

Control of Non-native Invasive Weeds

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✧ Japanese Knotweed ✧ Indian Balsam ✧ Rhododendron ✧ Giant Hogweed
✧ The Butterfly Bush



Japanese Knotweed *Fallopia japonica*

- Introduced from E Asia in 1850's
- Spread throughout UK – by plant sales & soil movement
- Extensive rhizome system – up to 7 metres from plant makes control difficult



Japanese Knotweed *Fallopia japonica*

- Large oval-triangular leaves
- Red leaf stalks
- Red-flecked hollow stems
- Small white flowers on branched spikes
- Very rapid growth
- Dominates/displaces native plants



Japanese Knotweed *Fallopia japonica*

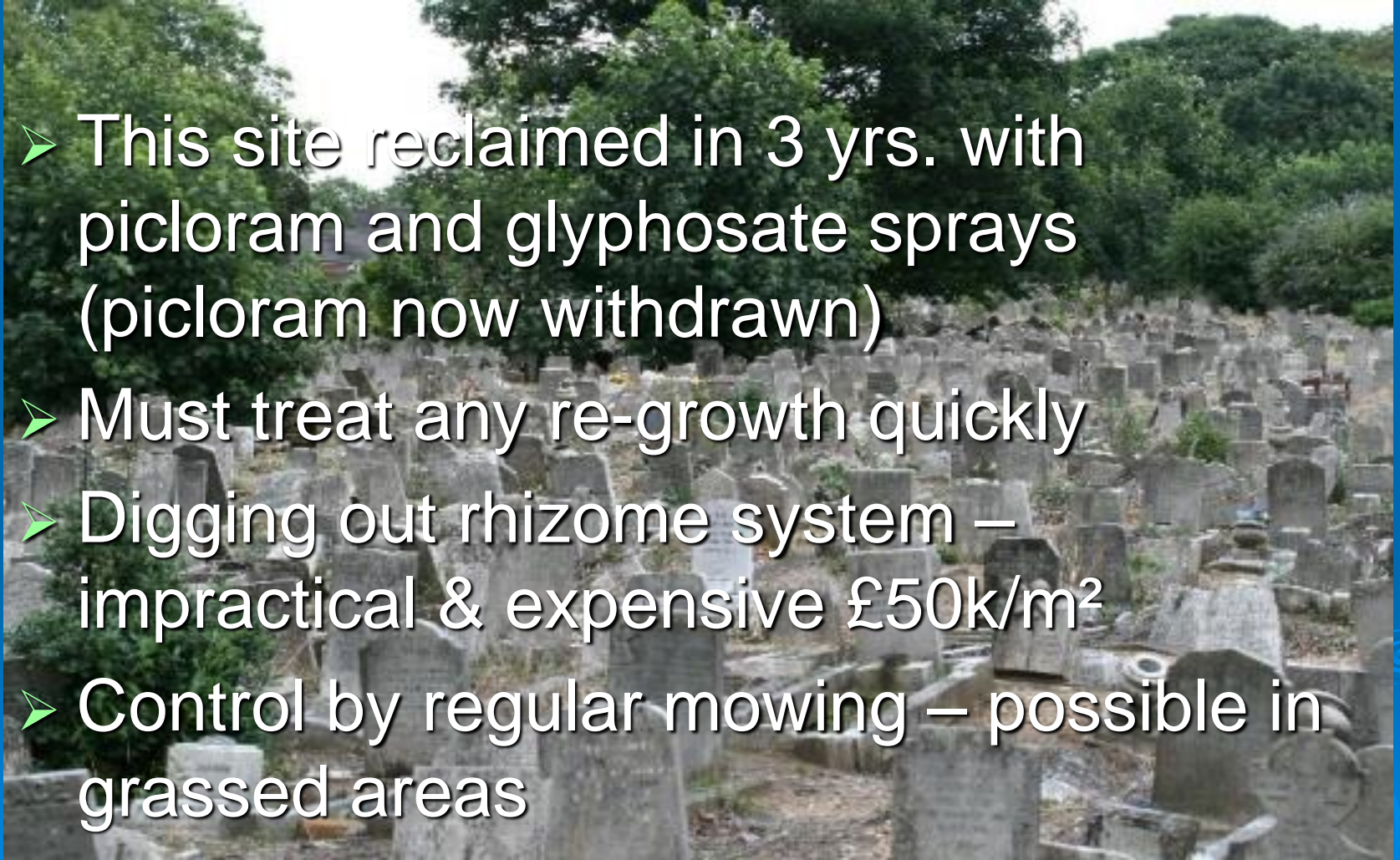
- Dioecious – has both ♂ & ♀ plants. UK only has ♀ so seed produced is sterile.
- All plants come from cuttings or rhizome fragments – very important NOT to disturb rhizomes
- Very hardy – can survive on poor soils, extremes of pH and temperature
- Included in schedule 9 of W.A.C.A. 1981
- Offence to plant/grow – waste must be controlled

