

# Landscapes and Life Cycles

Chip Bubl

OSU Extension

[chip.bubl@oregonstate.edu](mailto:chip.bubl@oregonstate.edu)

# Plant life cycles

- Annual
  - winter annuals, spring/summer annuals or the year-round annual types
- Biennial
- Perennial
  - woody
  - herbaceous
  - (wandering or not)



# Life cycle communities

- Plants (weeds) tend to group by life cycle – species present are due to the disturbance pattern, the seed/vegetative piece “bank” and seeds the arrive by various means.
- Lawns, pastures, orchards, and some densely planted perennial ornamental landscapes tend to ultimately favor perennial weeds.
- Periodically “bare” landscapes like yearly tilled ag ground and shrub and flower beds with lots of open areas tend to have mostly annual/biennial weeds.



# It's all about plant succession

- Complex plant reproductive biology - what you started with in the seed/clone bank, what moves in and how they all compete.
- Landscape disturbances: natural, human engineered, or both
- Selection pressures lead to weed/plant population shifts



Lesser Celandine  
*Ranunculus ficaria*

# Selection pressure

We do various things that favor one plant type/species/group over another:

Mowing

Tilling

Burning

Herbicide use pattern

Plant material choices

Irrigation or not

Mulches

Timing of control activities

Etc.

Garlic mustard  
*Alliaria petiolata*



# Examples

- Perennial annual bluegrass biotypes (fertility and mowing)
- Marestail or horseweed (herbicide resistance)
- Selecting for later germinating seeds of a given plant by always spraying non-residual materials at the same time of year



Annual bluegrass  
*Poa annua*

# Weed control options determined by

- § Weed species present
- § Botanical complexity of the landscape – what you want to save and stabilize versus what you want to remove.
- § Tools that are available and affordable



Common Groundsel  
*Senecio vulgaris*

# Before you use any herbicide

- Did you read **all** the label?
  - Is your location appropriate and desirable plants won't be affected?
  - Does the product work on your weed? Weed identification is so important
  - Can you make a precise application?
  - Are the weather conditions and timing (temperature, stage of growth of weed, etc.) right?

# Weed ID is so important!

- Knowing the life cycle may help you attack its weak links.
- Chemical and non-chemical approaches hinge on knowing how the plant thrives in your target area.
- What is this plant?



# Parsley-Piert (*Aphanes* sp.)

- In the Rose family
- Winter annual – emerges generally in the early fall but can germinate into April
- Likes close mowed turf – prostrate growth habit
- Very small
- Lots of turf chemicals don't work



# Weed Identification Support

- Colleagues
- OSU Extension
- SWCDs
- ODA
- Weed boards
- Parks staff
- Ag-Chem reps
- Watershed Council staff
- Good manuals
- Others



