Non-Native Invasive Plants

Impacts and Control

Bob Gale – Ecologist & Public Lands Director

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Why We Care…

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…Effects/Impacts On:

- Native Plants
- Wildlife
- Waterways
- Livestock
- People
- Recreation

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- **How do we make a difference locally?**
- **What are other partner organizations/Agencies doing?**

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Native vs. Non-Native Plants

Native - indigenous to the area in which it is found. They have developed, occur naturally or have existed in the area for many millennia.

Non-native *(*or *"exotic")* –introduced by humans to locations outside its native range

- **Deliberately -** Livestock forage, Soil retention, Ornamental purposes
- **Accidentally** - Within plant containers, Shipping containers, Ship bilge water.

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What is an *Invasive* plant?

Invasive –exhibits rapid growth over large areas

- Persistent
- Abundant flower/seed production
- Seeds have high germination rate
- Long growing season

Can a native plant be invasive?

- Opportunistic

  Examples: red maple, pokeweed, poison ivy...
- Mostly due to changes in land use and management

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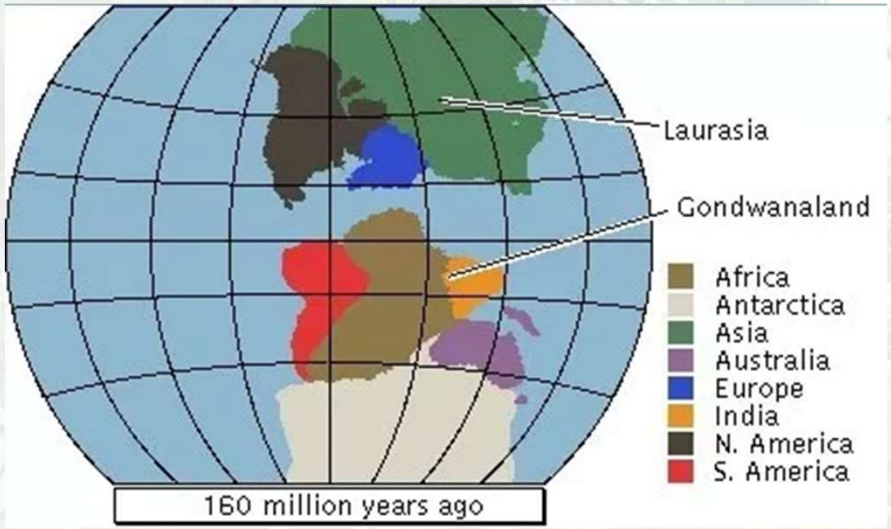
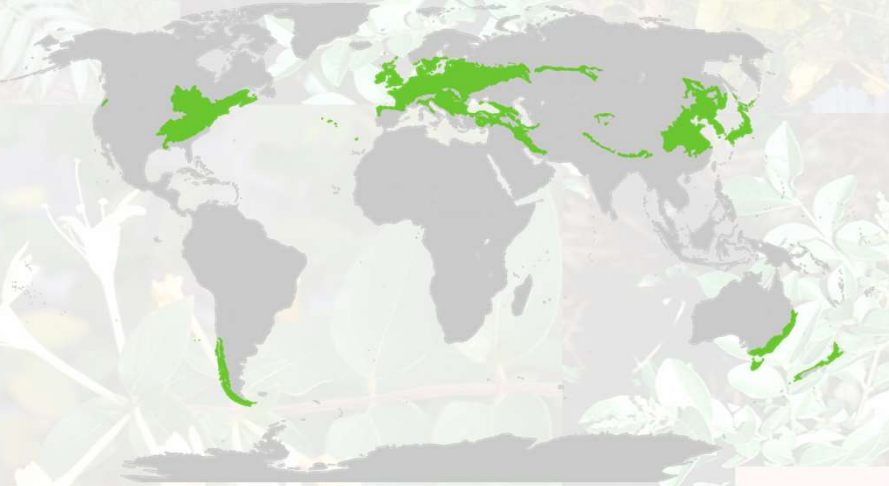
Where do invasives come from?

North America and Asia were connected millions of years ago when many plants were evolving, leading to common ancestors.

China, Japan, Appalachia, and small parts of Europe maintained remnant forests through periods of glaciation.

Most of our invasives are Asian or European.





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Why are they a problem?

Non-native Invasive plants ***out-compete*** **native plants** for **space, sunlight, water, and nutrients.**

They:

- Displace rare plant species
- Alter water and chemical characteristics of soil
- Interfere with natural succession
- Reduce Biodiversity: Replace complex communities with few species, or a monoculture
- Increase susceptibility of ecosystems to other disturbances (fire, erosion)

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Also…

- Reduce crop yields on farms and timber yields in forests
- Increase herbicide use
- Time and money are diverted towards management (Government agencies, private farms, golf courses, highways, etc.)
- Economic impact estimated $120-138* billion/yr in the US as of 2005
- ***Alter nutrition/feeding habits and harm health of native wildlife species***

*https://www.invasivespeciesinfo.gov/subject/economic-and-social-impacts, https://www.epa.gov/sites/production/files/2014-12/documents/economic_impacts_of_aquatic_invasive_species.pdf

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Normally yellow feathers in some northern yellow-shafted flickers are turning red, as seen above.