Japanese Knotweed – Control



Japanese Knotweed

- This site reclaimed in 3 yrs. with picloram and glyphosate sprays (picloram now withdrawn)
- Must treat any re-growth quickly
- Digging out rhizome system – impractical & expensive £50k/m²
- Control by regular mowing – possible in grassed areas



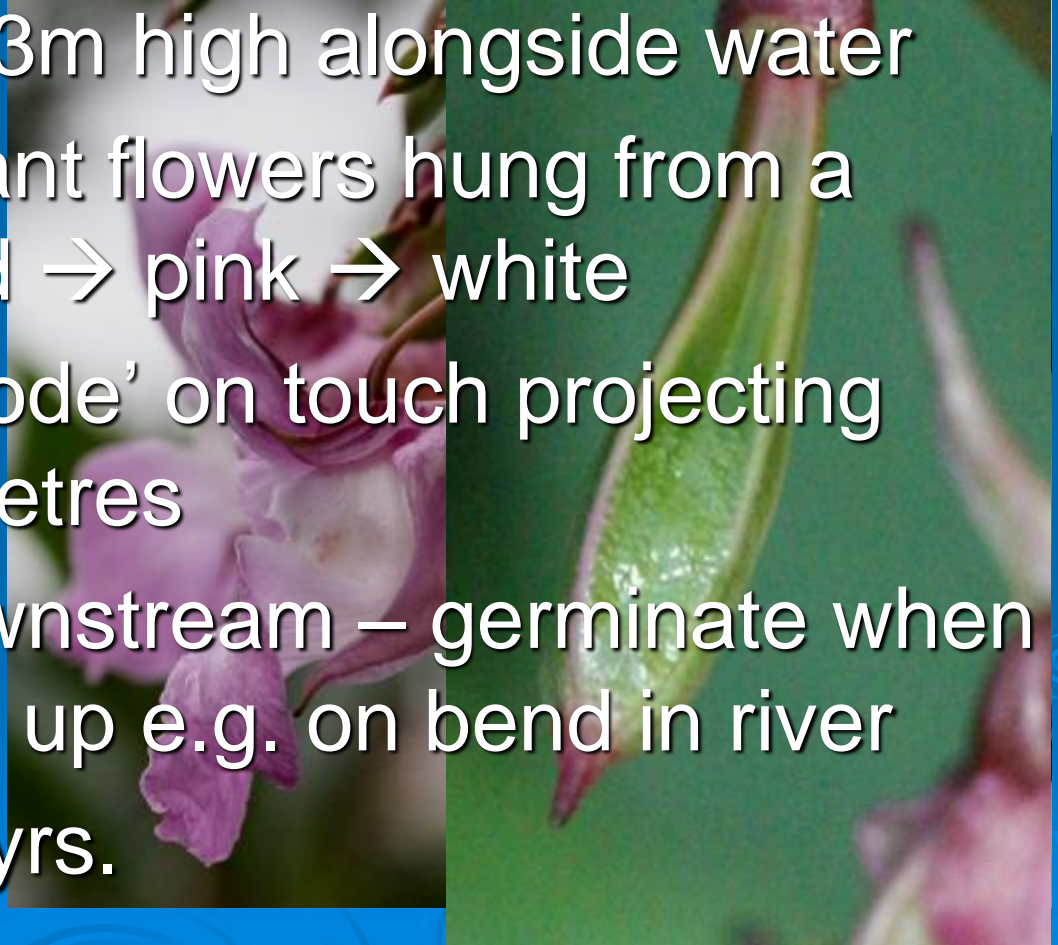
Indian Balsam *Impatiens glandulifera*

- A.k.a. 'Himalayan Balsam' Busy Lizzie fam. – tallest annual wild in UK
- Introduced from India by John Forbes Royle in 1839 – sent seed to Kew
- Initially thought to be 'tender' – kept under glass – but seed escaped through vents and grew outside – 'made off' down river in few generations!
- Term 'Riparian' – of or alongside river bank



