

<https://doi.org/10.33928/bib.2020.02.102>

Potential threats

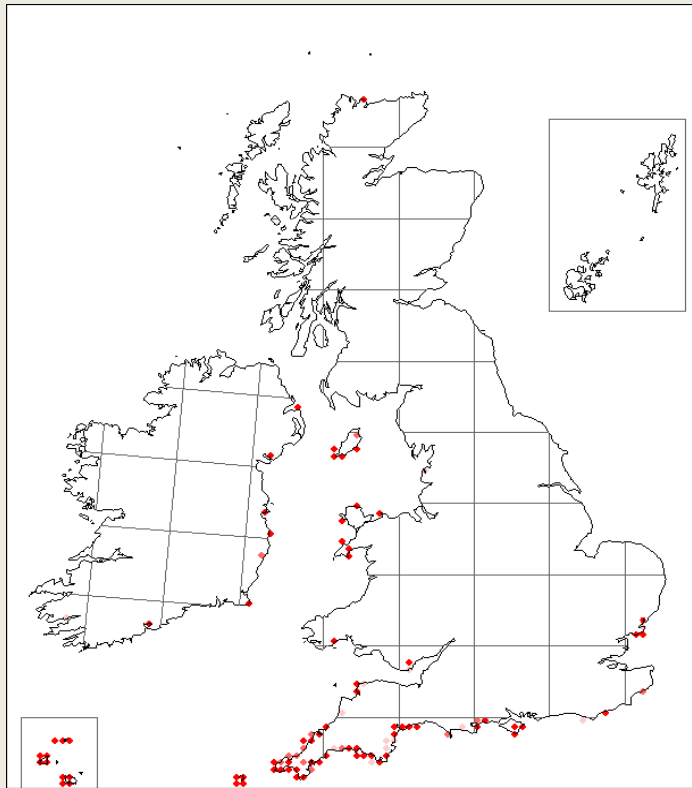


- Three to watch
 - *Carpobrotus edulis*
 - *Cortaderia sellanoa*
 - *Yucca gloriosa*
- Concentrated in the south west of UK with warmer climate
- *Carpobrotus edulis* identified by Natural England as having adverse environmental effects
- *Carpobrotus edulis* considered to be a species with high ‘invasion success’ (Giulio *et. al.* 2021)
- *Cortaderia sellanoa* established in sand dunes in Cornwall
- *Yucca gloriosa* recorded from a number of sites

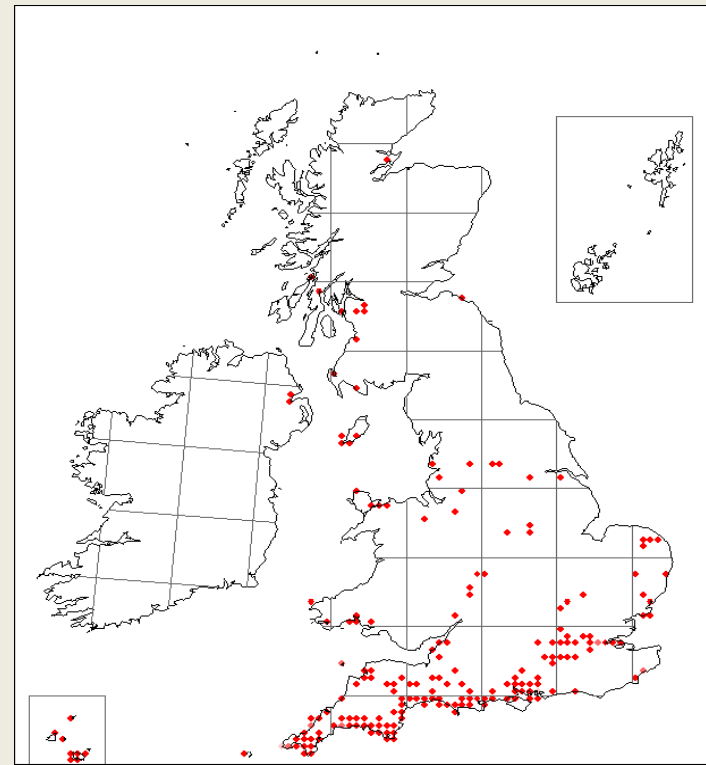
Giulio, S. *et. al.* (2021). Invasion success on European coastal dunes. *Plant Sociology* 58(1) 29-39

Current distribution of *Carpobrotus* and *Cortaderia* in UK and Ireland

Carpobrotus edulis



Cortaderia sellanoa



Might there be a problem with Yucca?



Assessing possible removal techniques for *Yucca gloriosa* on Sefton Coast with Phil Smith (second right)

- Seen as a casual in UK, i.e. not self seeding or spreading
- LIFE projects in Italy show that controlling an invasion is difficult: still strongly increasing in Italy (Cascone et. al. 2021)
- In Belgium F Verloove considers it naturalised and should be removed*
- In the UK we could start with a survey of site managers
- The experience of any management (digging out, herbicide etc) should be shared also with LIFE DUNIAS

Cascone, S et. al. (2021). Exploring temporal trends of plant invasion in Mediterranean coastal dunes. Sustainability 13 13946

<https://alienplantsbelgium.myspecies.info/content/note-about-yucca-agavaceae-asparagaceae-wild-belgium> F Verloove

Ireland's invasive and non-native species

- National Biodiversity Data Centre reported on trends in introductions (O'Flynn et. al. 2014)
- 377 non-native species assessed for risk, 250 (66%) low impact, 79 (21%) medium impact and 48 (13%) high impact.
- High impact includes *Carpobrotus edulis* mainly linked to cliff habitat
- Medium impact species include *Acaena ovalifolia*, *Ailanthus altissima*, *Buddleja davidii*, *Clematis vitalba*, *Cortaderia sellanoa*, *Cotoneaster horizontalis*, *Prunus serotina*, *Robinia pseudoacacia* and *Rosa rugosa*

UK invasive and non-native species (INNS)

- Huge body of knowledge published on INNS as well as structures at all levels
- Still a place for grass roots knowledge sharing between dune managers and between national conservation agencies
- Current LIFE projects have an opportunity to identify invasive species, support citizen science recording, learn by doing and give practical advice to site managers
- Conservation agencies should review strategies for invasive species control, add new strategies and use the network of site managers to assess current concerns
- Further survey and assessment is needed for species with potential to become established or to become invasive
- Centre for Ecology and Hydrology has identified a list of c. 100 potential IAS on coastal dunes. Further development of this list will follow the LIFE DUNIAS workshop
- Continued sharing of knowledge within the Atlantic region is a vital component of any early warning system