Galeopsis tetrahit – Hemp Nettle

# *Equisetum arvense*: Horsetail

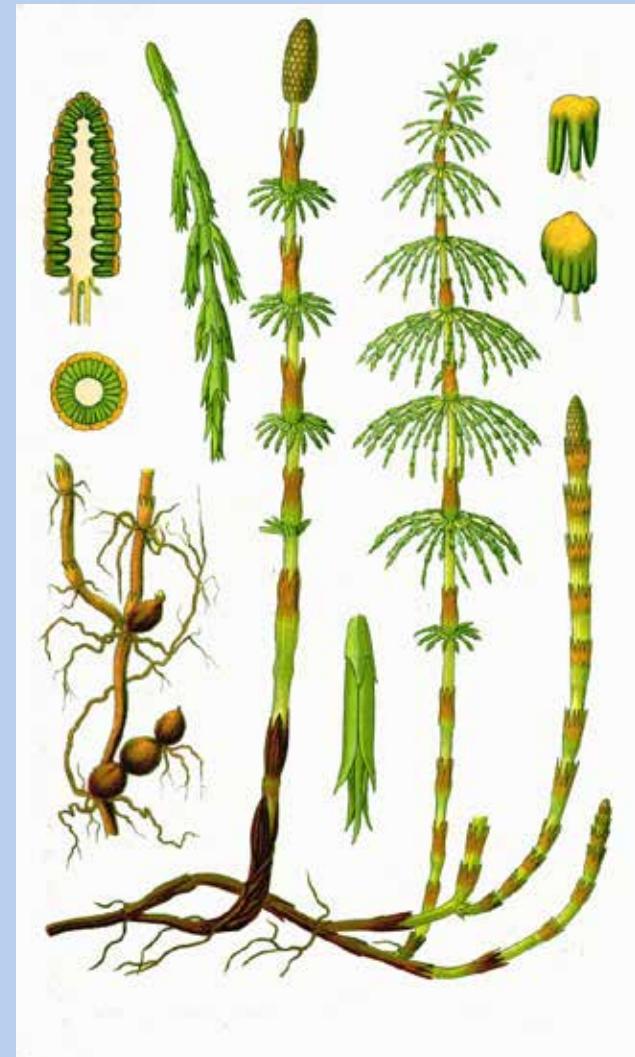
- Dominant plant family 250 million years ago
- Both native and non-native horsetails found in Oregon
- Herbaceous perennial
- Spreads aggressively by rhizomes and spores
- Rhizome fragments arrive in top soil, compost, and equipment. Or spores blow in.
- Prefers moist situations but can prosper in many managed landscapes. **Does not like shade**



Fertile stems – wither when spores released

# Equisetum continued

- Large food reserves in rhizomes.
- Carbohydrate starvation – does it work? Requires repeated removal of photosynthetic parts. The more **often** you remove, the better.
- Shade is a form of carb starve – Equisetum doesn't like deep shade. Landscape fabric (edge issues) or dense shade from plants
- So is herbicide burn down if repeated



# Equisetum (horsetail) cont.

- Tillage provides little control unless deeper than 14". Can spread with tillage.
- Chemical options on sites/uses where labeled: dichlobenil (Casoron) for woody landscapes, MCPA for lawns (repeated), halosulfuron (Sedgehammer and others) at upper end rate in certain landscape situations?



Vegetative stems

# Native: Equisetum hyemale



# Yellow Nutsedge



Has been called one of the world's worst weeds. Spread by seed, rhizomes, and tubers. Comes in topsoil. Suppress with landscape fabric or constant removal. Landscape herbicides: Halsulfuron (Sedgehammer), metolachlor (Pennant), Image (Imazaquin), Tower, and Casoron. Use all as per label instructions.

# Pearlwort

- *Sagina procumbens* – non-native Eurasian species
- Serious problem in nursery, turf and some landscape situations. Withstands close mowing.
- Invasive in some natural areas (sea cliffs and other moist, sunny sites) where it competes with native *Sagina* species and other plants.



# Pearlwort identification

- Can be confused with some moss species and corn spurry
- Very small plant with needle-like leaves
- In the “pink” (chickweed) family (so is spurry)
- Can grow in mats
- Perennial (mostly)
- “Irish moss” (*S. subulata*) is a commercial species – not invasive



# Pearlwort

- Small white flowers with green sepals larger than white petals
- Seed capsule
- Fairly deep taproot



Photo: G. D. Carr

# Pearlwort reproduction

- Flowers from April to early October
- Each seed capsule contains 60+ very tiny seeds. Spread by equipment, feet, wind, etc.
- Seeds germinate in the early fall and early to mid spring. Some germinate in the summer in irrigated settings.
- Seeds live 8+ years
- Also reproduces by rooting from trailing shoots

# Pearlwort management: landscapes

- Reduce moisture if possible to make it less comfortable. But difficult with deep taproot



# Pearlwort management: landscapes

- Pre-emergence:  
oryzalin+oxyflourfen  
 combos,  
dimethenamid, and  
isoxaben+trifluralin
- Post-emergence:  
glyphosate (non-  
selective), auxinic  
materials, glufosinate  
(?). May need repeat  
applications.



# Pearlwort management: turf

- In turf, keep thick grass stand and reduce excess water that favors pearlwort and slows grass growth.
- Start removal process early before there is a lot of seed built up
- Pre-emerge products:  
    Tenacity (mesotrione)?
- Post-emergent products:  
    – Dicamba, MCPP, 2,4-D?
- Monitor often!