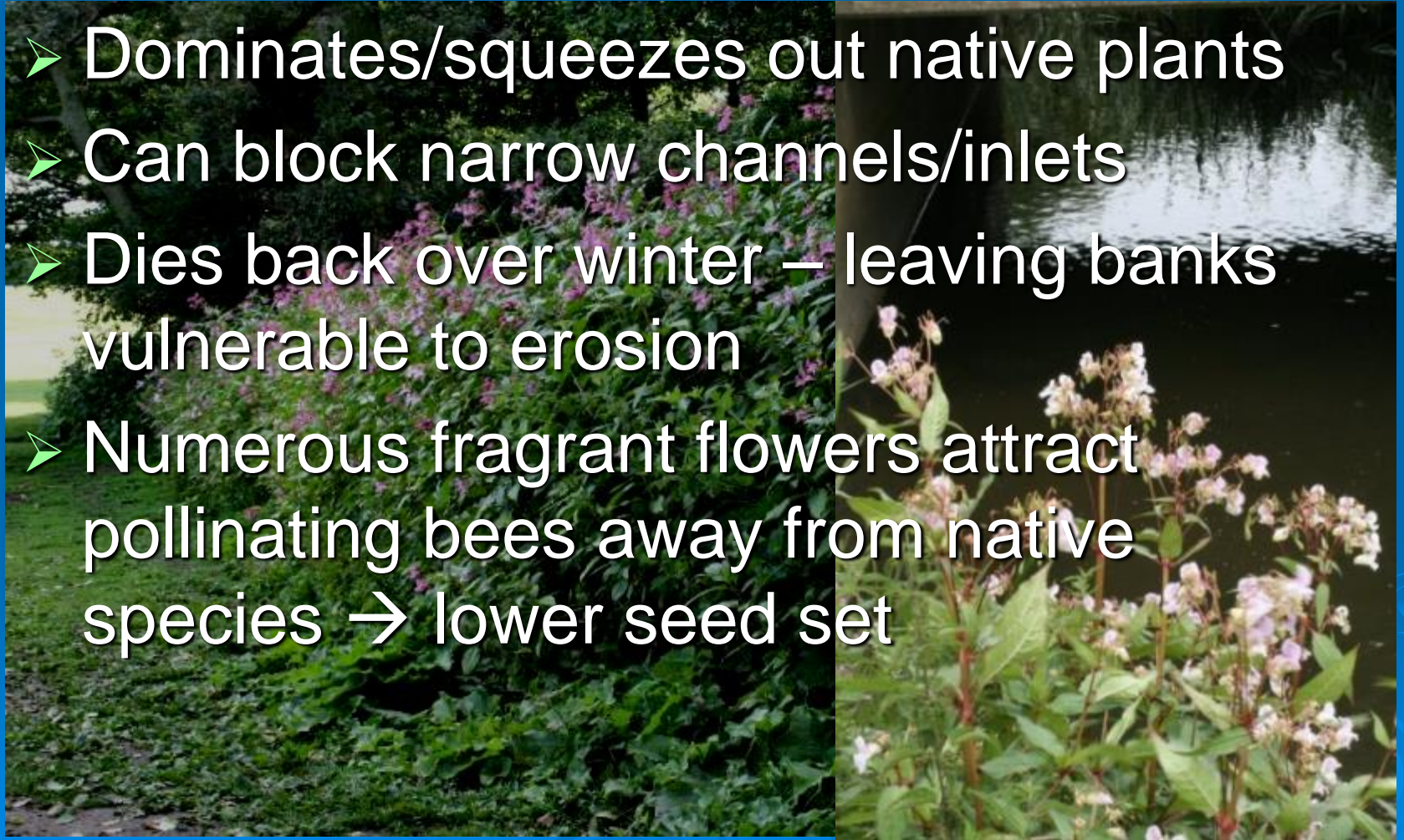
Indian Balsam *Impatiens glandulifera*

- Handsome annual – dark green tooth-edged leaves grows to 3m high alongside water
- Numerous fragrant flowers hung from a single stalk – red → pink → white
- Seed pods ‘explode’ on touch projecting seeds several metres
- Seeds travel downstream – germinate when they are washed up e.g. on bend in river
- Seeds viable >2yrs.



Indian Balsam *Impatiens glandulifera*

- Dominates/squeezes out native plants
- Can block narrow channels/inlets
- Dies back over winter – leaving banks vulnerable to erosion
- Numerous fragrant flowers attract pollinating bees away from native species → lower seed set



Indian Balsam – Control Measures

Easier than Japanese Knotweed – no rhizome system. Also seeds viable < 2 yrs

- Strategy: Remove seed bank from soil – 3 yrs
Must locate source – upstream to stop infestation
- Cultural: Cut plants below lowest leaves before flowering – Access may be difficult
- Chemical: Glyphosate or *2-4-D amine (*retains grass for bank stability) Spray early spring
- Direct stem injection with glyphosate (access?)