PHOTOGRAPH BY C. HANSEN

WEIRD & WILD

Why Yellow Birds Mysteriously Turn Red

No one could figure out why a North American woodpecker's feathers were changing color—until now.

DECATUR SLIDESHOW

Invasive bushes in Decatur killing cedar waxwings

Mary Margaret Stewart • Mar 3, 2017

MNN.com > Home > Organic Farming & Gardening

Why nandina berries and certain birds don't mix

TOM ODER

February 19, 2018, 5:01 p.m.

Share 866 Tweet 99

Cedar waxwings will gorge themselves on berries in the winter, and that can be a problem with a certain type of berry. (Photo: Ronald Caswell/Shutterstock)

Journal List > Vet Med Int > v.2010; 2010 > PMC3005831

Veterinary Medicine International

Vet Med Int. 2010; 2010: 818159. PMCID: PMC3005831
Published online 2010 Dec 9. doi: 10.4061/2010/818159 PMID: 21197466

Feeding Behavior-Related Toxicity due to *Nandina domestica* in Cedar Waxwings (*Bombycilla cedrorum*)

Moges Woldemeskel* and Eloise L. Styer

• Author information • Article notes • Copyright and License information Disclaimer

Abstract Go to:

Dozens of Cedar Waxwings were found dead in Thomas County, Georgia, USA, in April 2009. Five of these were examined grossly and microscopically. Grossly, all the examined birds had pulmonary, mediastinal, and tracheal hemorrhages. Microscopically, several tissues and organs were diffusely congested and hemorrhagic. Congestion and hemorrhage were marked in the lungs. Intact and partly digested berries of *Nandina domestica* Thunb. were the only ingesta found in the gastrointestinal tract of these birds. Due to their voracious feeding behavior, the birds had eaten toxic doses of *N. domestica* berries. *N. domestica* contains cyanide and is one of the few berries readily available at this time of the year in the region. The gross and microscopic findings are consistent with lesions associated with cyanide toxicity. This paper for the first time documents toxicity associated with *N. domestica* in Cedar Waxwings.

Vet Med Int

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UGA researchers identify, name toxic cyanobacteria killing American bald eagles

February 18, 2015 · by Sandi Martin

"Avian Vacuolar Myelinopathy (AVM) is the most significant unknown cause of eagle mortality in the history of the United States"

DOI: http://dx.doi.org/10.11646/phytotaxa.181.5.1

Aetokthonos hydrillicola gen. et sp. nov.: Epiphytic cyanobacteria on invasive aquatic plants implicated in Avian Vacuolar Myelinopathy

Susan Bennett Wilde, Jeffrey R. Johansen, Henry Dayton Wilde, Peng Jiang, Bradley Bartelme, Rebecca Smith Haynie

Abstract

Research into the taxonomy of a novel cyanobacterial epiphyte in locations where birds, most notably Bald eagle and American coots, are dying from a neurologic disease (Avian Vacuolar Myelinopathy—AVM) has been ongoing since 2001. Field investigations revealed that all sites where birds were dying had extensive invasive aquatic vegetation with dense colonies of an unknown cyanobacterial species growing on the underside of leaves. Morphological evaluation indicated that this was a true-branching, heterocystous taxon falling within the former order Stigonematales. However, 16S rRNA gene sequence demonstrated that it did not match closely with any described genus or species. More recent sequence analysis of the 16S rRNA gene and associated ITS region from additional true branching species resulted in a unique phylogenetic placement distant from the other clades of true-branching cyanobacteria. Light, epifluorescent, and transmission and scanning electron micrographs confirm the novel characteristics of this species, which is true-branching form with uniseriate basal filaments. It is encased within a firm sheath and has heterocytes both within the filaments and at the tips of the branches. The species is in a new genus of uncertain family assignment, and is herein named *Aetokthonos hydrillicola gen. et sp. nov.*

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Severe Invasives in the Southern Appalachians

Still Commercially Available

- Trees
  - Tree of Heaven
  - Princess tree
  - Mimosa
  - Bradford Pear
- Shrubs
  - Multiflora rose
  - Chinese, European Privet
  - Japanese knotweed
  - Autumn, Russian, and Thorny Olives
  - Japanese Spiraea
  - Japanese Barberry
  - Burning Bush
  - Five-leaf Akebia (Chocolate Vine)
- Grasses and Groundcovers
  - Japanese stiltgrass
  - Chinese Silvergrass
  - Golden Bamboo
  - Periwinkle
  - Garlic mustard
  - Coltsfoot
- Vines
  - Kudzu
  - Oriental bittersweet
  - English Ivy
  - Japanese honeysuckle
  - Chinese yam
- Aquatics
  - Marsh Dayflower
  - Yellow-flag Iris
  - Reed Canary Grass

