# Privet Biology and Management

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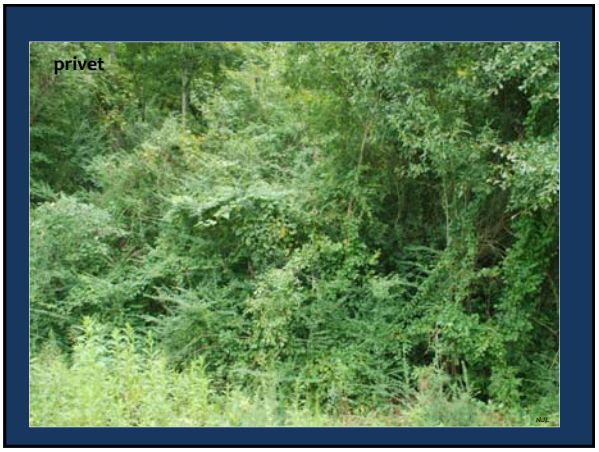



## Seven species of *Ligustrum* reported as escaped in the Southeast (EDDMapS)

- Amur privet (*L. amurense*)
- border privet (*L. obtusifolium*)
- California privet (*L. ovalifolium*)
- Chinese privet (*L. sinense*)
- European or common privet (*L. vulgare*)
- glossy privet (*L. lucidum*)
- Japanese privet (*L. japonicum*)

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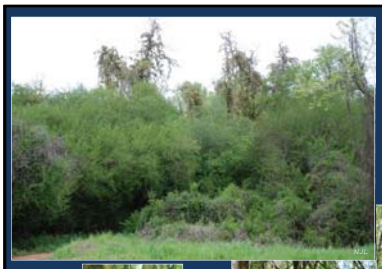
- Bark typically smooth and light greyish-brown, with raised lenticels

## Chinese privet (*L. sinense*)

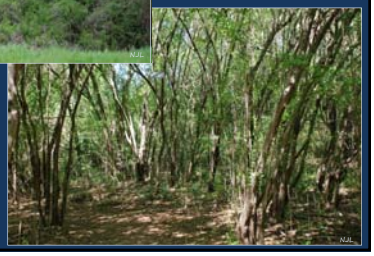
http://www.eddmaps.org/
https://apps.bugwood.org/

Leaves evergreen to semi-evergreen, 1-2" long, 0.5-1" wide, shape elliptic to elliptic-oblong; dull to shiny green above, paler below with pubescence on midvein; petiole short and pubescent; twigs pubescent when young

Flowers white in 2-4" long terminal and axillary panicles; stamens typically extend beyond the corolla tube



## Chinese privet infestation



## European or common privet (*L. vulgare*)


*Nava Tabak, www.bugwood.org*



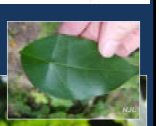
*Leslie J. Mehrhoff, www.bugwood.org*

Leaves deciduous, 1-2.5" long, 0.25 to 0.6" wide, dark green, oblong-ovate to lanceolate, obtuse to acute, midvein glabrous below

Flowers white in 1-3"panicles; stamens do not extend beyond corolla tube

## Glossy or waxleaf privet (*L. lucidum*)


*James H. Miller, www.bugwood.org*

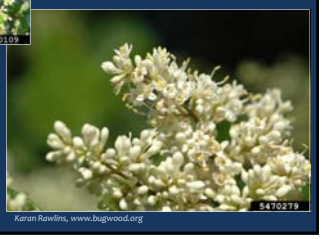
Leaves 3-6" long, 1-2.5" wide, glossy dark green; ovate to ovate-lanceolate, evergreen, *margin and veins translucent, don't snap when bent*

Flowers white, panicle 5-8" long; stamens about even with corolla tube

Can reach 40-50 feet tall

## Japanese privet (*L. japonicum*)


*Karan Rawlins, www.bugwood.org*


*Karan Rawlins, www.bugwood.org*

Leaves evergreen, 1.5-4" long, 0.75 to 2" wide, dark green, leathery; margin and mid-rib often reddish, margin may be slightly rolled; veins raised on underside; leaves snap (break) when bent