Purple Flowered *Rhododendron ponticum*

- Impressive colourful shrub - suited big gardens
- Introd: 1763 from Spain by Conrad Loddiges – Gardener from Hackney – grown from seed
- Spread across UK – plant sales – then escaped
- Used as rootstock for other varieties
- Likes acid ‘heath’ soils



Purple Flowered *Rhododendron ponticum*

- Large evergreen shrub 5 – 10m high
- 'Leathery' dark green 'oblanceolate' leaves 10-20cm x 2-6cm
- Flowers in rounded heads – purple/violet
- Large numbers seed produced by each head



Purple Flowered *Rhododendron ponticum*

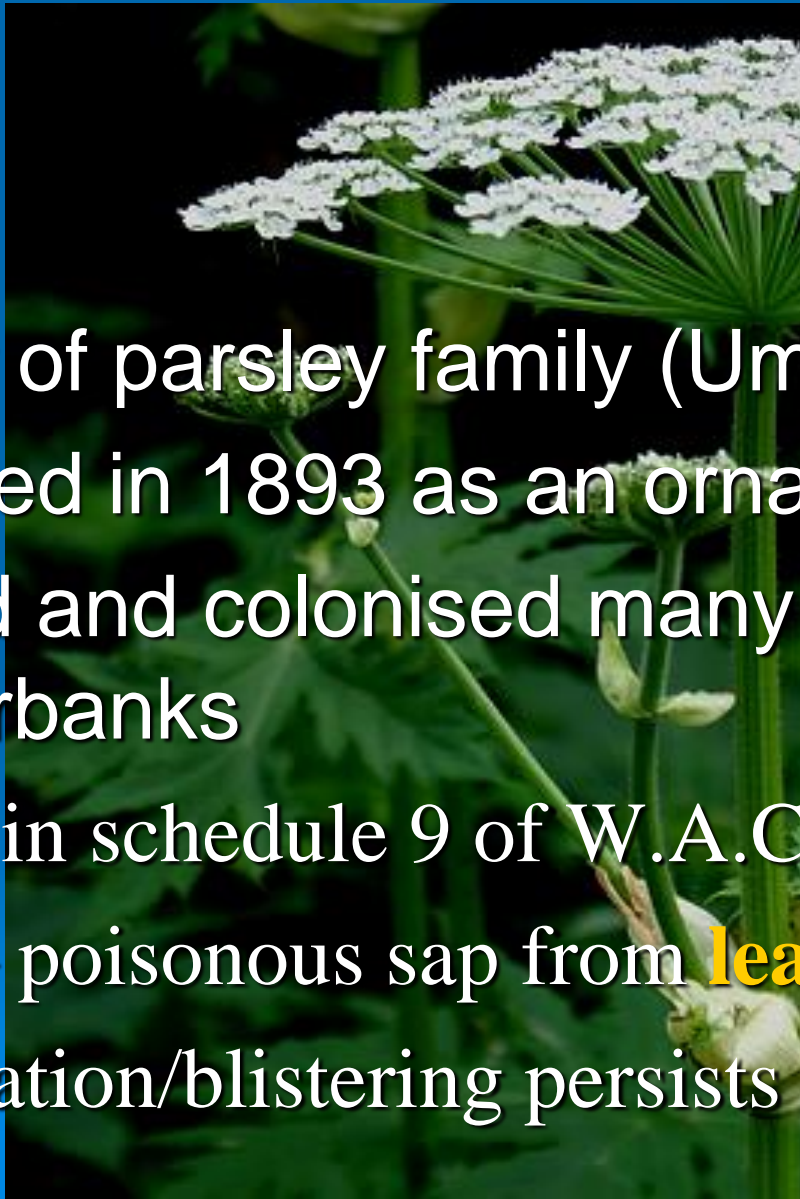
- Spreads by seed & vegetative means
- Dominates landscape: Light / nutrients / water
- Leathery leaves form mulch – prevents all other plant life from establishing
- Problem on heath land, moors, acid woodlands

Purple Flowered *Rhododendron ponticum*

Control Measures:

- Cultural Control: Cutting and removal of plants
 - can be difficult due to size and access
- Chemical Control: glyphosate and 2,4-D amine
 - penetration of leathery leaves requires adjuvants – direct stem injection could be useful
- Size of plants makes spraying difficult
- Soil replacement may be required after removal to re-establish native species

