



Blood Thirsty Ticks

Protection from tick borne diseases in the field

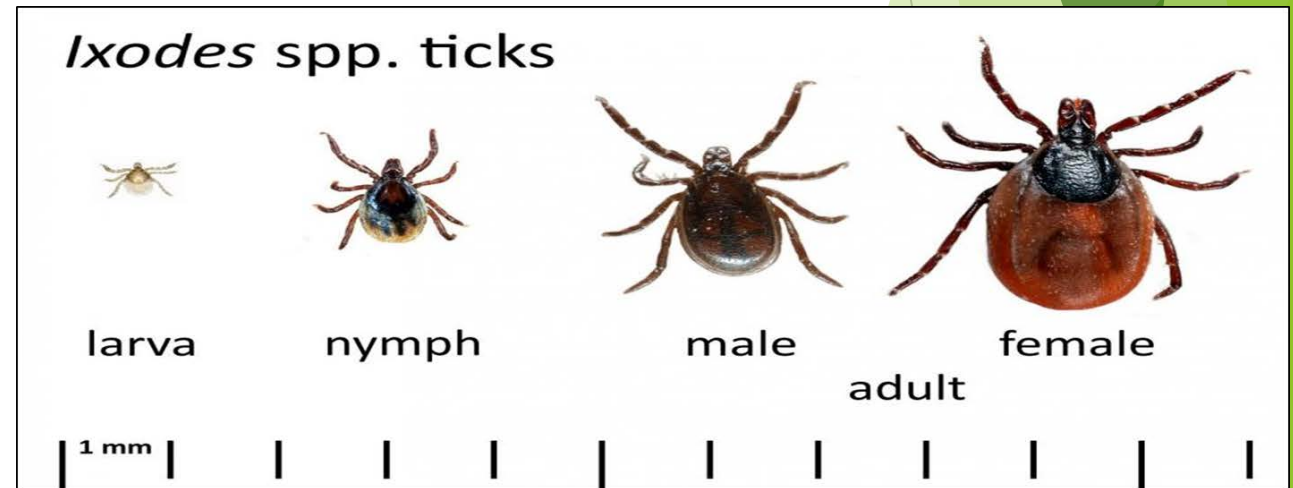
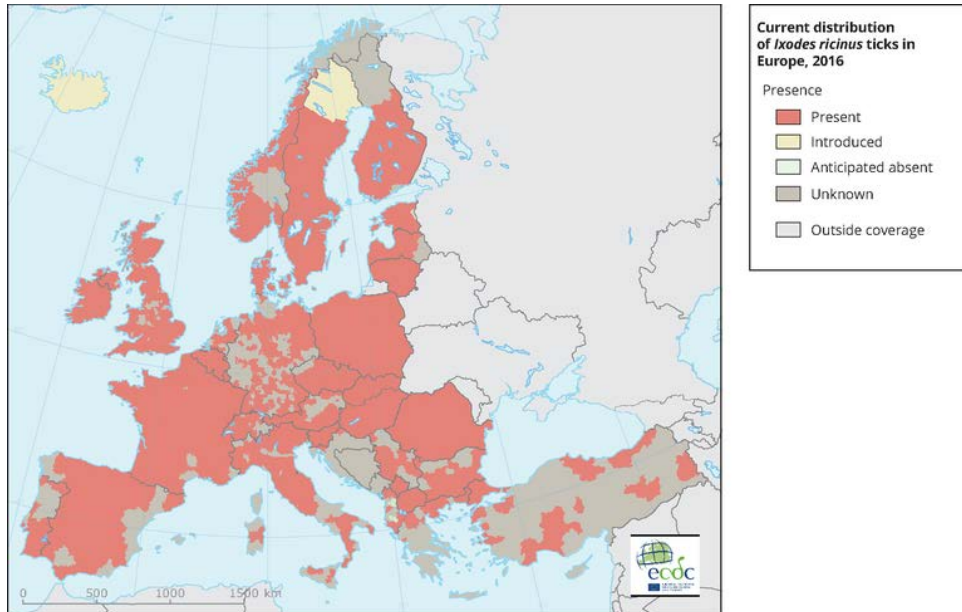


John Sherry
Ecologist
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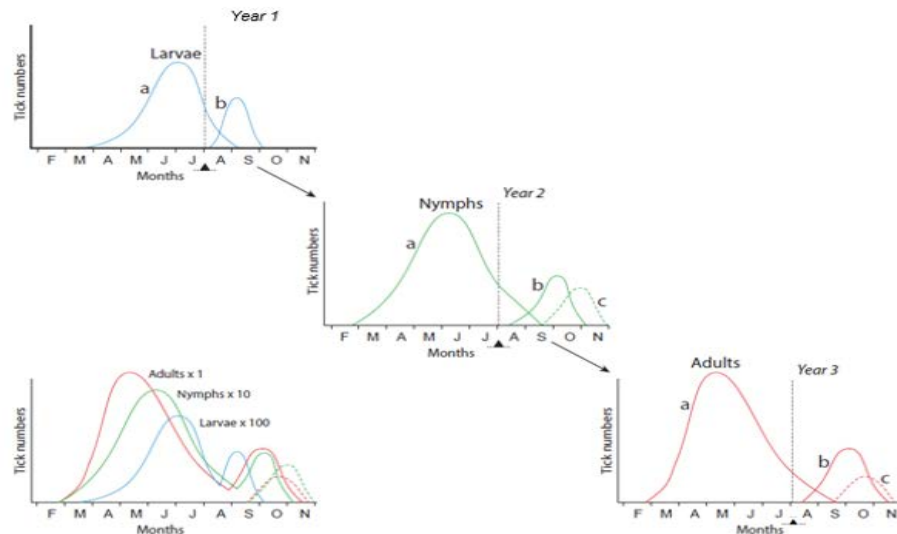
What is a tick?

- ▶ Ticks are ectoparasitic arachnids from phylum Arthropoda (Spiders)
- ▶ Globally ~800 species, split into two groups 'Hard' and 'Soft' ticks
- ▶ In Ireland 11 species, 10 'Hard' and 1 'Soft'.
- ▶ *Ixodes ricinus* the most numerous, especially in West and Wicklow.
- ▶ Three different life stages - Need a blood meal for each stage.