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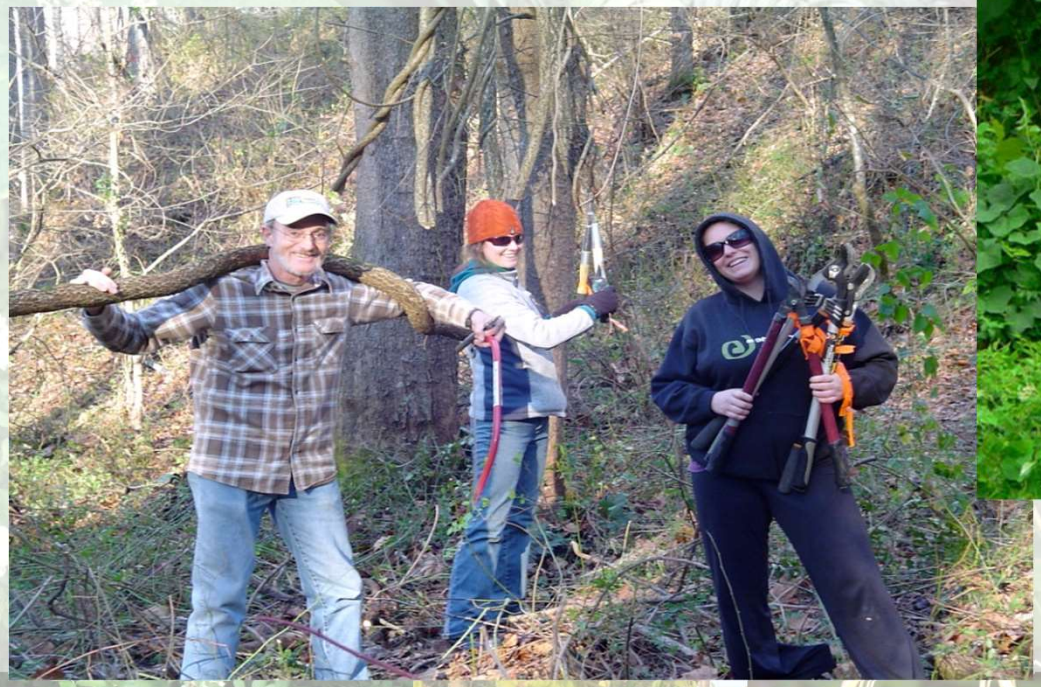
Control

- **Biological**- goats, introduced predators/ diseases/ blights
- **Manual & Mechanical**- pulling, cutting, mowing, digging, etc.
- **Chemical**



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Simplest Home Methods

COMPOST WITH CAUTION

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When it's time to use herbicides

- You have a monoculture
- The infestation is too large to treat manually
- You have limited mobility or time

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Control Equipment

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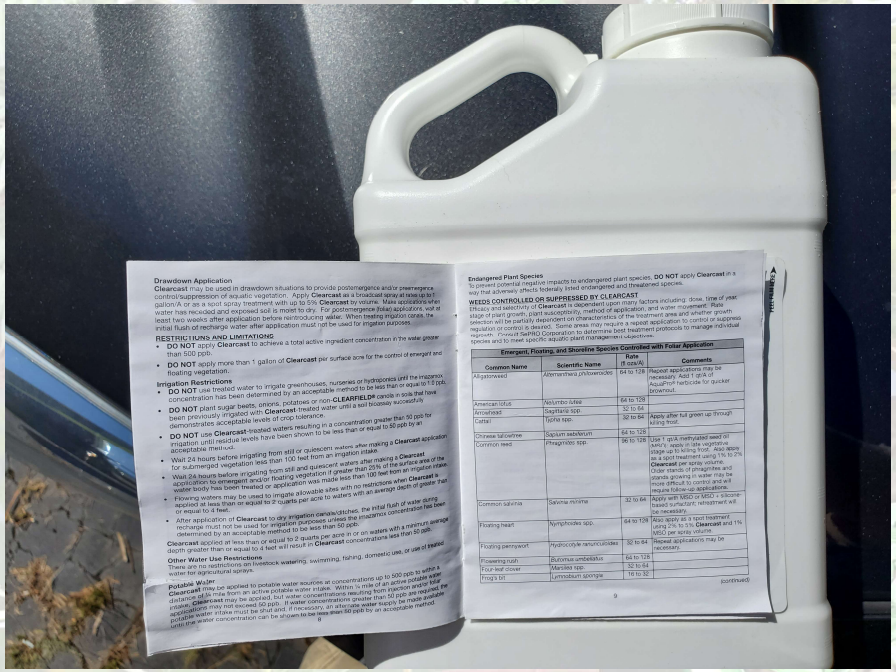
The Label is the Law!!



