



INVASIVE PEST

news & notes

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Extension
Utah State University.



Cooperative Agricultural Pest Survey Program & Utah Pests Winter 2022/23



A CBP Agriculture specialist points to an insect found after shaking a Christmas tree during an agriculture inspection at Fort Street Cargo Facility in Detroit, Michigan. CBP Photography, Public domain, via Wikimedia Commons

Declare Agricultural Items When Traveling

Each year, U.S. Homeland Security Customs and Border Protection (CBP) specialists intercept tens of thousands of “actionable pests,” defined as organisms of regulatory significance that can seriously impact the health and safety of U.S. agricultural and natural resources. In response to this threat, the U.S. Department of Agriculture, Animal and Plant Health Inspection Service (USDA APHIS), CBP, and other state, federal, and international partners work to educate the traveling public about these threats in part through the Don't Pack a Pest campaign. The program emphasizes the importance of declaring plant and animal items when traveling internationally, and its website (www.dontpackapest.com) provides helpful resources for determining permitted versus prohibited items. For example, some of the items that are prohibited from entering the U.S. and must be declared include:

- Almost all fresh, frozen, and dried fruits and vegetables, as well as canned products
- Soil, and plants and plant parts including

fresh cut flowers, greenery, and seeds

- Fresh coffee berries (i.e., unprocessed, whole coffee fruit with pulp)
- Most cattle, swine, sheep, or goat meat or meat products from countries affected with certain livestock diseases
- Most milk and dairy items from countries with foot-and-mouth disease

Prior to travel, visit the Don't Pack a Pest website for more detailed information on items permitted from your destination as well as items best left in-country, and declare all plant and animal items accompanying you on your travels. In general, declarable items include food products (meat, seafood, dairy products), plant products (plants, soil, fruits, nuts, vegetables, seeds, flowers, bulbs, teas, spices, wood products), honey, and seashells. Failing to declare items that may harbor pests and diseases is both risky and costly, as the items are confiscated and hefty fines are imposed. Declared items do not incur fees.

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 to 12 PM. 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
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www.utahpests.usu.edu/caps

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DECLARE AGRICULTURAL ITEMS, continued

Further, the Don't Pack a Pest's companion project, the Beagle Brigade, literally has its paws on the ground as it utilizes canines' superior senses to further safeguard our nation from foreign pest introductions. The project employs trained canines and handlers to detect undeclared contraband at international airports, U.S. borders, and mail and cargo facilities. The Beagle Brigade's mission is parallel to Don't Pack A Pest's, and USDA APHIS and CBP also manage this program. The dogs, which may also include labrador retrievers and russel terriers, are trained at the National Detector Dog Training Center in Georgia and go through a rigorous 13-week training program during which they learn to detect specific scents and how to signal their handlers when they detect contraband. After several years, the dogs are retired and then live out the rest of their lives in leisure with their handlers or other loving homes. To learn more about the Beagle Brigade program, visit CBP's Agriculture Canine (www.cbp.gov/border-security/protecting-agriculture/agriculture-canine) or USDA APHIS' National Detector Dog Training Center (www.aphis.usda.gov/aphis/ourfocus/planthealth/ppq-program-overview/nddtc) websites.

The keys to preventing the spread of harmful invasive species is public awareness and action, and acting to avoid invasive hitchhikers does not stop at international borders. Within the U.S., hitchhiking pests can get a quick journey to distant landscapes by the movement of infested materials such as firewood, fence posts, plant material, and vehicles that include passenger cars, campers, boats, interstate haulers, and construction equipment. When traveling within the U.S., be aware of quarantines at your destination or along your route and take the necessary steps to ensure your accompanying items are permitted and hitchhiker-free.

Ann Mull, Research Technician

Lori Spears, Invasive Species Survey Specialist



This beagle signals that a piece of luggage contains contraband. The Beagle Brigade program averages around 75,000 seizures of prohibited agricultural products a year, such as unauthorized meat, animal byproducts, and fruit and vegetables, all of which can carry diseases and pests that have the potential to harm U.S. agriculture and more. U.S. Department of Agriculture, Public domain, via Wikimedia Commons

Old World Bollworm

Old World bollworm (*Helicoverpa armigera*) (OWB) is among the most damaging agricultural pests worldwide. OWB was first detected in the western hemisphere in 2013 where it caused significant damage to some crops in Brazil before spreading to other South American countries. Nearer to home, this pest has been detected in Puerto Rico (2014) and Florida (2015) and intercepted at U.S. ports of entry numerous times. This moth is not currently known to be established in the U.S. and several states conduct annual surveys for it using specialized traps and lures. OWB can travel long distances by wind or by hitchhiking on international shipments of agricultural products such as flowers, fruits, and vegetables.