Giant Hogweed – *Heracleum mantegazzianum*



- Member of parsley family (Umbelliferae)
- Introduced in 1893 as an ornamental
- Escaped and colonised many roadsides and riverbanks
- Included in schedule 9 of W.A.C.T.
- Danger – poisonous sap from **leaf hairs** and stems
- Skin irritation/blistering persists many years

Giant Hogweed – *Heracleum mantegazzianum*



- Many white flowers in heads (umbels) up to 50cm across → 50,000 seeds
- Seeds viable for 15 years and are easily spread in water



Giant Hogweed – Control Measures

- Any contact with the plant is dangerous – protective clothing essential to avoid sap contact
- Cultural: Cut the plant down before it reaches 1m high (March)
- Crown can be dug out below ground to prevent re-growth
- Bury waste in licensed landfill or compost on site
- Chemical: glyphosate or 2,4-D amine – spray at 1m high. Follow up – seedlings
- Stem injection can work with this weed

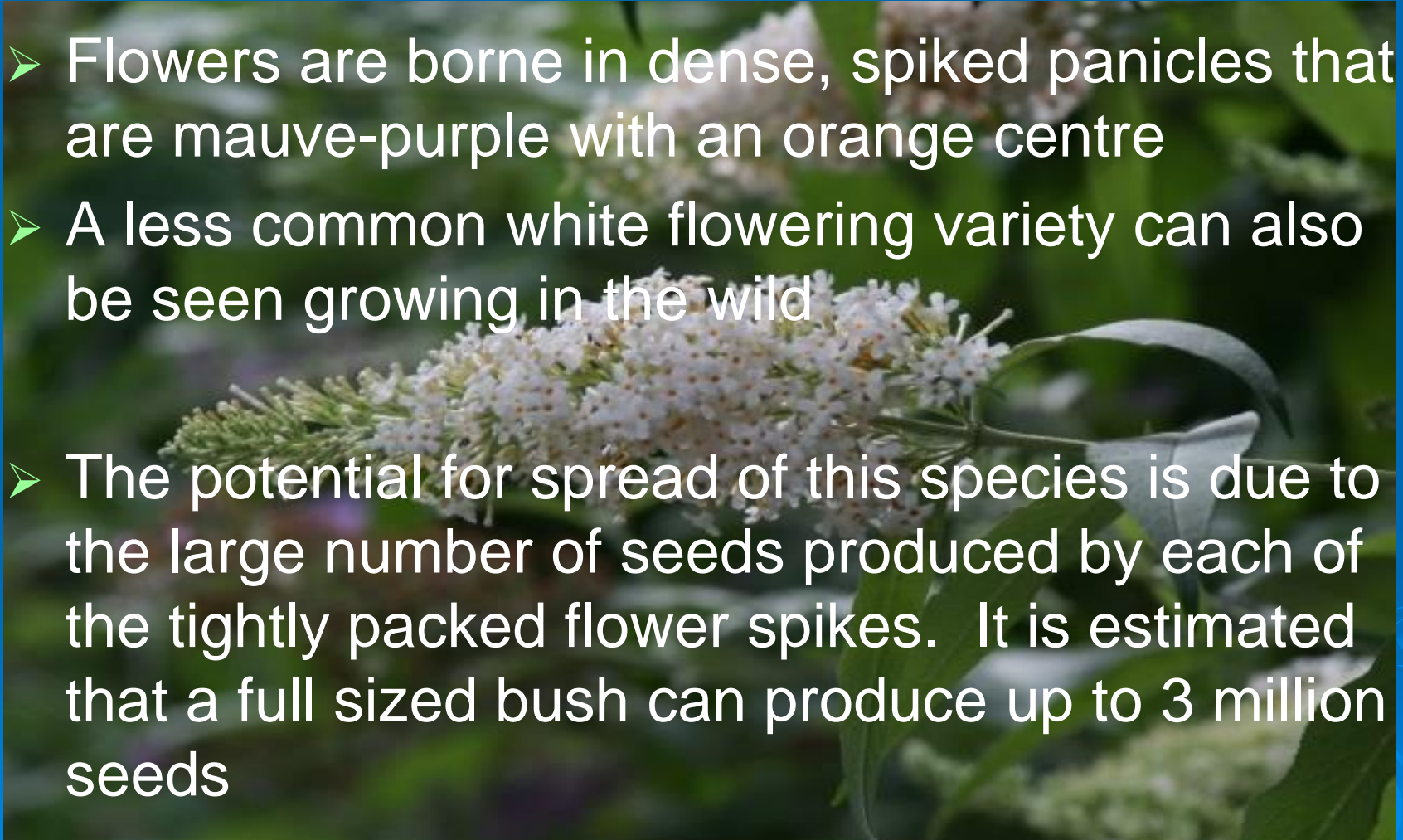
The Butterfly Bush

Buddleia davidii

- Loved by gardeners for the abundance of beautiful, scented, nectar-rich flowers that attract butterflies, bees and other insects
- Introduced to the UK from China in 1896
- Easy to propagate, with few natural enemies but can be difficult to control
- Grows to a height up to 5 metres with sage green lanceolate to ovate shaped, toothed leaves with downy white hairs on under surface