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Mixing Tray- A Must!

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Tree of Heaven
Ailanthus altissima

- Dark green, spear shaped leaves with small lobes at base with circular glands
- Smooth, not serrated leaf
- Alternate leaves on reddish twigs
- Crushed leaves and broken twigs have strong odor
- May easily be confused with sumac, black walnut, pecan, ash

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Multiflora Rose
Rosa multiflora

- Thorny, medium to large shrub
- Serrated leaflets with toothed hairs at base of stem
- White flowers April to June
- Fleshy, spherical rose hips/seeds
- May be confused with native roses, blackberry, and raspberry

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Japanese Spiraea
Spiraea japonica

- Perennial deciduous shrub 4-6 feet in height


Native Virginia spiraea

- Round, reddish brown slender stems, sometimes hairy
- Alternate, egg shaped leaves 1-3 inches long with toothed margins
- Rosy pink clustered flowers

Privet
Ligustrum sinense

- Stiff, glossy, oval to elliptical opposite leaves
- Small white four petaled flowers in loose clumps with musky smell
- Dark blue to black berries in October

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Oriental Bittersweet
Celastrus orbiculatus

- Twining deciduous woody vine
- Alternate, glossy, round leaves with finely toothed margins
- Small greenish flowers at base of leaf in May
- Abundant yellow fruit at base of leaf splits to fleshy red upon maturity
- Easily confused with American bittersweet which has oblong leaves and flowers at the terminal of the stem

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English Ivy
Hedera helix

- Hardy evergreen
- Thick leaves with waxy “cuticle”
- Strong, clinging roots

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What can you do to stop the spread?

- ***Learn*** **about invasive plants and how to identify them**
- ***Landscape*** **your lawn and gardens with native plants, or *non-invasive* exotics**
- ***Clean*** **boots, equipment, tires, and the dog before and after hiking or working in an infested area**
- ***Know*** **the source of your fill dirt, gravel, straw, or mulch**
- ***Get involved*** **in volunteer control efforts with MountainTrue and other organizations**

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Benefits of Native Species

Native Plants are often…

- Lower Maintenance
  - Require fewer chemical treatments
- Equally beautiful
- Better at sequestering carbon
- Better at conserving water
- Better for wildlife

Mountain Laurel

Prostrate violet

Blue Grosbeak in a serviceberry

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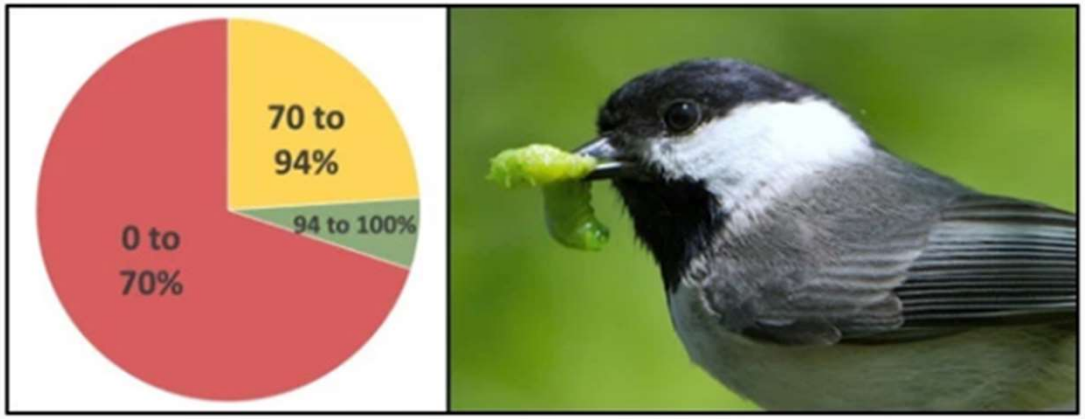
The Importance of Native Species

Survival of Baby Chickadees Declines in Yards with Less Than 70% Native Plants

Posted on December 14, 2018 by Maryland Grows 1 Comment



Caption: Landscapes with more than 94% native plants were excellent habitat for plant-eating caterpillars. These habitats provided enough caterpillars that Carolina chickadee parents could feed their young. Landscapes with 70 to 94% native plants may or may not support enough caterpillars. Nestlings in landscapes with less than 70% native plants were food-limited and had low survival rates. Image of chickadee courtesy of the National Zoo.

Native oak trees can support over 500 species of caterpillars, while Asian gingkoes support only 5.

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Questions?
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Thank You!

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