



INVASIVE PEST

news & notes

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Cooperative Agricultural Pest Survey Program & Utah Pests

Spring 2023



Invasive species can be introduced by human activities. Clockwise from upper left: emerald ash borer, Greeleygov.com; spotted lanternfly, PA Department of Agriculture; quagga mussel, National Park Service; spongy moth adults and egg masses, Rusty Haskell, University of Florida, Bugwood.org; Oregon Invasive Species Council; Kim Lanahan-Lahti, Minnesota Department of Natural Resources, Division of Forestry.

Stop Invasive Species In Your Tracks

For many Utahns, hitting the trails is a highly anticipated event each spring. By simply enjoying the great outdoors, however, even the most ardent enthusiast can become an unwitting catalyst for introducing an invasive organism. Nonnative species can be costly to an area's ecology, economy, and human health, and invasives can hitchhike to new locations on or within firewood (e.g., [emerald ash borer](#), [Asian longhorned beetle](#), [velvet longhorned beetle](#)), camping and picnicking gear (e.g., [Japanese beetle](#)), boats and fishing gear (e.g., [quagga and zebra mussels](#)), vehicles (e.g., [spotted lanternfly](#)), tires ([spongy moth](#), [imported fire ants](#)), footwear (e.g., [jumping worms](#)), and pets (e.g., [harmful weed seeds](#)), among others.

To address the importance of spreading the word—and not spreading the pests—the North American Invasive Species Management Association launched its PlayCleanGo campaign to emphasize the need for us all to be proactive when recreating

outdoors. PlayCleanGo targets outdoor educators, recreation leaders, environmental professionals working with the public, and all of us who spend time in nature. Its website ([PlayCleanGo.org](#)) provides videos, social media channels, and local media outlets to teach sanitary habits we can all employ to help protect fragile natural systems in Utah and beyond.

When you include these simple steps, you can help prevent spreading invasive species:

CLEAN your gear before entering and leaving the recreation site.

Camping equipment, off-road vehicles, construction equipment, trailers, recreational vehicles, and even bike tires can harbor and transport invasive species. When boating, "Clean, Drain, and Dry" your watercraft and fishing gear to Stop Aquatic Hitchhikers (see the USU fact sheet on invasive quagga and zebra mussels [here](#)).

ABOUT CAPS

The Cooperative Agricultural Pest Survey (CAPS) program supports the U.S. Department of Agriculture's Animal and Plant Health Inspection Service's (USDA APHIS) mission to safeguard the nation's agricultural and environmental resources from harmful plant pests and diseases. The Utah CAPS Committee is comprised of experts from multiple state and federal agencies as listed below. Members meet once a year to discuss and plan ongoing and future priorities and strategies. The next meeting is March 9, 2023 at 10 AM. The committee welcomes other stakeholders to participate. Email caps@usu.edu for more information.

U.S. Department of Agriculture,
Animal and Plant Health Inspection
Service

Utah State University Extension

Utah Department of Agriculture
and Food

Utah Weed Supervisors
Association

U.S. Forest Service

U.S. Homeland Security Customs
and Border Protection

Utah Division of Forestry, Fire &
State Lands

www.utahpests.usu.edu/caps

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STOP INVASIVE SPECIES IN YOUR TRACKS, *continued*

REMOVE plants, animals, and mud from boots, pets, and vehicles.

Plant parts and muddy items can contain seeds or microorganisms, and using water or compressed air can remove hidden pests that could otherwise be left behind.

STAY on designated roads and trails.

Using unsanctioned trail networks can allow invasive species to colonize newly disturbed sites where they may not have otherwise gained access. Many invasives are able to aggressively displace native species which can have rippling affects on our local natural systems.

USE CERTIFIED or local firewood and hay.

Don't Move Firewood! Buy it where you burn it, gather wood on-site as permitted, or buy certified heat-treated firewood which ensures any contained insect and disease pests are killed (see Utah-specific information on moving firewood at www.dontmovefirewood.org/map/utah/). Hay can contain invasive weed seeds, so use certified hay when you trail ride with equines to prevent accidental weed introductions.

