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2013

## Field Guide for Nebraska Invasive Insects

Nebraska Invasive Species Project

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# NEBRASKA INVASIVE INSECTS

## FIELD GUIDE 2013



Nebraska Invasive Species Project

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### Cover Photos

Asian longhorned beetle: [BeetleBusters.info](http://BeetleBusters.info)

Japanese Beetle: David Cappaert, Michigan State University,  
[Bugwood.org](http://Bugwood.org)

Gypsy Moth Larva: USDA Forest Service

Emerald Ash Borer: David Cappaert, Michigan State University,  
[Bugwood.org](http://Bugwood.org)

Published 2013



This guide provides information for some top priority invasive species already in Nebraska and for some not yet present. For a complete, categorized list of Nebraska invasive species, visit the Nebraska Invasive Species Project at: <http://snr.unl.edu/invasives>

The information in this guide was obtained from a number of sources, including:

USDA APHIS

[http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info](http://www.aphis.usda.gov/plant_health/plant_pest_info)

Center for invasive species and ecosystem health

<http://www.invasive.org/>

Beetle Busters

<http://beetlebusters.info/>

National Invasive Species Information Center

<http://www.invasivespeciesinfo.gov>

National Invasive Species Council

<http://invasivespecies.gov>

Nebraska Department of Agriculture

[http://www.agr.ne.gov/plant/pest\\_survey.html](http://www.agr.ne.gov/plant/pest_survey.html)

Don't Move Firewood

<http://www.dontmovefirewood.org>

<http://www.thousandcankerdisease.com/>

Stop the Beetle

<http://stopthebeetle.info/>

## TABLE OF CONTENTS

The following symbols will be used throughout the guide:

**P** Present in Nebraska      **U** Presence not known

Asian longhorned beetle .....	6-7
Brown marmorated stink bug .....	8-9
Cereal leaf beetle .....	10-11
Emerald Ash Borer .....	12-13
Gypsy Moth .....	14-15
Imported fire ants .....	16-17
Japanese Beetle .....	18-19
Mountain pine beetle .....	20-21
Pine shoot beetle .....	22-23
Sirex wood wasp .....	24-25
Thousand Cankers Disease .....	26-27

### **WHAT ARE INVASIVE SPECIES?**

Invasive species are non-native organisms introduced into new ecosystems whose introduction and ability to spread causes environmental or economic harm, or harm to human health. Once established, these species cause irreparable harm, including: introducing disease; competing with native species; changing the physical characteristics of natural areas; and negatively impacting local and national economies.

## WHAT CAN YOU DO?

Prevention remains our best defense. You could be transporting invasive species. They can hitchhike a ride to new areas on your vehicle, boots, hunting or fishing equipment, pets, your clothing, or in firewood.

Follow a general set of procedures every time you leave any natural area. Self-Check. Protect the natural resources that you use from harmful invasive species. Report new sightings.

## REPORTING INVASIVE SPECIES

If you think you have found an invasive species in Nebraska, please report it. Quick response allows us to better manage and protect our natural resources. If possible, please take a photo and document the location details.

Nebraska Invasive Species Project

<http://snr.unl.edu/invasives> 402-472-3133

Nebraska Department of Agriculture

402-471-2351

National Emerald Ash Borer Hotline

866-322-4512

Asian Longhorned Beetle hotline

866-702-9938



Photos: BeetleBusters.info

# Asian Longhorned Beetle



*Anoplophora glabripennis*

Order: Coleoptera, Family: Cerambycidae

**DESCRIPTION**- Also referred to as ALB; longhorned beetle, roundheaded borer. Large beetle is black with white spots and has blueish appearing legs; about 1-1.5 in. long (color pattern is opposite cottonwood borer). Antennae are black with white bands. Larvae are white and may grow to 1.5-2 inches long. Beetle has one year lifecycle (in most places).

## HOST PLANTS

Prefers maple, willow, elm, horsechestnut and birch, but feeds on 13 different genera of hardwoods.