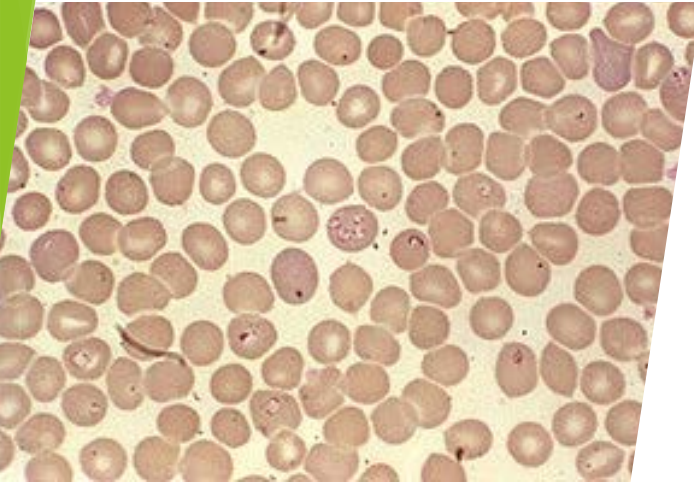
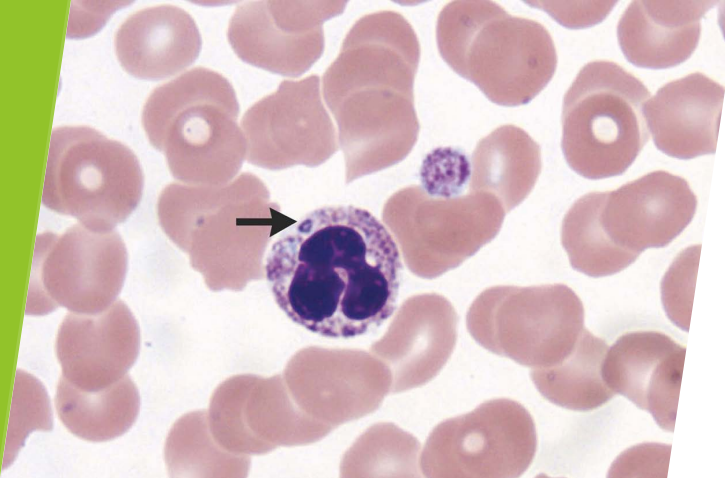
Where to find them?

- ▶ *Ixodes ricinus* can be found in many habitats from woodlands, grasslands and even urban areas.
- ▶ More of a preference for Woodland
- ▶ Lots of hosts
- ▶ Very sensitive to desiccation
- ▶ Require cover and a moist ground layer with high humidity to prevent drying out
- ▶ Seasonality due to temperatures and humidity



Tick Borne Diseases

- ▶ Looping Ill - depression, panting, nibbling, muscle tremors, incoordination, circling, ataxia and recumbency mainly found in livestock, rarely humans
- ▶ Anaplasmosis - loss of condition in livestock, termination of pregnancy, sterile again mainly in animals.
- ▶ Babesiosis - red water fever, parasite that attacks red blood cells. mainly infects cattle, very rarely humans.
- ▶ Lyme Disease - most common tick borne disease that effects humans.

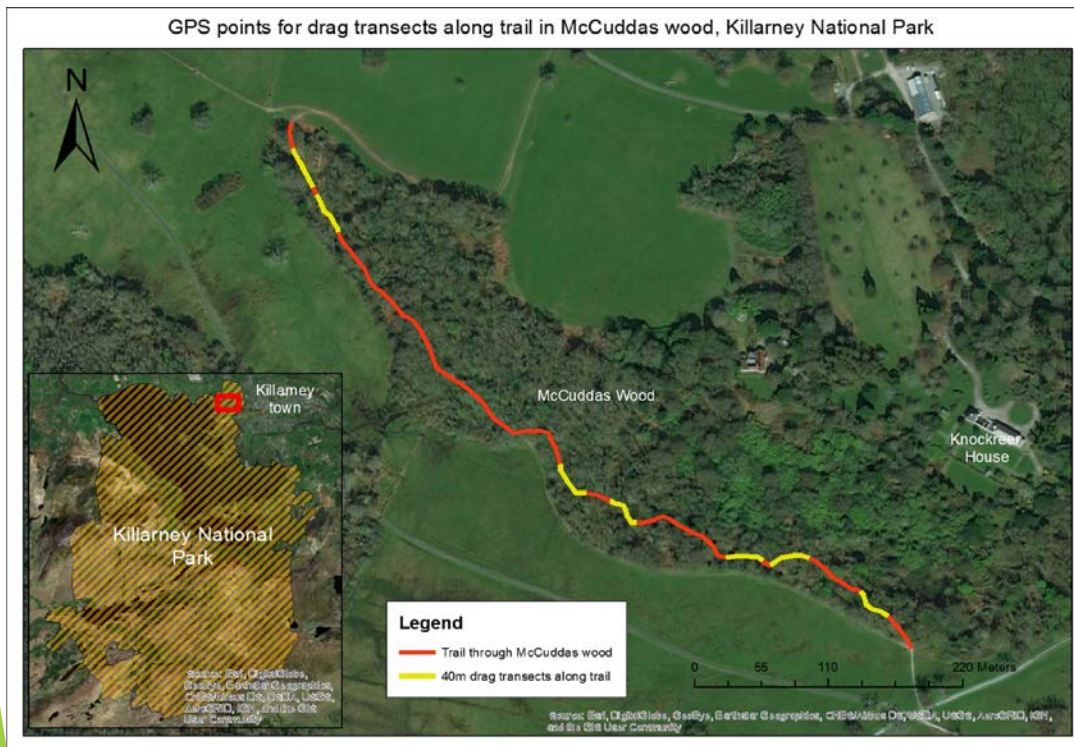
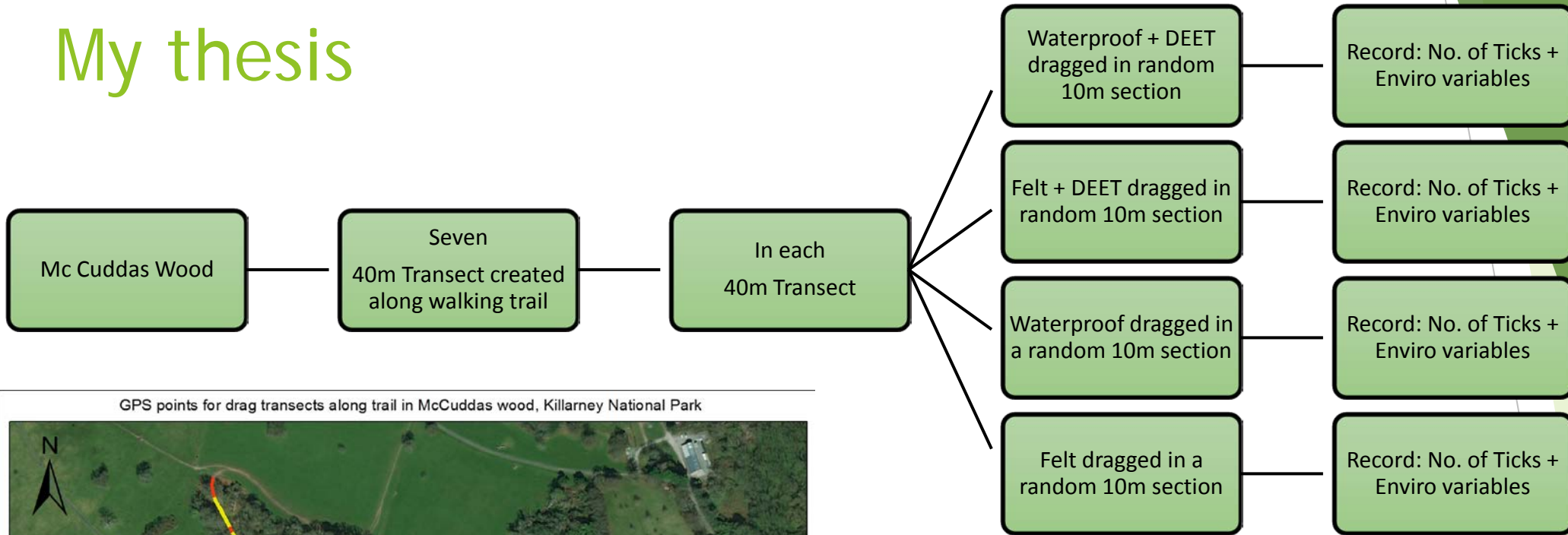