The fifth annual PlayCleanGo Awareness Week is June 5-11, 2023 across North America. Take the PlayCleanGo pledge at PlayCleanGo.org, and be informed, attentive, and accountable in your role to prevent spreading harmful species.

Ann Mull, Extension Associate



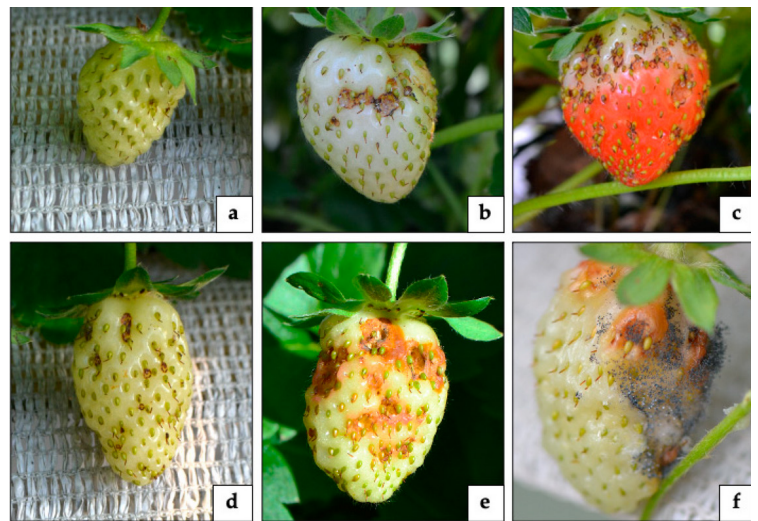
Many avenues exist for invasive species spread. Before leaving the recreation site, clean your belongings of hitchhikers. Clockwise from upper left: PlayCleanGo.org; USDA Forest Service; National Park Service; PlayCleanGo.org.

Strawberry Blossom Weevil

Strawberry blossom weevil (*Anthonomus rubi*) is an invasive beetle that damages flower buds of strawberry, raspberry, blackberry, and rose, and can cause economic injury to growers. The weevil is native to western Eurasia and North Africa and was first detected in North America in 2019 in British Columbia (B.C.), Canada, where it is now established in B.C.'s lower mainland region on both wild and cultivated hosts, most commonly Himalayan blackberry. In 2021, this pest was detected and deemed established in Washington state's Whatcom County, a prominent commercial raspberry-producing area that supplies frozen berries nationwide. The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA APHIS) has issued a federal order regulating Canadian plant imports of host crops to limit spread of this pest. Strawberry blossom weevil is not known to occur in Utah; if you suspect this pest in our state, please contact the [Utah Plant Pest Diagnostic Lab](#) at Utah State University.

The strawberry blossom weevil has four life stages (egg, larva, pupa, and adult). Adult weevils are small, about 1/16 to 1/8 inch long and black with scattered white to grayish "hairs," a bright white triangular structure between the wings, and a thin and elongate snout-like projection. Eggs are tiny, about 1/8 inch long, oval, and translucent white. The larvae are C-shaped, and creamy-white with a light brown head. Pupae are small, whitish-yellow, and typically found inside withered flower buds. Lookalike species in Utah include root- and leaf-damaging root weevils (*Otiorhynchus* spp.) and turf-damaging billbugs (*Sphenophorus* spp.), but these insects are found on non-rosaceous hosts.

Adults emerge from their overwintering sites in spring when air temperatures reach 50 to 60°F. After emerging, adults feed for two to three weeks on host leaves, leaving behind small, circular holes on leaf surfaces. Beginning in late spring (May), females typically lay one egg inside a developing flower bud, then puncture or clip the pedicel which prevents flower and fruit development. Eggs are laid over one to two months, and the developing larvae feed on pollen grains within the withering bud. Each larva undergoes three instars before forming a pupa within the bud and emerging as an adult. The new adults emerge from late summer through autumn, live for less than 240 days, and can feed on host leaves, petals, fruit, pollen, and nectar. In B.C., adults have also fed on non-rosaceous plants including dandelion, moth mullein, and ornamentals that include oxeye daisy, tansy, and Astilbe, among others. Overwintering occurs as adults in soil and surface litter, not necessarily near the host plants, and one generation occurs per year. In B.C., adult weevils were observed from May through September, but in Italy