## PATHWAY OF INTRODUCTION AND SPREAD

Introduced from Asia. First found in New York in 1996. Spreads through the movement of wood products and as hitchhikers on vehicles or in cargo.

## SYMPTOMS

Larval galleries under the bark, top dieback and out of season yellowing of leaves. Dime-sized (1/4" or larger), perfectly round exit holes in the tree. Frass and sap may be found at exit holes

**LOCATION IN NEBRASKA** - No known infestations in Nebraska. Currently found in Massachusetts, New Jersey, New York, Ohio (Fall 2012).





Photos: Gary Bernon, USDA-APHIS



# Brown marmorated stink bug

*Halyomorpha halys*

Order: Hemiptera, Family: Pentatomidae

**DESCRIPTION** - Typical of other stink bugs, has a shield-shaped body and emits a pungent odor when disturbed. With a mottled brown, 1/2 in. body, it has characteristic alternating dark and light bands across the last two antennal segments that appear as a single white band in both nymphs and adults (the most distinguishing characteristic).

## HOST PLANTS

Pests of various crops, but in the U.S. it has been primarily reported as a household nuisance and ornamental pest. Has been found feeding in apple orchards, and in Asia, feeds on ornamental plants, weeds, soybeans, apples, peaches, figs, mulberries, citrus fruits, and persimmons.

## PATHWAY OF INTRODUCTION AND SPREAD

Introduced from Asia, has been expanding its range since its U.S. discovery in Allentown, Pennsylvania, in 2001. Spreads by hitchhiking or through commercial sale of infested host plants.

## SYMPTOMS

Small necrotic spots on fruit and leaf surfaces often result from feeding damage.

**LOCATION IN NEBRASKA** - Found in Nebraska in 2010, but is not widespread.



Photos: John Meyer, NC State University



# Cereal leaf beetle

*Oulema melanopus*

**Order: Coleoptera, Family: Chrysomelidae**

**DESCRIPTION** - Adults  $\frac{1}{4}$  inch long with brightly colored orange-red thorax, yellow legs and metallic blue head and wing covers. The larva has a light yellow body with brown head and legs. The body is protected by a layer of slimy fecal material which makes them look like a slug.

**HOST PLANTS** - Cereal leaf beetle has a wide host range including barley, oats, wheat, and rye. May also feed on corn, sorghum, or grass weeds including wild oats, quackgrass, reed canary grass, ryegrass, foxtail, orchard grass, wild rye, smooth brome and fescues.

## **PATHWAY OF INTRODUCTION AND SPREAD**

Imported insect pest from Europe. It was first detected in Michigan in 1962. Spreads through movement of infested agricultural commodities

## **SYMPTOMS**

Both adults and larvae of the cereal leaf beetle damage grain crops by feeding on the leaves. Feeding typically occurs on the upper leaf surface and is characterized by elongated slits.

**LOCATION IN NEBRASKA** - No known infestations in Nebraska. Currently found across the U.S. and in adjacent states of Kansas, Iowa, and Missouri (Fall 2011).



Photos: Center for Invasive Species and Ecosystem Health

# Emerald Ash Borer

*Agrilus planipennis* Ledeb.

Order: Coleoptera, Family: Buprestidae

**DESCRIPTION** - Also referred to as EAB

Wood boring insect with a one year lifecycle. Metallic green with bronze on the head and under the elytra. About 13 mm long, indented along the elytra. Larvae are milky white with triangular segments.

## HOST PLANTS

Ash species (*Fraxinus* spp.)

## PATHWAY OF INTRODUCTION AND SPREAD

Originally introduced from Asia. First found in Michigan in 2002. Spreads through the movement of ash wood products and on vehicles from infested areas.