What is Lyme disease?

- ▶ Lyme's disease/Lyme borreliosis is a multisystem disorder caused by an immune response.
- ▶ Caused by the bacterium *Borrelia burgdorferi* sensu lato. *B. garinii* most common in Ireland
- ▶ In Ireland the main reservoir is believed to be from ground dwelling passerines such as Blackbirds.
- ▶ Ticks obtain the bacteria from feeding but can be passed from female to egg.
- ▶ Bacteria lives in gut and passes to human via saliva
- ▶ Takes at least 48 hours BUT can be sooner..
- ▶ Symptoms are not always obvious, but most noted is the bullseye rash
- ▶ In Ireland, approximalty 50 to 200 cases a year.



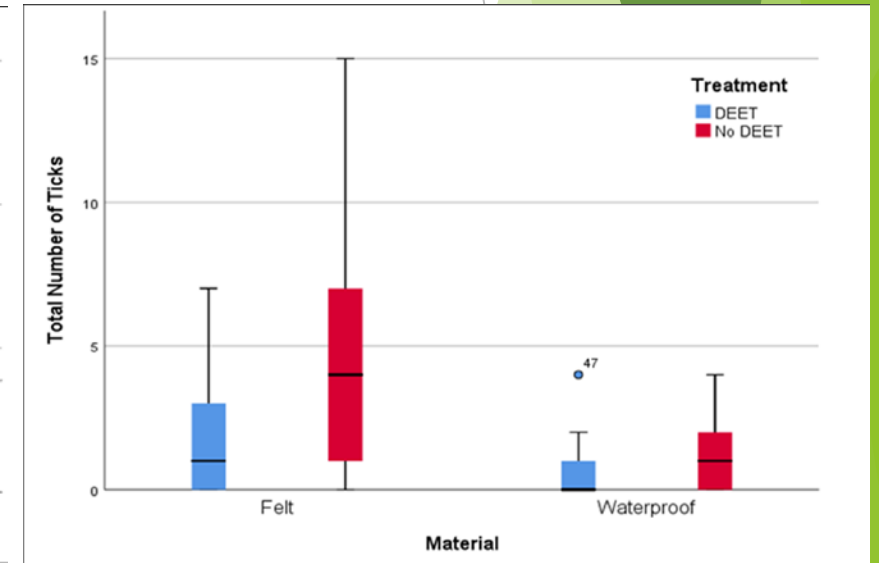
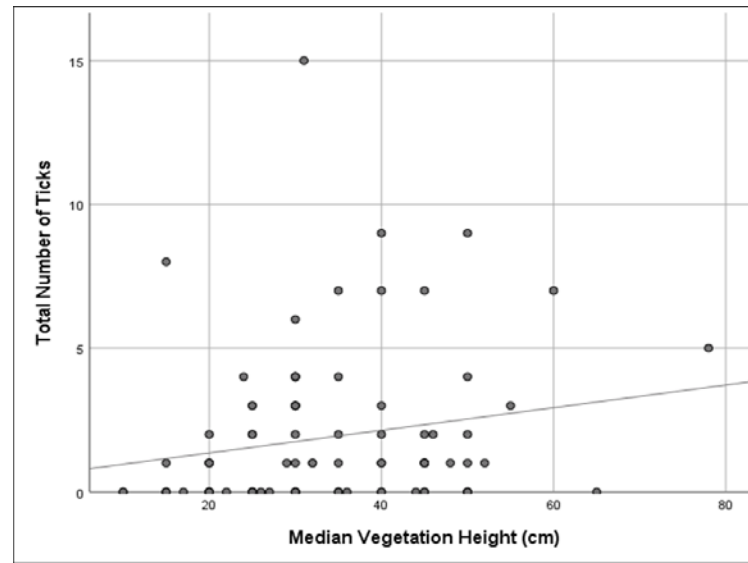
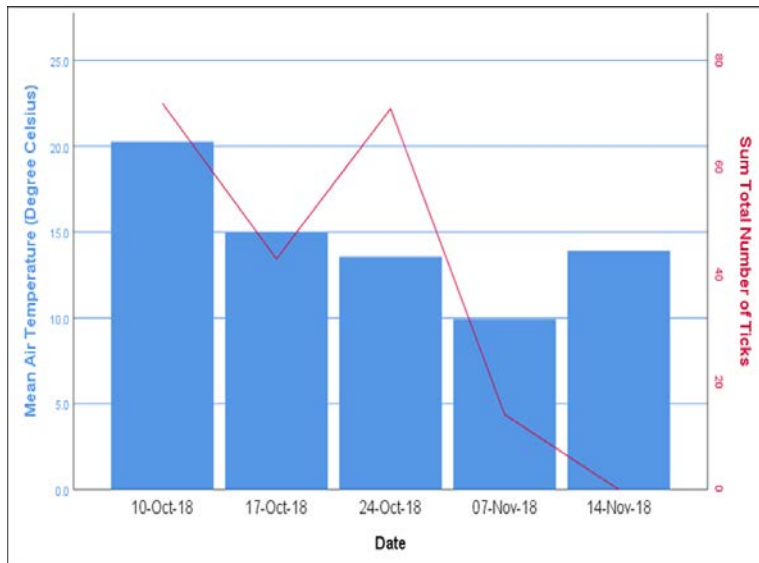
My thesis