# Viola species

- Several species – **the most weedy ones are perennial**
- Characterized by heart-shaped leaves and quarter-sized flowers in colors from white, yellow, blue, and purple.
- Most prefer shady locations (less competition) but can do well in very sunny sites and even dry sites.

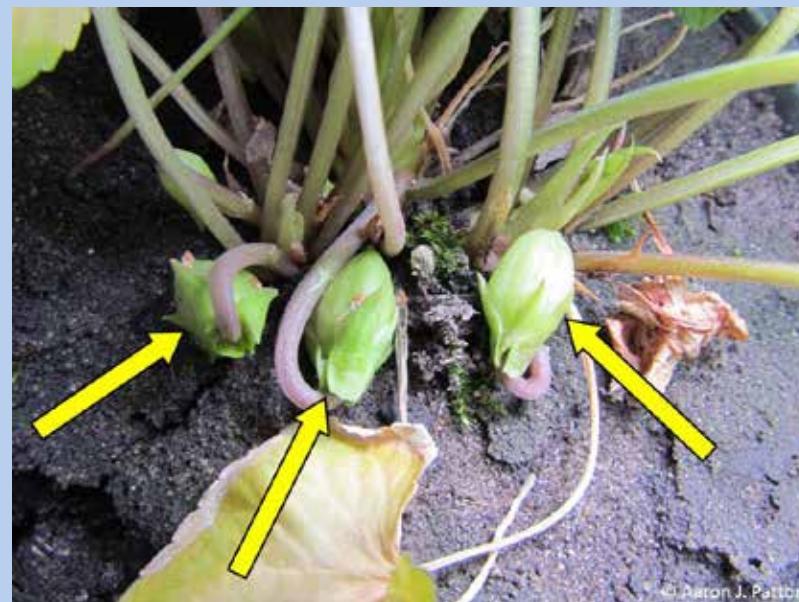


# Viola species

- Perennials reproduce by running rhizomes and seed
- Annuals just by seed
- Flower seed capsule droops to the ground, avoiding your mower



© Aaron J. Patton



© Aaron J. Patton

# Viola management - Turf

- Mowing more often may help
- Strong turf may help exclude violets
- Hand removal of perennial species
- Chemical control:  
Labeled turf products with triclopyr are most widely used.  
Repeat applications.



© Aaron J. Patton

# Violet management: landscape beds

- Hand removal
- Competitive plantings
- Spot spray carefully with labeled materials like glyphosate (non-selective) or triclopyr taking care to avoid damage to sensitive desirable plants.
- Learn to recognize and conserve our native wood violet (Johnny Jump-Up) *Viola glabella*



# Shiny geranium (*Geranium lucidum*)

- Likes sun/shade margin
- Winter/spring **annual**
- **Very invasive**
- No bad smell (unlike Herb Robert – aka Stinky Bob)
- Pull to keep from going to seed. Spot herbicide options to knock out seed set. Triclopyr, glyphosate, others as per label.  
Continue to have seed germination. Plant grass afterwards.



Bruce Newhouse

# Shiny geranium

- Spreading rapidly in both natural sites and semi-managed landscapes.
- Competitive planting – grasses and others
- Pre-emerge products where labeled in managed landscapes





Photo Bruce Newhouse

# Herb Robert (*Geranium robertianum*)

- “Stinky Bob”
- Resembles shiny geranium or bleeding heart
- Aggressive **biennial**
- Prefers some shade.  
Forest floor invader



Photo by Philip Bendle

# Herb Robert vs bleeding heart



# Herb Robert

*Geranium robertianum*

- Spreads by explosive seeds - moved by deer?
- May be allelopathic
- Easy to pull (if you have lots of time and labor)
- Seeds live 5+ yrs



# Herb Robert management

- Pulling
- Possibly burying under heavy mulch
- Contact herbicides in winter – attack the **rosette** while not harming dormant herbaceous perennial native plants.
- Options: spot treat with glyphosate, triclopyr, glufosinate, others?
- Bio-control???