## SYMPTOMS

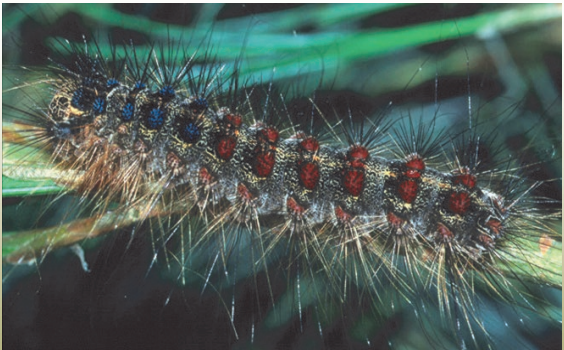
Top dieback and increased woodpecker damage. 1/8 inch D-shaped borer holes along the trunk. Suckering occurring at the base of the tree. Larval galleries under the bark.

**LOCATION IN NEBRASKA** - No known infestations in Nebraska. Currently found in 18 states (Northeastern and Midwest U.S.) and in Canada, including adjacent states of Iowa, Missouri, and Kansas (Fall 2012).

More information can be found here: <http://stopthebeetle.info/>



John H. Ghent, USDA Forest Service, Bugwood.org



Connecticut Agricultural Experiment Station Archive, Connecticut Agricultural Experiment Station, Bugwood.org

# GYPHY MOTH

*Lymantria dispar*

Order: Lepidoptera, Family: Lymantriidae

**DESCRIPTION**- Males are dark brown with black “chevron” markings. Females are white with black “chevron” markings. Males have large feathery antennae. Larvae are dark colored and fuzzy with 5 pairs of blue spots. One year lifecycle.

## HOST PLANTS

Prefers oak, aspen, willow, apple and crabapple, tamarack, white birch, witch hazel, and mountain ash but are found on over 300 species of trees.

## PATHWAY OF INTRODUCTION AND SPREAD

First introduced from Europe for silk production, and first found in Massachusetts in the late 1800’s. Spreads through the movement of nursery infested stock, movement of firewood, and on vehicles from infested areas.

## SYMPTOMS

Shot holes in leaves and foliage stripped from trees. Declining trees from many years of damage.

**LOCATION IN NEBRASKA** - No current known infestations in Nebraska; sporadically found here as a hitchhiker. Currently found in several states in northeastern U.S.

Additional info:

<http://www.invasivespeciesinfo.gov/animals/eurogyps moth.shtml#.UJErU2-HJ8E>





# IMPORTED FIRE ANTS



*Solenopsis invicta*, *Solenopsis richteri*

Order: Hymenoptera, Family: Formicidae

**DESCRIPTION**- Includes 2 species introduced separately in the U.S. Approximately 1/8 to 1/4 in. long and reddish brown to black in color. Fire ants are probably best distinguished by their aggressive behavior and characteristic large, mound-shaped nests.

## HOSTS

Fire ants attack newborn domestic animals as well as pets and wildlife. Can also destroy seedling corn, soybeans, and other crops. They feed on buds or fruits of many plants and may remove bands of bark from young citrus trees, often killing them.

## PATHWAY OF INTRODUCTION AND SPREAD

Both from South America, the black imported fire ant arrived sometime around 1918 and the red imported fire ant, in the late 1930's at the port of Mobile, Alabama—likely in soil used as ballast in cargo ships. Ants travel by hitchhiking in vehicles and in soil, nursery stock, sand, gravel, grass, sod, hay, wood, or soil-moving equipment.

## SYMPTOMS

Both species are a major public nuisance because of their ferocious sting and aggressive behavior, and also damage several agricultural commodities

**LOCATION IN NEBRASKA** - No known infestations in Nebraska; found across much of the Southern U.S.

Clemson University - USDA Cooperative Extension ,  
Bugwood.org



UGA1235067



Jerry A. Payne, USDA Agricultural  
Research Service, Bugwood.org

UGA1224225



Mike Reding and Betsy Anderson, USDA Agricultural  
Research Service, Bugwood.org

# JAPANESE BEETLE

*Popillia japonica*

Order: Coleoptera, Family: Scarabaeidae

**DESCRIPTION**- Scarab beetle, similar to a June beetle/June bug. One year lifecycle. Metallic green head and abdomen with brown elytra. Five white tufts similar to hair along the edges of elytra. About 12 mm long. White grub larvae have gray abdomens and brown heads.