The Results



- ▶ Significantly less ticks were observed on the waterproof material and the DEET treated blankets when compared to controls.
- ▶ However, no significant difference was found between waterproof material and waterproof material treated with DEET.
- ▶ Avoiding tick habitat when the temperature is above 5 to 7°C and areas of vegetation between 24 and 44cm will lower the risk of tick attachment



A TICK BIT ME! AM I GOING TO DIE?!

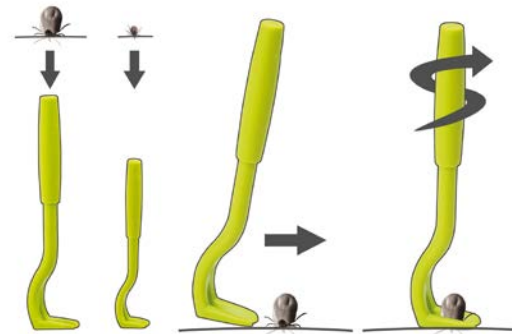
- ▶ Fine point tweezers
- ▶ Other products available
- ▶ No need to twist but may be needed for stubborn ticks
- ▶ No need to panic if the head breaks - only risk from secondary infection
- ▶ Once removed store in a plastic bag and freeze it.
- ▶ If any flu like symptoms or get a rash appears go straight to your GP and take the tick with you.

▶ In field:

- ▶ If possible, avoid tick habitat
- ▶ Tuck trousers into socks
- ▶ Pale clothes - easier to see any on clothes
- ▶ Wear waterproof trousers and or DEET/other repellent

▶ At home:

- ▶ Put clothes in washing machine
- ▶ Check yourself...EVERYWHERE
- ▶ Shower and check yourself again.





Questions?



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Ravenous Green Aliens

An introduction to riparian
invasive plant species

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What is an invasive alien species?

Invasive species are species that have been introduced, generally by human intervention, outside their natural range and whose establishment and spread can threaten native ecosystem structure, function and delivery of services.



Third Schedule: Part 1 Plants

Non-native species subject to restrictions under Regulations 49 and 50

First column Common name	Second column Scientific name	Third column Geographical application
American skunk-cabbage	<i>Lysichiton americanus</i>	Throughout the State
A red alga	<i>Grateloupia doryphora</i>	Throughout the State
Brazilian giant-rhubarb	<i>Gunnera manicata</i>	Throughout the State
Broad-leaved rush	<i>Juncus planifolius</i>	Throughout the State
Cape pondweed	<i>Aponogeton distachyos</i>	Throughout the State
Cord-grasses	<i>Spartina</i> (all species and hybrids)	Throughout the State
Curly waterweed	<i>Lagarosiphon major</i>	Throughout the State
Dwarf eel-grass	<i>Zostera japonica</i>	Throughout the State
Fanwort	<i>Cabomba caroliniana</i>	Throughout the State
Floating pennywort	<i>Hydrocotyle ranunculoides</i>	Throughout the State
Fringed water-lily	<i>Nymphoides peltata</i>	Throughout the State
Giant hogweed	<i>Heracleum mantegazzianum</i>	Throughout the State
Giant knotweed	<i>Fallopia sachalinensis</i>	Throughout the State
Giant-rhubarb	<i>Gunnera tinctoria</i>	Throughout the State
Giant salvinia	<i>Salvinia molesta</i>	Throughout the State
Himalayan balsam	<i>Impatiens glandulifera</i>	Throughout the State
Himalayan knotweed	<i>Persicaria wallichii</i>	Throughout the State
Hottentot-fig	<i>Carpobrotus edulis</i>	Throughout the State
Japanese knotweed	<i>Fallopia japonica</i>	Throughout the State
Large-flowered waterweed	<i>Egeria densa</i>	Throughout the State
Mile-a-minute weed	<i>Persicaria perfoliata</i>	Throughout the State
New Zealand pigmyweed	<i>Crassula helmsii</i>	Throughout the State
Parrot's feather	<i>Myriophyllum aquaticum</i>	Throughout the State
Rhododendron	<i>Rhododendron ponticum</i>	Throughout the State
Salmonberry	<i>Rubus spectabilis</i>	Throughout the State
Sea-buckthorn	<i>Hippophae rhamnoides</i>	Throughout the State
Spanish bluebell	<i>Hyacinthoides hispanica</i>	Throughout the State
Three-cornered leek	<i>Allium triquetrum</i>	Throughout the State
Wakame	<i>Undaria pinnatifida</i>	Throughout the State
Water chestnut	<i>Trapa natans</i>	Throughout the State
Water fern	<i>Azolla filiculoides</i>	Throughout the State
Water lettuce	<i>Pistia stratiotes</i>	Throughout the State
Water-primrose	<i>Ludwigia</i> (all species)	Throughout the State
Waterweeds	<i>Elodea</i> (all species)	Throughout the State

Invasive species and the law

- ▶ EU have a three-stage hierarchical approach for invasives species, recommending:
 - ▶ Prevention
 - ▶ Early detection and eradication
 - ▶ Control and long-term containment
- ▶ Laws for invasive come from many directives and regulations,
- ▶ Main one in Ireland being "*The European Communities (Birds and Natural Habitats) Regulations 2011*"
- ▶ Prohibits the planting, dispersal or allowing to disperse or spread or causing to grow of any plant listed in Part 1 of the Third Schedule
- ▶ Also illegal under Irish law (Wildlife Act) to cause an exotic species of flora to grow in the wild anywhere in the state.