# Garlic Mustard

- Biennial
- Kidney shaped leaf, white flower with four petals
- Displaces native understory vegetation
- Reduces forage available for deer
- Plant is very hard to control once established
- Persistent seed bank
- May affect forest mychorrhizae



# Garlic Mustard control

- Hand-pull: start at “leading edge” and work backward
- Bag and dispose in garbage (do not compost)
- Wash or brush off boots, equipment
- Spray with glyphosate and others before flowering in the spring
- Deep mulch areas?





# Marestail or Horseweed (*Conyza canadensis*)

- Annual/biennial
- Native to N. America but rapidly increasing in geography.
- Windblown seeds can germinate after spraying
- Significant in some clearcuts



# Marestail management

- Seeds can germinate from early fall through spring and early summer
- Fall plants have bigger root systems and a complex system of meristems that can be released to regrow after herbicide treatment or mowing
- Post and pre-emergent options depending on site
- Longevity of pre-emergent activity important given staggered seed germination



U. Nebraska – Nathan Mueller

# Horseweed in Forest Re-plant Site



# Weed characteristics that favor resistance

- § High reproductive capacity
- § Good seed dispersal

Horseweed  
or Marestail  
*Conyza  
canadensis*

Winter/Summer annual/biennial



# A word about herbicide resistance

- § Inherited ability of a weed or crop biotype to survive a herbicide application to which the original population was susceptible.
- § Example: Marestail plants that survive herbicides that normally control marestail are considered resistant plants.
- § Change chemistries and/or timing. Change up cultural controls. Do something different!



Marestail (annual/biennial)

# Management of winter annuals

- Early fall mulching to reduce seedling emergence
- Germinate in waves
- Hand weeding and/or post-emergence spot spraying
- Collect info on species present on site
- Pre-emergence herbicides – no bodies, fewer callbacks.



Common Groundsel

# Some winter annuals



Red dead nettle –  
*Lamium purpureum*



Common chickweed –  
*Stellaria media*

# Another winter annual



Little bitter cress  
*Cardamine oligosperma*

# Not another....winter annual



Photo by Phil Bendle

Bedstraw- Galium aparine aka “velcro plant”



Nipplewort  
*Lapsana*  
*communis*

Winter annual or  
biennial

Found at sun and  
shade margins.

Germinates most  
of the year.



*Lapsana communis*  
Nipplewort

Seedlings look a lot  
like garlic mustard  
seedlings

# Northern willow herb

- *Epilobium ciliatum*  
*ssp watsonii*
- W. Coast native  
herbaceous  
**perennial** in evening  
primrose family
- Sun or shade
- Can grow 1-6 feet tall
- Overwinters as a  
rosette
- Deep rooted



# Northern willow herb

- Floral stalk emerges as soon as it starts to warm
- Flowers are pink
- Seeds prolifically
- Seed blow in wind from June-September
- Seeds can germinate in 4-7 days after landing



# Northern willow herb management in landscapes

- Eliminate dispersal sites
- Grub out plants (not easy)
- Carefully spot spray existing plants as per label
- Some pre-emergent products to look at:  
indaziflam, dichlobenil,  
trifluralin+ixosaben,  
oxyflourfen, and others as per label requirements.



# Italian arum

- Perennial bulblets
- Also seeds from berries
- Stop early
- No effective chemical treatment? Waxy cuticle. Needs more study.
- Slow spreader
- Very tenacious



# Lesser Celandine (*Ranunculus ficaria*)



# Lesser Celandine (*Ranunculus ficaria*)

- Buttercup family
- Perennial bulblets, and tuber-like pieces, and seed
- Can tolerate shade
- Short growth and bloom cycle
- Stop early!
- No controls work well (?) except digging and sifting soil. Needs more study, esp glyphosate timing – earlier may be better.





# Bull thistle



© Paul Hackney



Biennial – notice rosette

# Perennial: Canada thistle

Canada thistle  
Is one of the worst  
agricultural weeds.