Top: Strawberry blossom weevil adult. A. Balodis <https://commons.m.wikimedia.org>

Bottom: Damage to strawberry fruit at different stages: (a) small and green, (b) white, and (c) red strawberry; (d) immature malformed strawberry; (e,f) development of molds on damaged fruit. Tonina-Zanettin, 2021.

adults are present on strawberry year-round and move between crop and non-crop areas. Severe infestations can cause from 60 to 80% yield losses on strawberry, and bud losses of up to 38% and 80% on raspberry and rose, respectively.

The related strawberry bud weevil (*A. signatus*) is native to the eastern U.S. and is also a significant pest of field grown strawberry, raspberry, and blackberry. Strawberry cultivars attacked by *A. signatus* compensate for bud losses by increasing fruit weights on remaining buds, but losses vary depending on cultivars attacked, and severe crop losses have occurred. If *A. rubi* will have similar effects is yet unknown.

Ann Mull, Extension Associate

National Research Highlights

Emerald Ash Borer

Emerald ash borer (EAB) has destroyed tens of millions of ash trees as it advances across the country, but a promising study in *BioControl* reported early introductions of four parasitoid wasps were able to significantly suppress EAB to low densities in several regions, and regenerating ash was observed in some sites. Applying systemic insecticide treatments is common for controlling EAB but can negatively affect non-target insect species by altering the timing of a tree's phenology, such as delaying bud, flower, and leaf development. A recent study in the *Journal of Economic Entomology* reported that injecting emamectin benzoate or azadirachtin to control EAB may mitigate such phenological changes.



Emerald ash borer attacks North American ash trees. It is not known to occur in Utah. Marianne Prue, Ohio Department of Natural Resources- Division of Forestry, Bugwood.org

Northern Giant Hornet

In its native range, the northern giant hornet preys on a variety of insects including the honey bee, whose hives can be quickly destroyed by a few individual hornets. This pest was first detected in North America in 2019 in Washington State, and little is known about how the hornet would affect an area were it to become established in North America. Researchers analyzed diets from nests that were located and removed as part of extensive survey and eradication efforts in Washington. The results, published in *Frontiers in Insect Science*, noted a diet of 56 species from 14 insect orders, most commonly

other social Hymenoptera including bald-faced hornets, European paper wasps, and honey bees, suggesting that this new invader is able to utilize an assortment of North American insects similar to its native diet in Asia.



Northern giant hornets can kill entire honey bee colonies. It is not known to occur in Utah. Satoshi Kuribayashi, Minden Pictures

Spotted Lanternfly

The spotted lanternfly (SLF) is an economically and ecologically important pest new to North America, and a new article in *Scientific Reports* suggests humans have been primarily responsible for assisting the spread of SLF in the eastern U.S. as it hitchhikes to new locations on cars, trucks, and trains. Although SLF develops on a variety of plant species in its native range, with tree-of-heaven as the preferred end host, a study in *Frontiers in Insect Science* found that winegrape ('Riesling') supported all SLF life stages, with lower survival occurring on winegrape with silver maple and varieties of apple and peach. It seems not all grape varieties are created equal, however, as Concord grapevines were previously shown to be a poor host unless tree-of-heaven was also utilized. Other research, published in *Applied Animal Behavior Science*, found that trained detection dogs located SLF egg masses at a 95% success rate. Once located, the egg masses could be destroyed. The trained dogs may prove invaluable in vineyard settings.



Spotted lanternfly attacks more than 100 host plants, including grapevines. It is not known to occur in Utah. Emelie Swackhamer, Penn State University, Bugwood.org

Spotted Wing Drosophila

Spotted wing drosophila (SWD) is a pest of many fruits and is a serious threat in some parts of the U.S. A study published in *Ecology and Evolution* found that SWD infested blackberry fruit in natural areas at a higher rate than cultivated blackberry, suggesting a flexibility in egg-laying and foraging behavior that may contribute to more effective management strategies in the future. A similar study in Mexico suggests SWD's preference for wild fruits can increase cultivated blackberry yields.