Japanese Knotweed - *Fallopia japonica*



Japanese knotweed in flower



Zig-zag growth pattern of stem



Mottled stem colouration wintertime



Japanese knotweed colonising road side

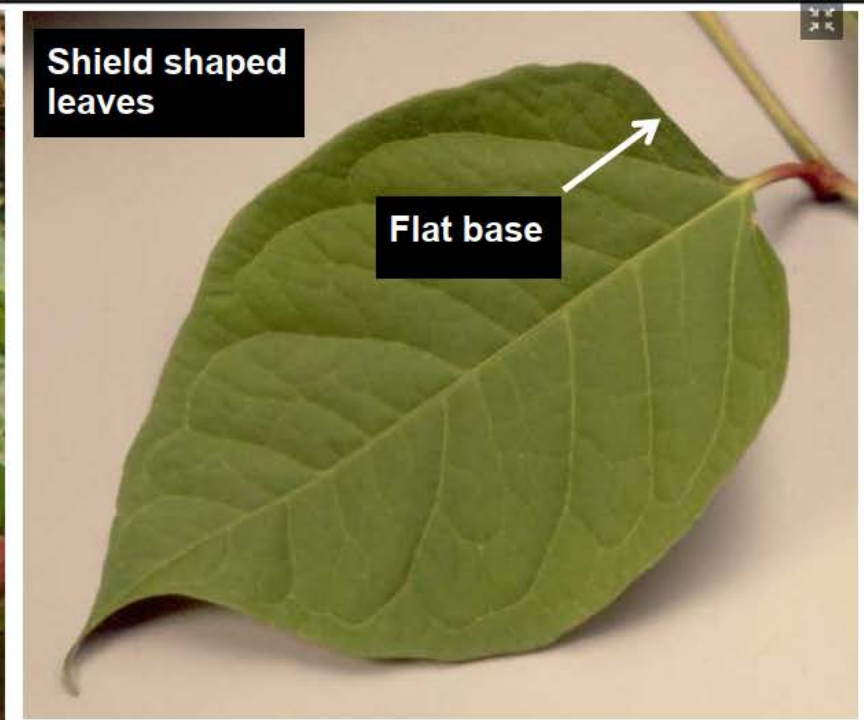
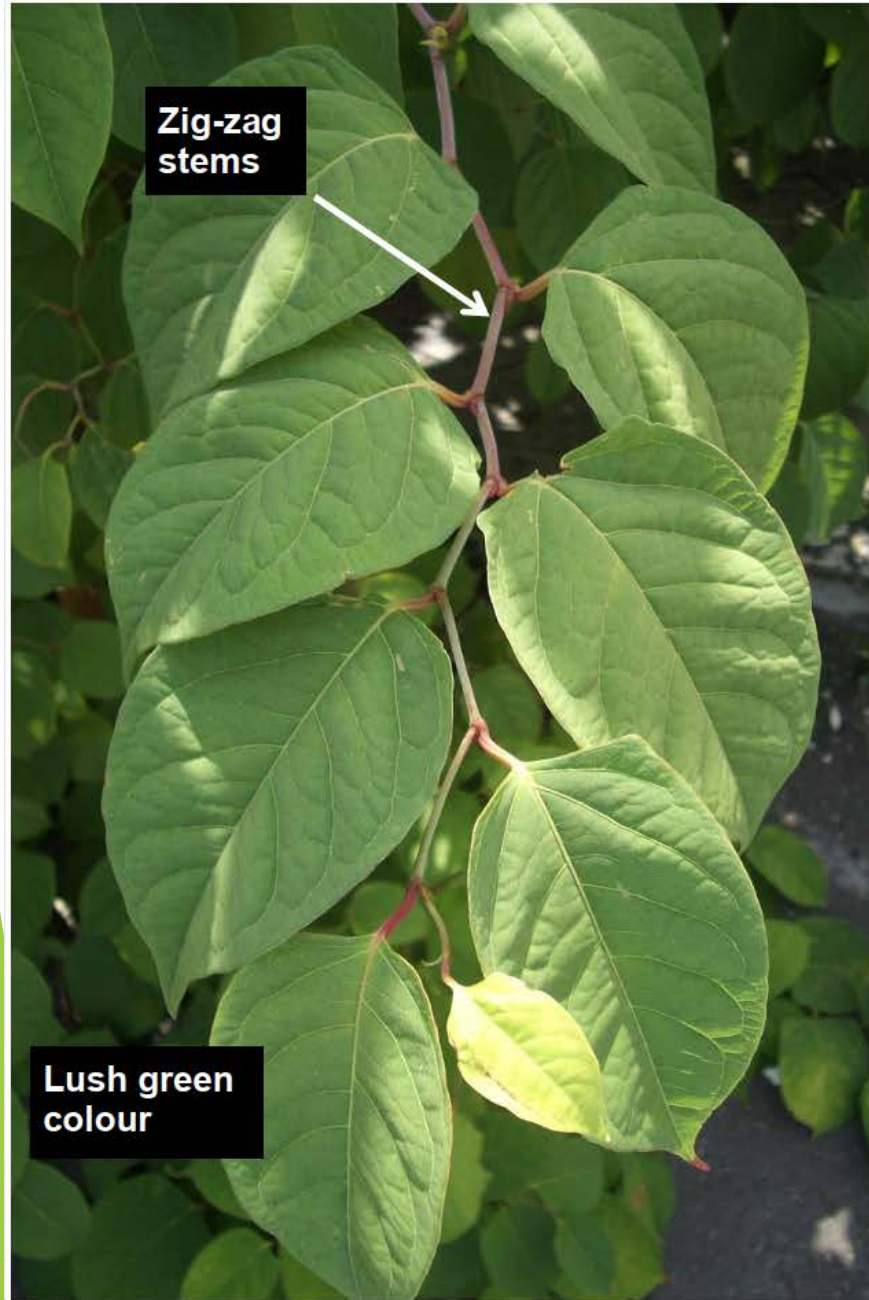
- ▶ Native to Japan, China, and parts of Korea and Taiwan. It was introduced to Europe as an ornamental plant in the 19th century
- ▶ Shoots appear early spring. Mature canes are hollow like bamboo. Can grow to over 3m in height. Flowering occurs in late summer/autumn. During the winter the leaves die back and reveal orange/brown woody erect stems.
- ▶ The underground rhizomes (7m long & 3m deep) are thick and woody with a knotty appearance with bright orange-coloured centre
- ▶ Only female Japanese plants have been recorded to date in Ireland
- ▶ Spread entirely via the movement of plant and rhizome fragments
- ▶ Widely distributed across a variety of habitat types