Herbaceous  
perennial –  
extensive  
spreading root  
system

Male and female  
clumps







## Canada thistle

*Cirsium arvense*

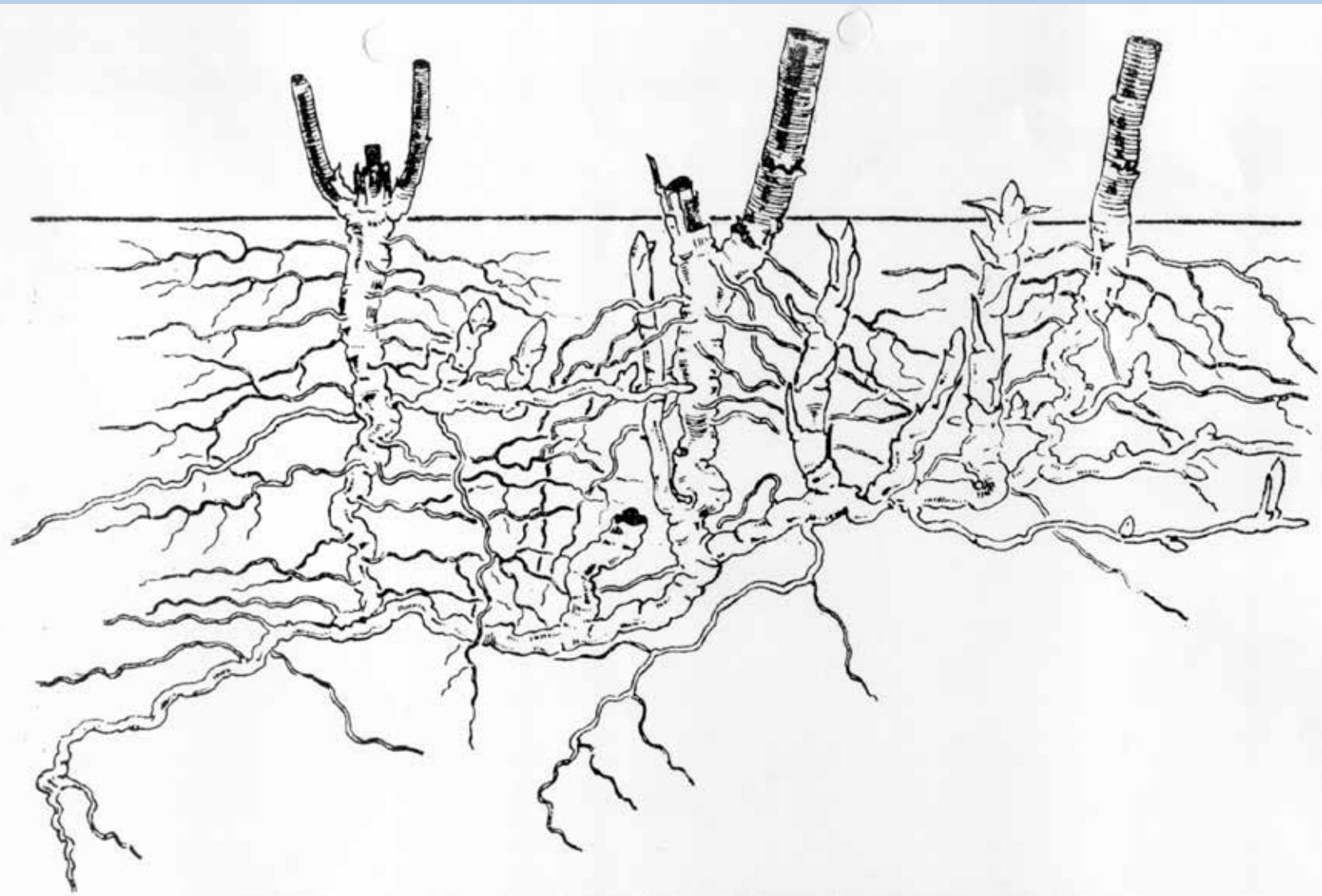
Intense competitor

Allelopathic

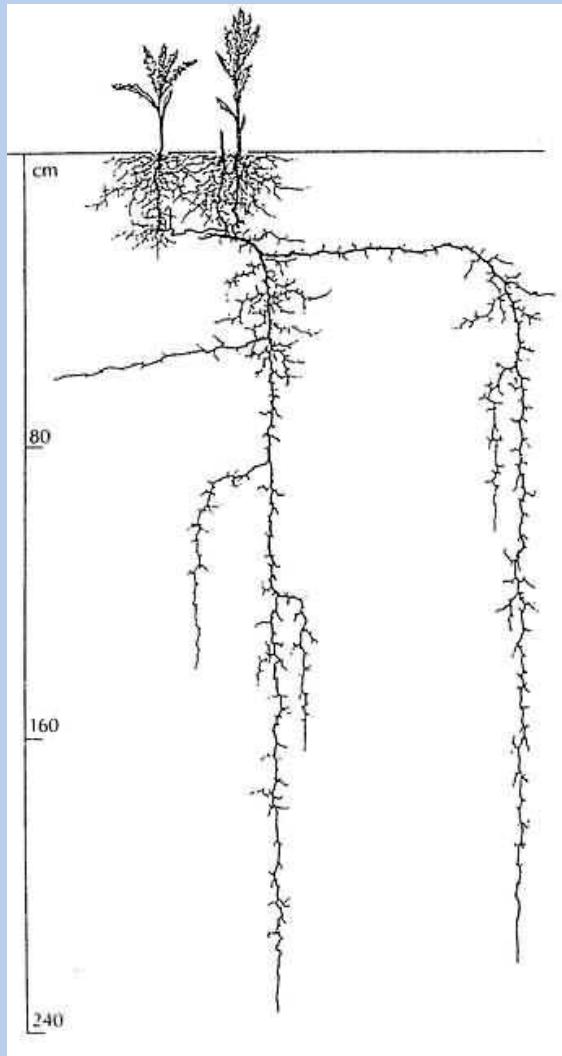
Male and female  
plant “clumps”

Have to kill the  
roots

Don't see a rosette  
in the winter



# More Canada thistle



One tough plant !!

# Canada thistle

- Control: Have to get to the root systems.
- Digging/tilling is tough.
- Carb starve with competitive plantings?
- Several landscape herbicides & timings:
  - Dichlobenil (Casoron) in winter (woody landscape)
  - **Spot** spray with glyphosate bloom onwards
  - Auxinic materials like chlopyralid and others where allowed and safe – lots of damage potential.  
Read labels!!



# English and other Ivies

- Some species confusion that may affect treatment success and failures
- One of the worst problems in the coming years – geometric increase



5392189

# English Ivy

- Woody broadleaf evergreen
- Spreads by rooting stems and berries spread by birds
- Covers photosynthetic surface of hardwoods and kills them.
- Sale prohibited in Oregon





English Ivy with mature  
(non-juvenile) leaf form

Birds spread berries & seed



## English Ivy

Treatment options not well worked out:

- Pulling/stem cutting is difficult & must be repeated. High labor cost.
- Goats will eat but high cost and must be brought back often.
- **WE NEED BIOCONTROL OPTIONS!!**

# Herbicide BMPs (for now)

- Treat cut larger aerial stems with triclopyr amine and water 50/50
- Spot treatment of ivy on ground seems to work best in July-October (before leaf drop on deciduous trees) with glyphosate (4%), triclopyr amine (2%), non-ionic surfactant like Competitor (2%).
- Mow/weed-whack first?
- Continue cut stem treatments
- Repeat every 2-3 years. Long term follow-up.
- Decent native recovery from seed bank. Can plant natives afterwards.