Flowers white in terminal panicles 2-6" long; stamens extend beyond corolla tube

## border privet (*L. obtusifolium*)


*Leslie J. Mehrhoff, www.bugwood.org*



*Leslie J. Mehrhoff, www.bugwood.org*

Leaves deciduous, 1-2" long, 0.3-1" wide, medium to dark green; elliptic to oblong, glabrous above, pubescent below (or only on midrib), may turn reddish purple in fall

Flowers white, in 0.75-1.5" long drooping, axillary panicles, stamens within or equal to edge of corolla tube

## California privet (*L. ovalifolium*)


*Leslie J. Mehrhoff, www.bugwood.org*



*Leslie J. Mehrhoff, www.bugwood.org*

Leaves 1-2.5" long, 0.25 to 0.6" wide, dark green; elliptic-ovate, lustrous dark green above, yellowish green below, deciduous in some areas

Flowers white, in crowded 2-4" long, terminal panicles

Fruit is shiny, black when ripe.

## Amur privet (*L. amurense*)

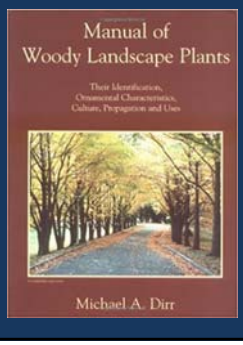

Leaves 1-2" long, elliptic to oblong, dull green

Often used as a hedge

Photos: http://extension.illinois.edu/shrubselector/detail_plant.cfm?PlantID=413


Also, golden ticket privet (*Ligustrum* x *vicaryi*) … cross between California privet and European privet, purportedly sterile.

For more information on identification of *Ligustrums* …

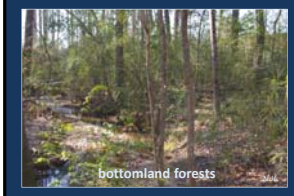




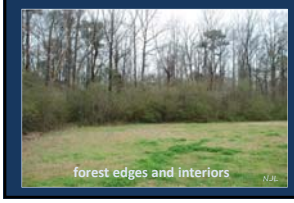
## Privet Biology

# Privet Biology
or
Why Privet is Such a Successful Invader

## Privet invades a wide range of habitats

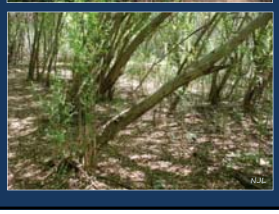








## Privet is shade tolerant



## Privet is shade tolerant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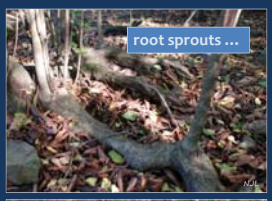
Being evergreen to semi-evergreen effectively gives privet a longer growing season than many of it's competitors.

Privet produces abundant seed (especially in the sun), spread by birds, other animals and water.

Seeds will germinate without stratification.

Luckily, seeds are only viable for about a year.

Privet also spreads through aggressive sprouting



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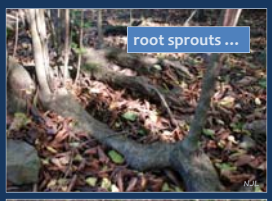