Japanese Knotweed Identification

- ▶ Up to 3m, hollow stems,
- ▶ stem red speckles,
- ▶ leaves zig zag stems,
- ▶ white flowers, long clusters (longer than leaf),
- ▶ Leaf truncated.
- ▶ Thick, woody roots, Orange when snapped



Key ID Features



Impacts of Japanese Knotweed

- ▶ Both an environmental and economic threat
- ▶ Readily establishes along roadsides, railways, riverbanks and hedgerows proving to be a driving hazard by blocking sightlines and damaging road surfaces
- ▶ Can grow through concrete & tarmac
- ▶ On riverbanks can affect flood defence structures
- ▶ Vigorous growth rates, form tall thickets
- ▶ Removal from the Olympic Village in London cost ~£88m



Methods of Removal



Extensive pre-management survey



Erecting signs



Spraying with Glyphosate along roads



Injecting with Glyphosate along rivers

Soil can also be removed and treated but this is very expensive

Himalayan Balsam - *Impatiens glandulifera*

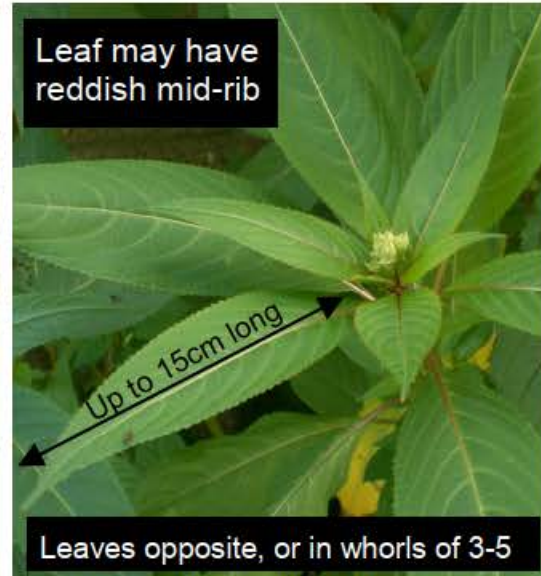
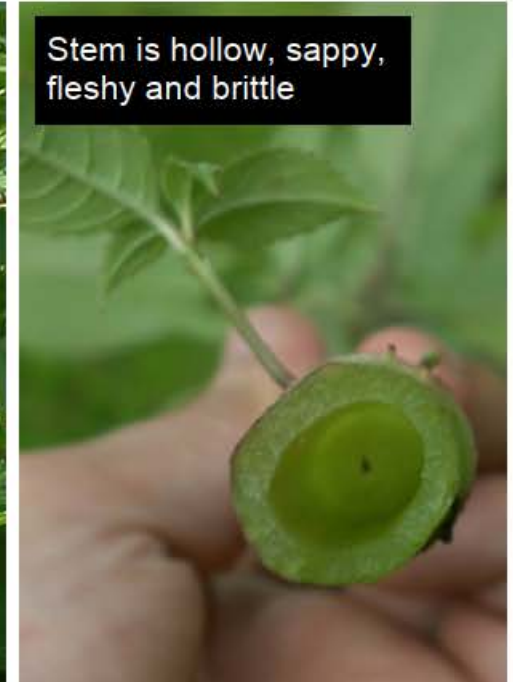
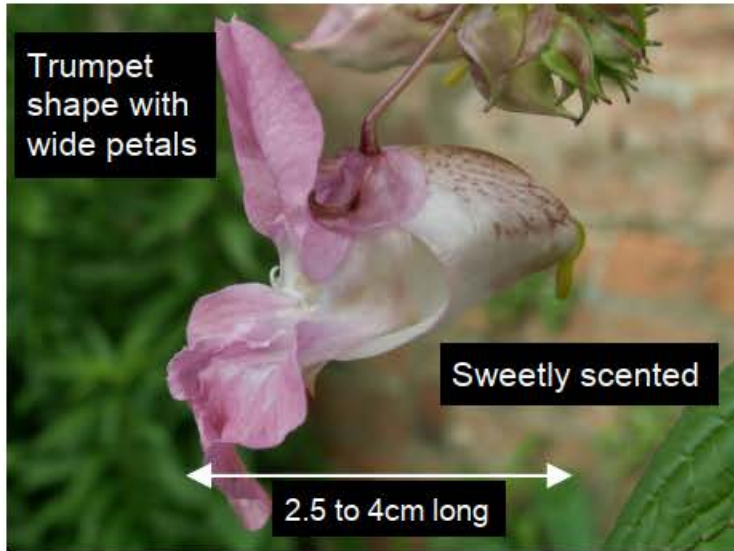
- ▶ Aggressive opportunistic coloniser,
- ▶ Originates from West and central Himalayas
- ▶ Grows in all terrains, mainly along water courses and damp habitats,
- ▶ Prolific & efficient seed dispersal,
- ▶ Outcompetes many native flora for space,
- ▶ Grows rapidly and shades out slower growing natives,
- ▶ Impact on pollination of native species,

Himalayan Balsam Identification

- ▶ Tall attractive plant up to 2m high,
- ▶ Pink trumpet shaped flower, sweet smell,
- ▶ Hollow and fleshy red/green stems,
- ▶ Seed pods that explode when ripe/touched,
- ▶ Leaves are opposite or in whorls and finely serrated,
- ▶ Shallow rooted.