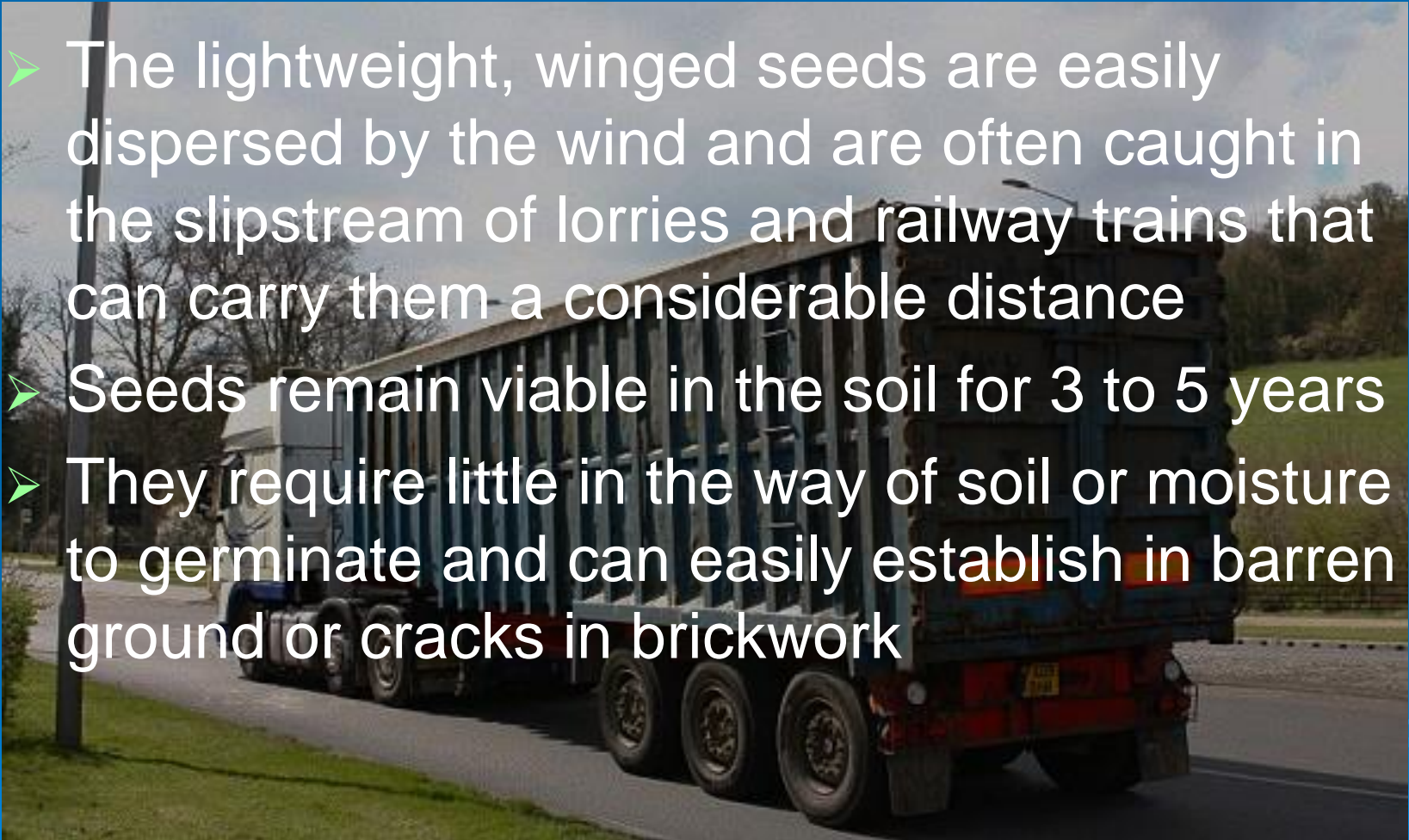
The Butterfly Bush

- Flowers are borne in dense, spiked panicles that are mauve-purple with an orange centre
- A less common white flowering variety can also be seen growing in the wild
- The potential for spread of this species is due to the large number of seeds produced by each of the tightly packed flower spikes. It is estimated that a full sized bush can produce up to 3 million seeds