## HOST PLANTS

Larvae are found feeding on turf roots. Among the plants most commonly damaged are rose, grape, crabapple, and beans, but will feed on over 300 plant species.

## PATHWAY OF INTRODUCTION AND SPREAD

First found in New Jersey in 1916; originally from Japan. Spreads through the movement of infested nursery stock, as hitchhikers on vehicles or in cargo.

## SYMPTOMS

Skeletonized leaves and defoliation of host plants. Root damage to lawns caused by the larvae.

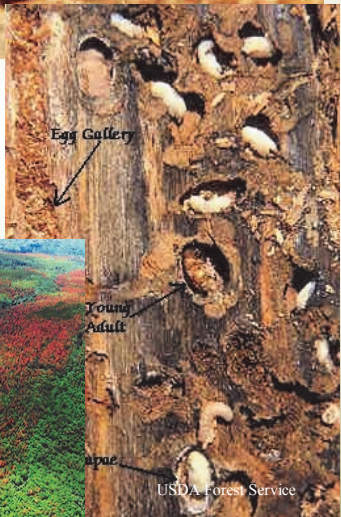
**LOCATION IN NEBRASKA** - Positive traps found in several Nebraska counties across the state (2011). It is distributed throughout the U.S. (except the Southeast).

More info:

[http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/jb/index.shtml](http://www.aphis.usda.gov/plant_health/plant_pest_info/jb/index.shtml)

UGA0949030

Photo courtesy of the USDA Forest Service. USDA Forest Service archives



# MOUNTAIN PINE BEETLE

*Dendroctonus ponderosae*

Order: Coleoptera, Family: Scolytidae

**DESCRIPTION** - Originally called Black Hills or Rocky Mountain Pine beetle. Beetle that feeds on bark; one generation per year. Cylindrical, black adults; the head is obvious from above. About 4-7.5 mm long, indented along the elytra. Larvae are white with a sclerotized head.

## HOST PLANTS

Mainly lodgepole and ponderosa pine, but attacks many other pine species.

## PATHWAY OF INTRODUCTION AND SPREAD

Native to the forests of North America. Spreads through the movement of firewood or other wood products with bark still on the wood.

## SYMPTOMS

Foliage turns yellow to red through the crown. Sawdust on and around trees at sites of bored holes. Resin, “pitch tubes”, on the trunk from tunneling. Blue stained wood due to the fungus the beetle vectors.

**LOCATION IN NEBRASKA** - Found in Northwest counties of Nebraska, especially in the Wildcat Hills and the Pine Ridge areas.

More info: <http://www.fs.usda.gov/r2/barkbeetle>

Gyorgy Csoka, Hungary Forest Research  
Institute, Bugwood.org



Gyorgy Csoka, Hungary Forest Research  
Institute, Bugwood.org



Beat Forster, Swiss Federal Institute for  
Forest, Snow and Landscape Research,  
Bugwood.org

UGA1269056

# PINE SHOOT BEETLE

*Tomicus piniperda*

Order: Coleoptera, Family: Scolytidae

**DESCRIPTION** - Also referred to as PSB, bark or engraver beetle. Adults vary in color between reddish brown and black. About 3-5mm long, cylindrical bodies. Larvae are white with brown heads, up to 5 mm long. One year life cycle.

## HOST PLANTS

Pines (*Pinus* spp.)

## PATHWAY OF INTRODUCTION AND SPREAD

First found in Ohio in 1992; originally from Europe. Spreads through the movement of nursery stock and pine wood products.

## SYMPTOMS

Wilting on new branch shoots from burrowing adults. Stunted tree growth. Larval feeding galleries throughout the trees.

**LOCATION IN NEBRASKA** - No known infestations in Nebraska. Currently found in several Northeast and Midwest states in the U.S., including nearby states of Iowa and Minnesota.