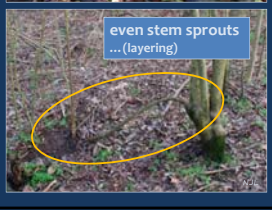

Sprouting in 'old growth' privet stand …

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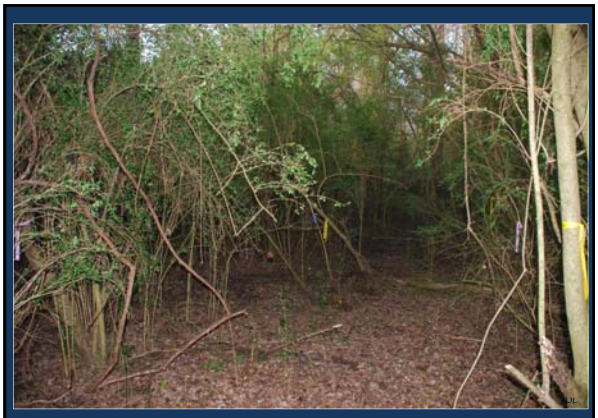
## Some impacts of privet infestations



Plant biodiversity - typically very low in the dense shade of the understory.

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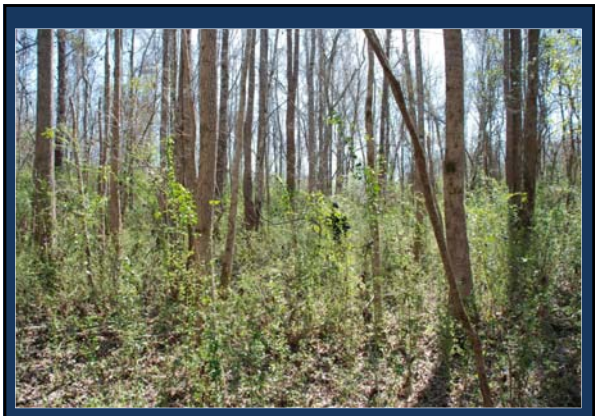
… but non-natives *are* prevalent in the understory of this privet stand.



Privet in the midstory reduces natural regeneration → stand conversion.

## Privet and insect diversity

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Yes, honeybees like privet, but …

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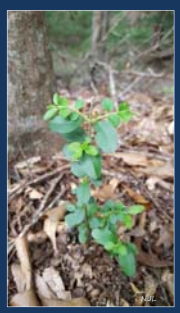
removing privet helps native bees, and beetles, and earthworms …

## Privet also impacts nutrient cycling

- Enhances litter decomposition rates
- Increases N mineralization *Brantley (2008), Mitchell, Lockaby, Brantley (2011)*
- Higher soil pH under privet *Lobe, Callaham, Hendrix, Hanula (2014)*
- In long run, following stand conversion and loss of overstory, may see reduced net primary productivity and carbon allocation

## Privet and herbivores …



Deer browse privet … reduce growth and flowering

## Privet and herbivores …

Beaver will eat and use privet.

## Privet Control

## Control options for privet

- Pulling
- Mechanical
- Herbicide
  - Foliar
  - Cut stump
  - Basal bark
- Fire?

## Method of control will depend on …

- How dense the privet infestation is
- How tall the plants are
- Where the infestation is (urban, riparian, pasture, pine or hardwood, etc.)
- What your management objectives are (restoration, forest management, etc.)
- Resources (time, money and labor)

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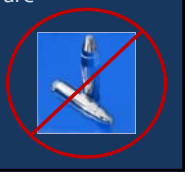

## Pulling – option for seedlings or saplings

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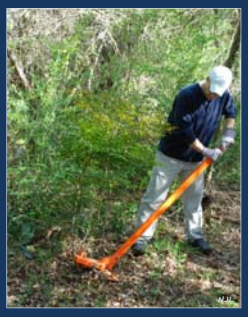

Weed wrenching

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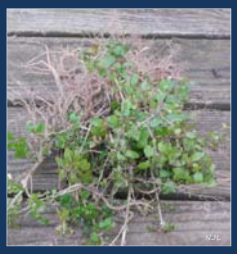
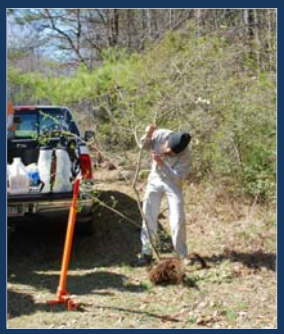


Hand pulling



Weed wrenching
causes some soil disturbance

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- Follow-up with foliar spray of sprouts … after 3-4 feet of growth
- Danger of spreading seeds if conducted in the fall.