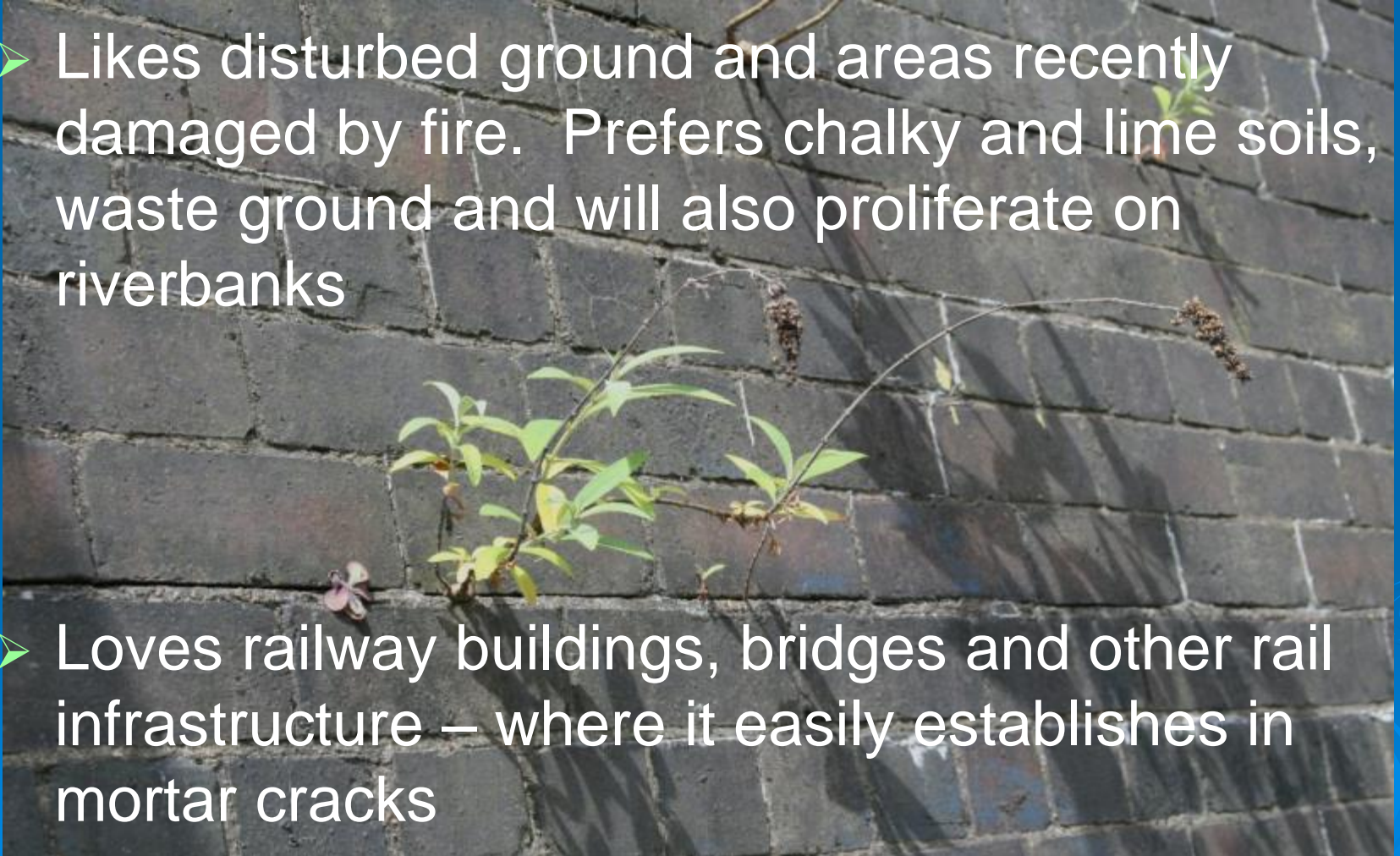
The Butterfly Bush

- The lightweight, winged seeds are easily dispersed by the wind and are often caught in the slipstream of lorries and railway trains that can carry them a considerable distance
- Seeds remain viable in the soil for 3 to 5 years
- They require little in the way of soil or moisture to germinate and can easily establish in barren ground or cracks in brickwork