OWB has four life stages (egg, larva, pupa, and adult). Adult moths have about a 1.5-inch wingspan and vary in color, but often females are orange-brown and males are light-yellow, light-brown, or yellow-brown. Larvae (caterpillars) reach up to about 2-inches long and are extremely variable in color with shades of green, straw-yellow, pinkish, or brownish-red to black, darkening after each molt. Mature larvae typically have a striped pattern over their base color. OWB is similar in appearance to other cutworms including a closely related and prominent native crop pest, the corn earworm (*Helicoverpa zea*), and proper identification requires dissection or molecular testing.

The life cycle of OWB is influenced by climate and photoperiod, and the different various life stages generally develop faster at higher temperatures. OWB completes from 2 to 5 generations per year in temperate regions and up to 11 generations in tropical regions. Each female can lay up to 1,500 eggs in her lifetime. Larvae are the damaging life stage and feed primarily on reproductive parts (flowers, fruits) of host plants from more than 180 species, including alfalfa, corn, cotton, small grains (e.g., barley, oats, wheat), soybean, pepper, tomato, and some brassicas (e.g., cabbage, cauliflower) and cucurbits (e.g., pumpkins, squash). Larvae may also feed on foliage, and both field and greenhouse plants are at risk.

OWB's notorious reputation emanates from its mobility, high reproductive rate, broad diet, high insecticide resistance, and its ability to tolerate a wide range of environmental conditions. You can help prevent OWB and other invasive pests from spreading to the U.S. by knowing what you can bring or send home when traveling abroad. Declare all plant material and soil to Customs and Border Patrol agricultural inspectors. If you suspect OWB in Utah, contact the [Utah Plant Pest Diagnostic Lab](#) at Utah State University.

Ann Mull, Research Technician
Lori Spears, Invasive Species Survey Specialist



Top: Old World bollworm adult. Gyorgy Csoka, Hungary Forest Research Institute, Bugwood.org

Middle: Old World bollworm larva feeding on a ripe tomato. Central Science Laboratory, Harpenden, British Crown, Bugwood.org

Bottom: Feeding damage. Metin GULESCI, Leaf Tobacco, Bugwood.org

National Research Highlights

Box Tree Moth

A new paper published in *Journal of Integrated Pest Management* provides a comprehensive overview of the identification, biology, ecology, and management of box tree moth. Little is known at this time about how to manage this new invasive species in North America, but effective control in Europe and Asia have included *Bacillus thuringiensis*, entomopathogenic nematodes, neem, and pyrethroid, spinosyn, and organophosphate insecticides.

Brown Marmorated Stink Bug

Brown marmorated stink bug (BMSB) is a nuisance and agricultural pest with a broad host range that includes fruits, vegetables, and ornamental plant species. Researchers from North Carolina Cooperative Extension and Virginia Tech recently published a study in the *Journal of Economic Entomology* that examined the effects of vegetable host type on nymph survival and development. Results showed that lab-reared BMSB survived and developed best on sweet corn, followed by bell pepper and snap bean. Eggplant and tomato were poor hosts. However, the authors note that optimal development of BMSB probably occurs best on mixed host diets.

Emerald Ash Borer

While studying the effects of two introduced parasitoids, *Tetrastichus planipennisi* and *Spathius galinae*, on the population dynamics of emerald ash borer (EAB), researchers found that the parasitoids decreased densities of live beetle larvae by 76 percent, driven primarily by *S. galinae*. Further, the *Journal of Economic Entomology* published a study that found *T. planipennisi* and woodpeckers prefer to attack EAB larvae in the fourth instar

and contributed greatly to reducing the reproductive potential of the invasive beetle. The authors of this study also found that large ash trees were more likely to be infested with EAB larvae and to die than ash saplings.

Japanese Beetle

Japanese beetle is highly destructive to ornamental plants, trees, shrubs, turfgrass, and some crops. Researchers at the University of Minnesota discovered significant reductions of beetle numbers on raspberries grown under high-tunnels as compared to uncovered crops.

Another study, published in the *Journal of Economic Entomology*, found gradual declines of beetle populations after the establishment of the microsporidian pathogen, *Ovavesicula popilliae*. Specifically, about ¾ of the infected beetle larvae died before pupating, adult infection rates increased to about 30 percent, and overall beetle populations declined by more than 70 percent.