Varroa Mite

Varroa mite infestations in honey bee colonies are one contributor to colony collapse disorder and a scourge of many beekeepers worldwide. A study published in the *Journal of Economic Entomology* found each doubling of sunflower crop areas reduced mites by 28% in nearby hives. Further, supplementing colonies in late summer with sunflower pollen reduced mite infestations by 2.75% when compared to supplementing with artificial pollen. These findings suggest that planting sunflower crops near hives can benefit bee health. Not all sunflower varieties produce pollen, however, so ensure the sunflowers you plant are pollen-producing varieties to reap this benefit.

Recent U.S. Border Interceptions

- An unidentified land snail species native to Asia and Australia from the superfamily Helicoidea was detected in early February from a flight from Italy. The snail was discovered in personal baggage that included large amounts of citrus and persimmon, and the passengers were traveling to the citrus-rich state of Florida which risked introducing pathogens including the destructive diseases known as citrus canker and citrus greening. Some species of helicoid snails are highly invasive and have become serious agricultural pests in parts of the U.S.
- *Ceratitis capitata*, commonly known as Mediterranean fruit fly or Medfly, was detected in December within multiple shipments of peppers from Spain, resulting in the USDA issuing a federal order prohibiting fresh bell pepper imports from Spain. The Medfly is considered the most important agricultural pest in the world and first occurred in the U.S. in Florida in 1929. Medflies infest a broad range of commercial and garden fruits, nuts, vegetables including apple, bell pepper, citrus, melon, peach, plum, and tomato.
- *Chaetocnema aridula*, a flea beetle known from Middle Asia and parts of Europe, was detected in late October

in a bag of fresh peat moss included in a Christmas wreath kit shipped from England. This was a first-in-nation detection for this pest. These beetles are pests of winter wheat and other cereal crops and can cause significant harvest losses especially in winter crops. An exotic click beetle from family Elateridae was also detected in the same Christmas wreath kit shipment. Click beetles are known for their ability to click, jump, and right themselves from a single click, and these beetles pose serious threats to American agriculture, especially cereal plants.

- Unspecified nonnative moths from the genus *Cydia* were detected in November in a shipment of chestnuts from Italy. The genus contains species that are agricultural pests primarily of fruit and nut trees. Unspecified nonnative weevil pests from the family Curculionidae were also intercepted in the same chestnut shipment from Italy. Curculionid weevils feed on live plant materials and some are important pests of field and orchard crops.
- *Lissachatina fulica*, formerly *Achatina fulica* and commonly known as the giant African snail, was detected inside passenger luggage originating in Africa in Detroit in March and in

Atlanta in November. The giant African snail is among the most damaging snails in the world due to its broad diet of plant material, and additionally it poses a serious human health risk as it carries a parasitic nematode linked to meningitis. In Florida, three pet snails were released into the wild in the 1960s, and eradication efforts lasted 10 years and cost \$1 million. These snails are eaten in many countries and are also sold as canned food for the pet trade. Keeping them as pets in the U.S. is illegal.

- *Isotes multipunctata*, a skeletonizing leaf beetle pest, was a first-in-port detection reported from the Otay Mesa Cargo Facility in southern California in January. This pest from the family Chrysomelidae was found in a celery shipment from Mexico. In the same shipment, a noctuid moth pest in the genus *Copitarsia* was also detected. *Copitarsia* moths are polyphagous agricultural pests found throughout Mexico and Central and South America.

Note that shipments that are found to contain pests are refused entry to the U.S., and prohibited food items that are deemed high risk for spreading invasive pests and diseases are seized and destroyed.



Ceratitis capitata. USDA ARS Photo Unit, USDA Agricultural Research Service, Bugwood.org



Lissachatina fulica. Andrew Derksen, USDA-APHIS, Bugwood.org



Isotes multipunctata. U.S. Customs and Border Protection

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