The Butterfly Bush - Habitat

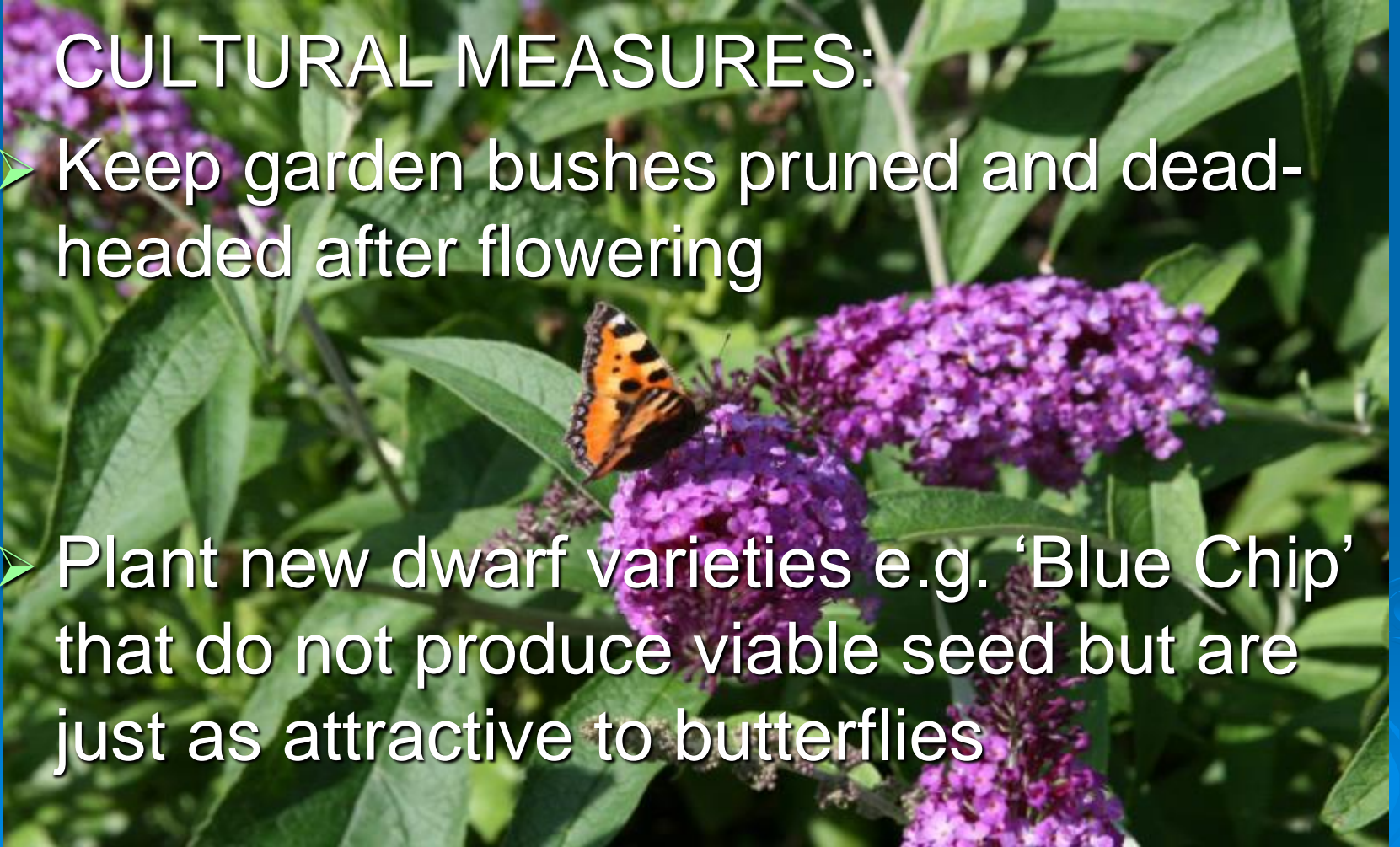
- Likes disturbed ground and areas recently damaged by fire. Prefers chalky and lime soils, waste ground and will also proliferate on riverbanks
- Loves railway buildings, bridges and other rail infrastructure – where it easily establishes in mortar cracks



Butterfly Bush - Control

CULTURAL MEASURES:

- Keep garden bushes pruned and dead-headed after flowering
- Plant new dwarf varieties e.g. 'Blue Chip' that do not produce viable seed but are just as attractive to butterflies



Butterfly Bush - Control

CHEMICAL CONTROL:

'Pistol' – glyphosate and diflufenican (residual) gives excellent control of seedlings

'Round-up' and other formulations of glyphosate will control green stems

Mature plants require stronger brushwood killer such as 'Icade' or 'Speedline' (Rail use)

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