# Knotweed complex: Herbaceous perennials

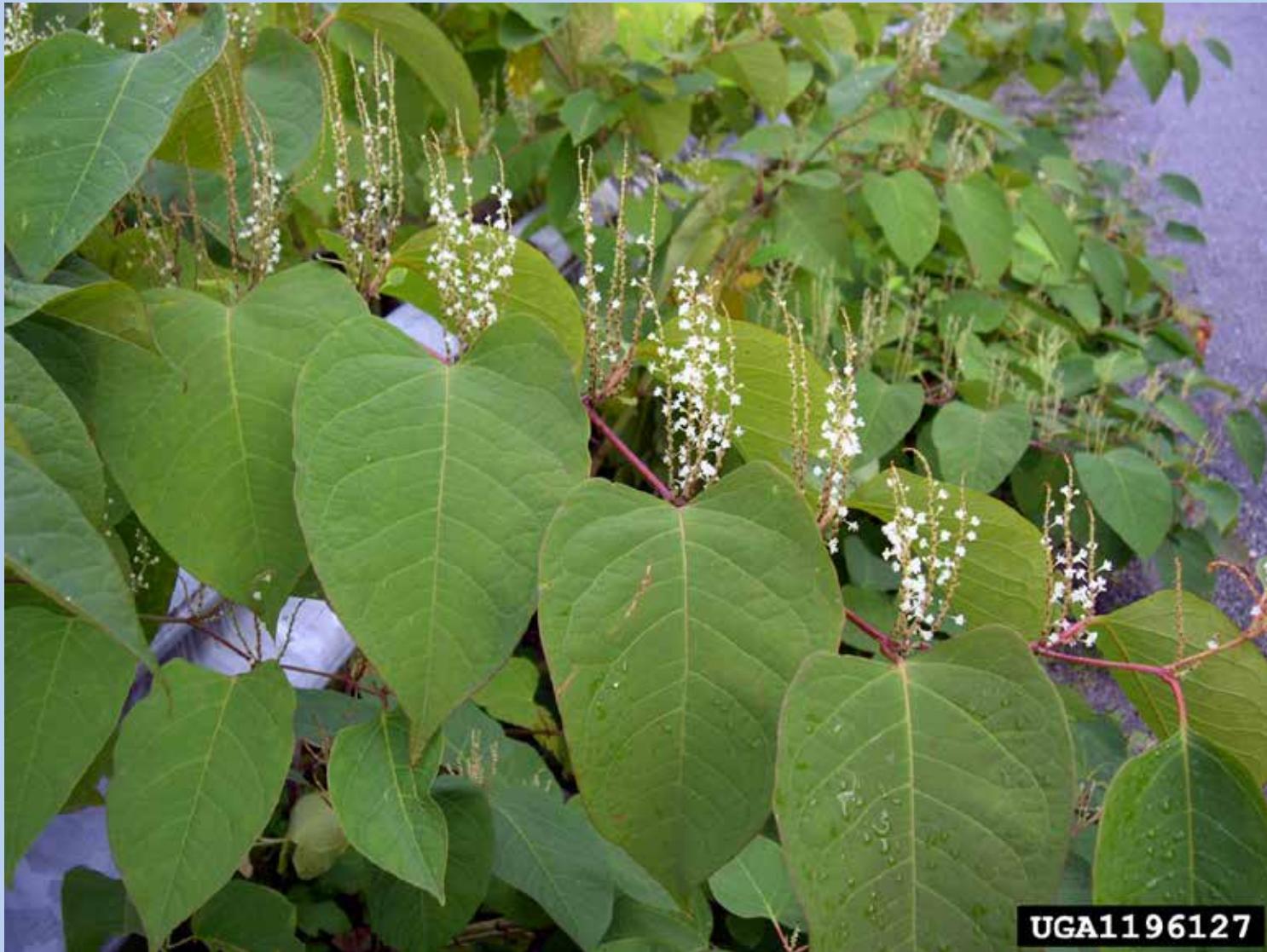






Japanese knotweed stand

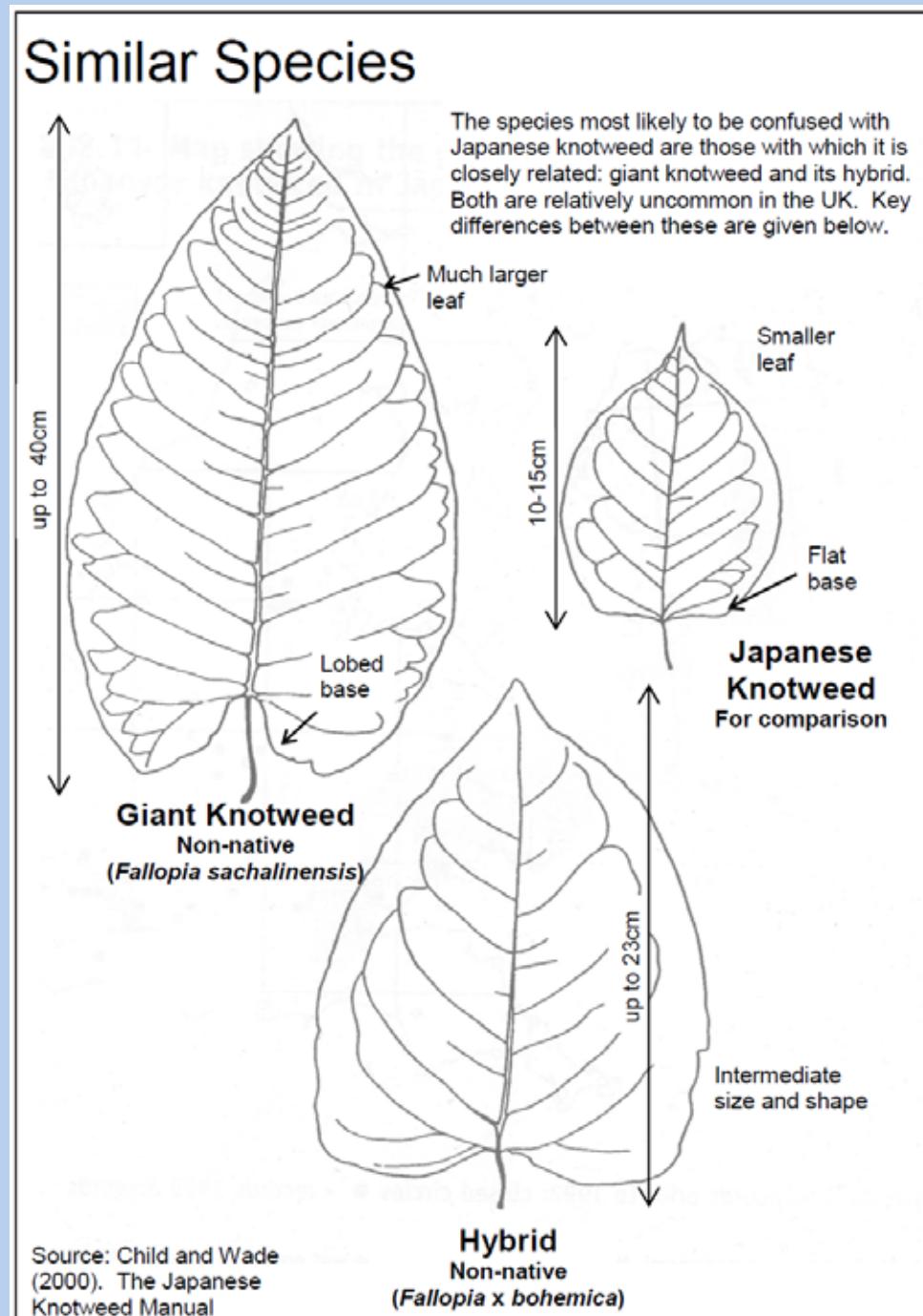
# Riparian invasive weeds



Giant knotweed

# Knotweed species

- Species now is *Fallopia* vs *Polygonum*
- Giant knotweed and the hybrid *F x bohemica* clumps are generally taller and have stouter stems.
- Clonally propagated – flooding; soil with roots, etc.
- Deep shade intolerant
- Huge carbohydrate root reserves



# Knotweed complex treatment

- Mowing generally not effective. Cattle grazing?
- Bio-control some day?
- Stem herbicide injection - no better and often worse than foliar treatment plus uses lots of chemical, can't treat all the stems and stay within label, and is super expensive to do.
- Foliar herbicide treatment in September/October
  - Imazapyr with aquatic label (Habitat, Polaris, others) is first option
  - Glyphosate (aquatic label) is fair to good
  - Triclopyr is poor
- Establish a competitive planting on treatment site and maintain it (easier said than done!)