More info:

[http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/psb/index.shtml](http://www.aphis.usda.gov/plant_health/plant_pest_info/psb/index.shtml)

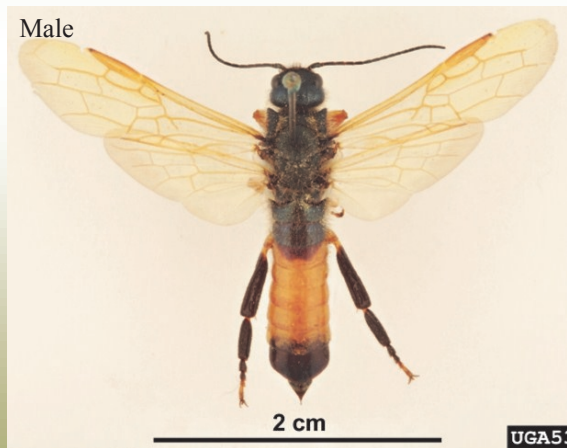


Female



David R. Lance, USDA APHIS PPQ, Bugwood.org

Male



Pest and Diseases Image Library, , Bugwood.org

## SIREX WOODWASP

*Sirex noctilio* F.

Order: Hymenoptera, Family: Siricidae

**DESCRIPTION**- Wood boring wasp with a one year life cycle. Dark blue or black abdomen with yellow legs. Males middle segments are orange. About 1-1.5 inches long, large ovipositor on females. Larvae are white and have a spine at the end of their abdomen.

### HOST PLANTS

Prefers Scotch, Austrian, maritime pines, and many more.

### PATHWAY OF INTRODUCTION AND SPREAD

Originally introduced from Europe, Asia, and N. Africa. First found in Indiana in 2002, established in New York in 2005. Spreads through movement of solid wood packing material.

### SYMPTOMS

Foliage wilts and changes color to eventually red. Resin beads from egg laying sites. Exit holes that are 1/8-3/8 inch diameter. Females inject a fungus, a toxic mucous, and eggs into trees to provide a good environment for the larvae.

**LOCATION IN NEBRASKA** - No known infestations in Nebraska. Currently found in several states across the U.S., but seemingly absent from the Central Midwest states.

More Info: <http://www.dontmovefirewood.org/gallery-of-pests/woodwasp.html>



More Info: [http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/tcd/index.shtml](http://www.aphis.usda.gov/plant_health/plant_pest_info/tcd/index.shtml)

# THOUSAND CANKERS DISEASE



Fungus: *Juglans nigra*

**DESCRIPTION** - Originally in Colorado as early as 2003, this is a newly recognized disease (2008) of primarily Black walnut (*Juglans nigra*) and caused by a fungus, *Geosmithia morbida*, that is vectored into the tree by the walnut twig beetle (*Pityophthorus juglandis*).

**HOST PLANTS** - Primarily black walnut, but Arizona walnut, English walnut, and California walnut have all shown varying degrees of susceptibility to this fungus.

**PATHWAY OF INTRODUCTION AND SPREAD** - Fungus is spread by a native insect. Most likely pathway for movement is raw wood—logs, burls, stumps, firewood, wood packaging material, nursery stock, scion wood for grafting, and natural spread.

**SYMPTOMS** - Fungus kills a localized area in the phloem just under the bark in >2cm wood after introduction. These dead areas often overlap or coalesce from numerous strikes (35 insects per square inch of wood) causing nutrient disruption to foliage and thus leading to branch dieback. Early symptoms are yellowing of leaves and foliage thinning of the upper crown of the tree.

**LOCATION IN NEBRASKA** - No known infestations in Nebraska. Confirmed (2012) in Washington, Oregon, California, Idaho, Utah, Colorado, Arizona, New Mexico and now, Tennessee) and is thought to be widespread.

**Be a tree hero.**



**DON'T MOVE  
FIREWOOD**