Key ID Features



Impact on water quality and habitat

- ▶ Spreads rapidly on rivers, dying back in winter, leaving bare banks susceptible to erosion
- ▶ This erosion not only causes problems for the landowner, but this results in sedimentation on the river bed. This silt causes major problems for certain fish species such as Atlantic salmon, aquatic invertebrates and molluscs such as the critically endangered Freshwater pearl mussel



Pollination impacts



*47 times greater nectar production than
Great willowherb*



*23 times greater nectar production than
Purple loosestrife*

This allows it to attract pollinators such as bees away from native species, so reducing their seed set

Methods of Removal

- ▶ Most common is 'balsam bashing'
 - ▶ Can be cut/mown
 - ▶ Grazing is an option in suitable areas
 - ▶ Treated with herbicide
-
- ▶ Caution need to be taken with every method as seed pod explode!
 - ▶ Can also regrow even after pulling and cutting



Giant Hogweed

- ▶ Native to Caucasus mountains in south west Russia and Georgia,
- ▶ A large plant, up to 5m when fully grown,
- ▶ Can be confused with native hogweed,
- ▶ Spreads only by seed or deliberate planting,
- ▶ Sap permanently removes melanin from skin and causes blisters,
- ▶ Outcompetes native species and leaves riverbanks vulnerable.

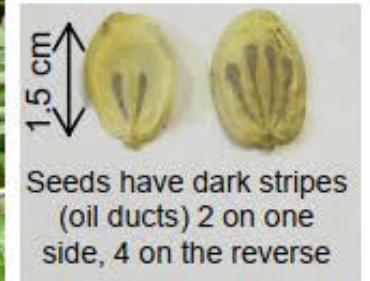
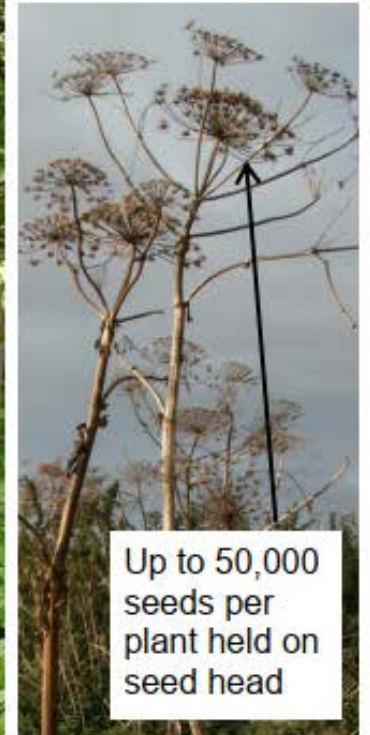
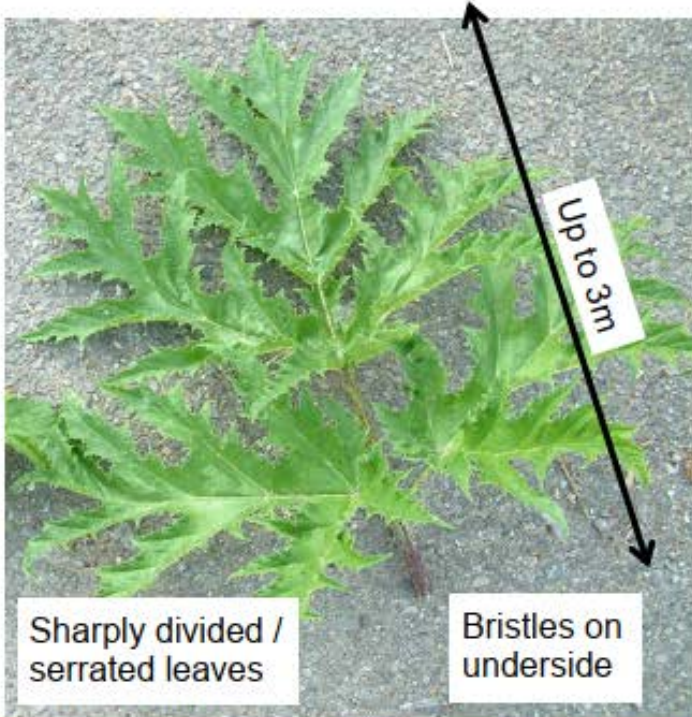