## Mechanical – bush hogging or mowing

- Potential option for smaller privet plants, but … they will resprout
- Frequent mowing ***might*** eventually deplete the underground reserves
- Could be used as first step, followed by foliar treatment of regrowth

## Goats … "bio-mechanical"


http://www.al.com/living/index.ssf/2015/10/goats_at_work_a_herd_of_150_wo.html

Readily browsed by goats … Red Mountain Park in Birmingham has used goats to clear over 200 acres of privet and other invasive or undesirable plants; but will need to follow-up with foliar spray or repeated browsing.

## Herbicide treatment options

- Foliar
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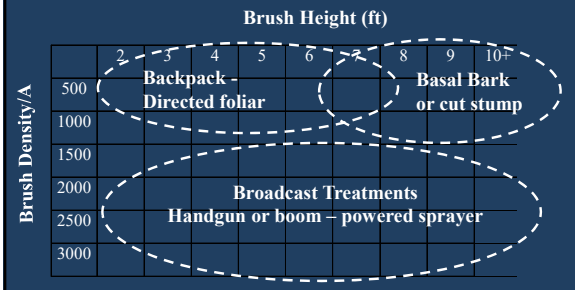
**Always read and follow the herbicide label, paying attention to site and rate restrictions and safety recommendations for applicators. The Label is the Law!**

## Plant density is important when selecting the application method




Slide curtesy of: Stephen Enloe

## Foliar spray



Single nozzle backpack sprayers are useful in many situations.

Get good spray coverage of the entire plant.


James H. Miller, www.bugwood.org

## For foliar backpack treatments, spray to wet

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Get good coverage over the entire plant.

## over-application and WASTE

## Herbicides for foliar treatment

Glyphosate (many products and formulations)

- Avoid Ready to Use (RTU) formulations
- Use a product with at least 41% active ingredient
- 3-5% v/v (4- 6.5 fluid ounces per gallon of solution)
- Many glyphosate products already have surfactant built in, but if not, include 0.5% v/v of a non-ionic surfactant
- If spraying near water, use an aquatic labeled product (e.g., Rodeo) + an aquatic- approved surfactant
- Optimal timing is late fall to early winter (if temps are mild) – works well, and avoid collateral damage

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Triclopyr amine (Garlon 3A, Element 3A)

- 2% v/v solution (2.5 oz/gal)
- Ortho Max Poison Ivy and Tough Brush Killer (use the max label rate)

## Additional herbicide options for foliar treatment (forestry situations)

Triclopyr ester (Garlon 4, Remedy Ultra, Triclopyr 4)

- 1-2% v/v solution (1.25-2.5 oz/gal)

Triclopyr ester + 2,4-D (Crossbow)

- 1-1.5 % v/v (1.25 – 2 oz/gal)

Imazapyr (Accord, Arsenal ) … soil active!

- 1% v/v

Metsulfuron (Escort XP) … soil active!

- 1 oz/acre


- Summer into fall treatments typically most effective

## A few cautions with foliar spray …

- Be careful of drift (and volatility if using triclopyr ester)

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- Read and follow herbicide label.

## Cut Stump

Cut close to the ground

## Treat immediately
## SECONDS COUNT !!

## Treat the entire surface of small stumps

**Glyphosate** – use 25% solution of product with 41% active ingredient (32 oz/gal water)

**Triclopyr amine** – use 25% solution of product with 44% active ingredient

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spray indicator is helpful to keep track of what has been sprayed

## Delayed Cut Stump
## Oil based mixture (basal bark mix)

Spray top of stump and the bark around the sides to the ground … to the point of run-off.

20% solution triclopyr ester in oil carrier.