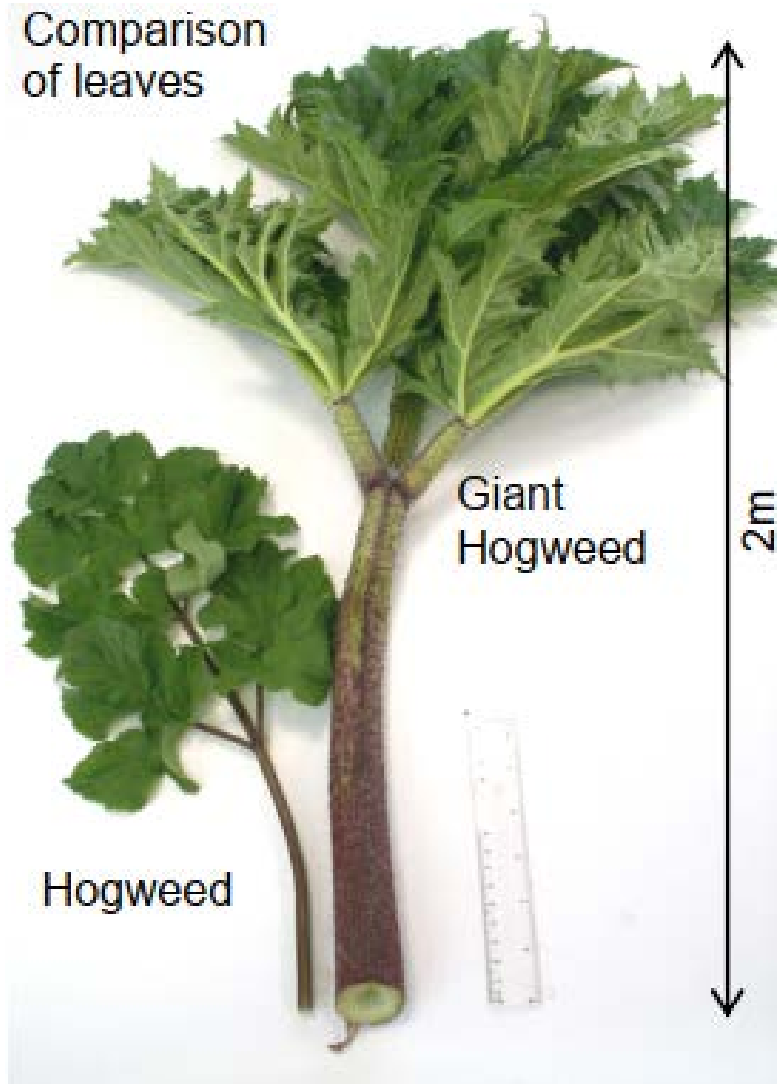
Giant Hogweed Identification

- ▶ Tall plant, up to 5m when fully grown,
- ▶ Leaves are large, up to 3m and sharply divided with bristles underneath
- ▶ Stems are thick and green with purple blotches again with bristles
- ▶ Large umbrella shaped flower head up to 80cm, made of many little white flowers
- ▶ Dies back in winter, leaving large dead stalks.

Key ID Features



Native Hogweed V Giant Hogweed



Methods of removal

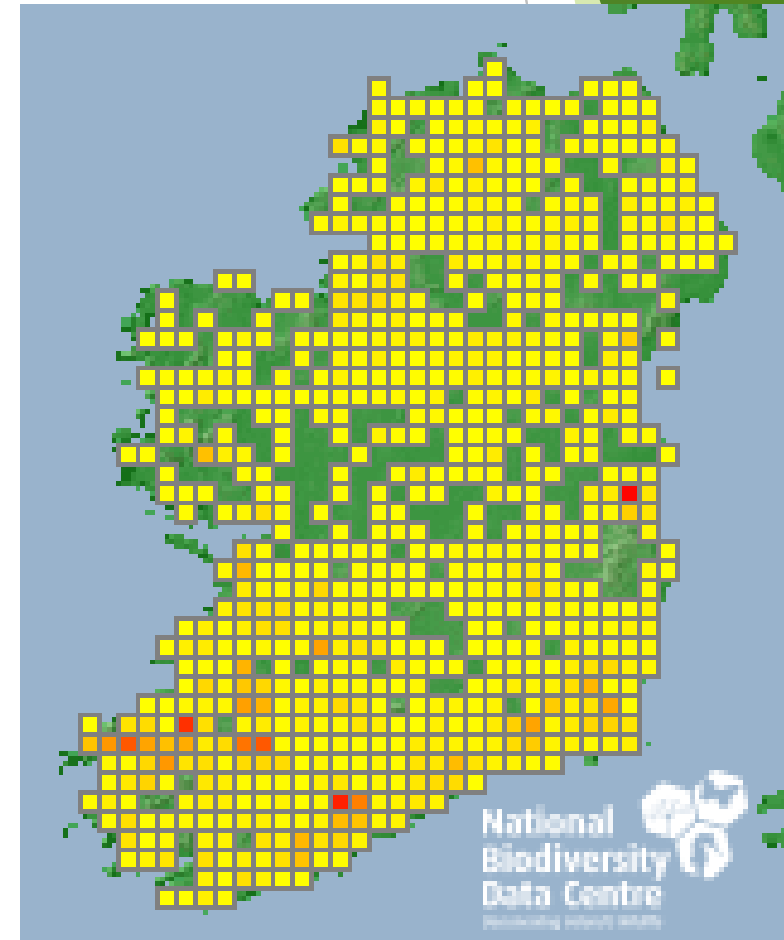
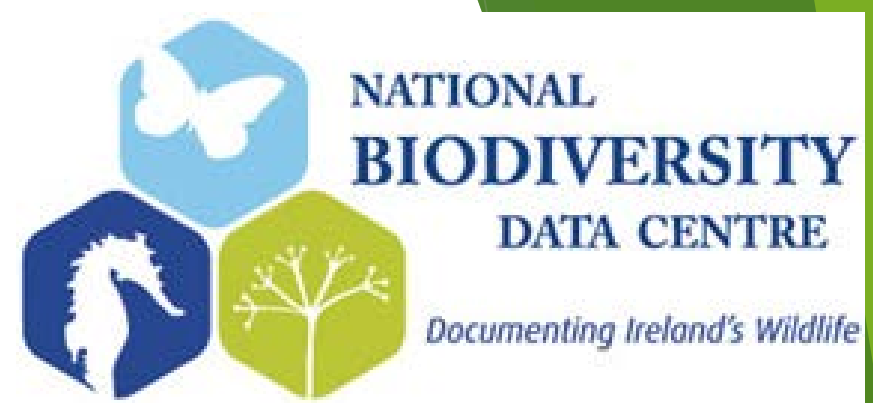
- ▶ Roots can be cut/split with a spade if only a few plants
- ▶ Removal of flower and seed heads - place in bin bag and leave in sun to destroy seeds,
- ▶ Plant can be cut/mown when small,
- ▶ Once cut plant can be covered with plastic
- ▶ Larger areas can be sprayed with herbicides
- ▶ **EXTREME CAUTION WITH AND REMOVAL OF GIANT HOGWEED** - Sap will cause long lasting effects.



What should you do if you encounter an invasive alien?

- ▶ Try to avoid the continued spread of the species in that area, avoid it if possible
- ▶ Ensure you don't bring it to another uninfected site,
- ▶ Make a record of it, in reports, the National Biodiversity Data Centre, local authorities etc.

- ▶ Many great resources available in invasive:
 - ▶ National Biodiversity Data Centre
 - ▶ Invasive species Ireland
 - ▶ Many companies involved in the removal of problem species
 - ▶ Local authorities are increasingly becoming involved in removal



Questions?

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