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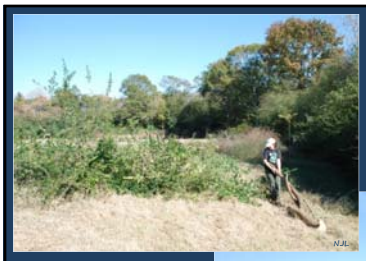

## Drawbacks of cut stump treatments

- very labor intensive
- what to do with the cut material

## Basal Bark


## Basal bark is not going to work here!

## Basal bark treatments

- Treat the lower 12-15 inches of each stem
- Use an oil carrier, NOT water
  - Bark oil, mineral oil, or crop oil
- Use an oil soluble herbicide formulation
  - e.g., triclopyr ester (20% solution)

## Hack and squirt treatment

Could be used on larger stems.

Number of hacks and spacing is on the herbicide label.

Herbicides:

- glyphosate
- triclopyr amine
- imazapyr
- Some of newer chemistries?

## Timing for Cut stump, Basal bark, and Hack and squirt treatments

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- Avoid late winter and early spring when sap flow is upwards
- Some basal bark oil carriers may become difficult to use in very cold weather

## Fire and privet control

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  - a possible pretreatment for herbicide.

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See: https://www.fs.fed.us/database/feis/plants/shrub/ligspp/all.html

## Safety first!

### Use appropriate personal protective equipment!

Safety is always a top priority when working in the difficult situations often presented by invasive plant infestations and treatments. As your first line of safety, use and maintain personal protective equipment (PPE) designed for a specific task. A task as seemingly simple as surveying a site requires PPE. The following are examples of PPE-based invasive plant management tasks:

*Protect yourself with the right PPEs.*

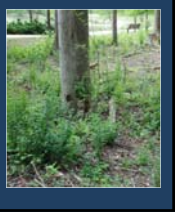
**Suggested Personal Protective Equipment by Task**
**(herbicide applications must follow the label specified on the PPE's)**

| Task | Waterproof Boots | Hard Hat | Leather Gloves | Eye Protection | Safety Boots | Shin Guards | Hearing Protection | Neoprene Gloves | Appropriate Chaps |
|---|---|---|---|---|---|---|---|---|---|
| Surveying | | X | | X | X | | | | |
| Mechanical Control | | | X | X | X | | | | |
| Stem Injection | | X | X | X | X | | | X | |
| Cut and Treat | | X | X | X | X | X | X | X | X |
| Mixing Herbicides | X | | | X | | | | X | X |
| Applying Herbicides | | | | X | | | | X | X |
| Girdling | | X | X | X | X | | X | | |

Required safety items for the field include a separate water container for washing, along with soap, paper towels, and trash bags as well as ample drinking water and a fully stocked first-aid kit.

http://www.srs.fs.fed.us/pubs/gtr/gtr_srs131.pdf

In summary, there are a lot of options for privet control, but the sad truth is ….



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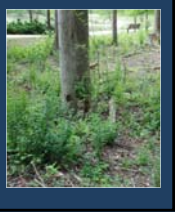

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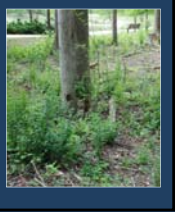

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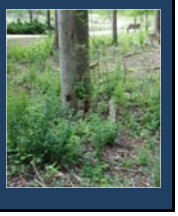

## In summary, there are a lot of options for privet control, but the sad truth is ….

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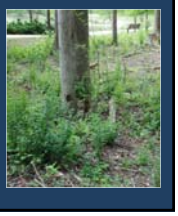
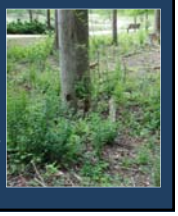


## In summary, there are a lot of options for privet control, but the sad truth is ….

- No single treatment will eradicate privet.
- Flush of seedlings following treatment is typical.
- Some sprouting from stumps and lateral roots is to be expected.
- Reinvasion from nearby sites also to be expected.
- Monitor and follow-up with spot treatment of new plants and sprouts.

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