Japanese beetle attacks over 300 plant species and is currently being eradicated from Utah. Whitney Cranshaw, Colorado State University, Bugwood.org

Spotted Lanternfly

Little is known of the mating processes of spotted lanternfly (SLF), a destructive and severe nuisance pest that is rapidly spreading through the U.S. However, a new paper published in *Forests* suggests that an aggregation-sex pheromone is likely used by the insect, thus giving hope for future lure development. Another

study, published in *Frontiers in Insect Science*, found that SLF "honeydew" excretions emit volatile compounds that attract others of the same species. This first-of-its-kind evidence in a planthopper may be important in developing effective control strategies in the future. Such strategies are critical considering that the journal *Communications Biology* recently published a study that used process-based modeling to forecast the spread of SLF in the absence of preventative management. The study found that SLF has a high probability of reaching California's grape- and other crop-producing counties by 2033.



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 ripening, ripe, and overripe fruit, and is a serious threat in some parts of the U.S. A recent study published in the *Journal of Economic Entomology* reported that baited red-panel sticky traps are effective at capturing male SWD in various berry and fruit crops. These easy-to-use traps detected male flies earlier in the season than the grower-standard baited liquid traps. Another study tested the efficacy of various baits and lures in sweet cherry orchards and found that the Scentry lure attracted the most SWD as well as the most non-target insects (bycatch). The Trécé lures were best at capturing only SWD, but generally fewer flies were caught.

Recent U.S. Border Interceptions

- *Lymantria dispar asiatica*, a close relative of spongy moth (*L. dispar dispar*, formerly known as gypsy moth), was detected in September at a New Orleans port on a vessel originating from China. This subspecies is particularly concerning as it has a broader diet and females are more mobile than spongy moth, which has altered landscapes and caused millions of dollars of damage to eastern U.S. forests.
- *Kunzeana versicolora*, a leafhopper known from Mexico, was detected in July in a celery shipment that arrived at a port of entry in California. Leafhoppers suck plant sap and can transmit plant pathogens. Feeding damage appears as leaves with pale specks.
- *Acanthoderes funeraria*, a longhorn beetle from Mexico, was detected in July at a port of entry in Texas inside a tractor trailer hauling fresh vegetables. Longhorn beetles are known to feed on woody materials or herbaceous plants.
- Live snail pests (*Theba pisana*) were part of an Italian shipment of foods to New Jersey that were detected at a Tennessee port in July. These edible snails rapidly aggregate and can defoliate mature trees and spread pathogens. This species is known from Europe, and although populations now

occur in parts of California, it is of top national quarantine significance in the U.S.

- *Hendecasis duplifascialis*, a moth pest of jasmine that is native to India, was recently detected inside a shipment of fresh flowers that arrived at a Texas port of entry. In the same shipment were *Puccinia horiana*, a white rust of chrysanthemum that causes spotty leaves and is classified as a quarantine significant pest in the U.S., and unidentified live *Helicoverpa* moths which are serious pests of agricultural crops globally.
- Mealy bug species *Maconellicoccus hirsutus* and *Paraputo larai* were detected in June in a rambutan fruit shipment crossing into San Diego. Mealy bugs feed on plant juices and can vector diseases. These species are known from Asia and Central America, respectively.
- A longhorn beetle from genus *Dihammaphora* was detected in May on a truck shipment of flowers from a San Diego port. This wood-boring pest is thought to be *D. hispida*, which is a first-in-nation interception. These beetles are known from Central and South America.
- Pyralid moth larvae and pupae were detected in seed pods in

passenger luggage on a flight from the Philippines in September 2021. The insects were collected, quarantined, and reared for further analysis. The moth was later identified as *Salma brachyscopalis* by a USDA Smithsonian Institution entomologist. This species was last encountered at the nation's border in 1912.

- A live rare leaf beetle pest (*Cochabamba* sp.) had its detection debut in May 2022 in a shipment of fresh mangosteen fruit arriving from Mexico. This pest is known to occur in central and south America.
- A stink bug was intercepted in December 2021 in Spanish moss used to decorate a Christmas nativity stable, and then was later identified as *Pharypia nitidiventris*. Stink bugs feed on a wide variety of fruit and vegetable crops.
- A snout beetle from genus *Ammocleonus* was recently intercepted at an airport in Puerto Rico. Snout beetles are also often referred to as true weevils and can be serious agricultural pests.

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.



Lymantria dispar asiatica larva (caterpillar). John Ghent, Bugwood.org



Acanthoderes funeraria. Luis Stevens (licensed under <http://creativecommons.org/licenses/by-nc/4.0/>)



Theba pisana. Tato Grasso, CC BY-SA 3.0, via Wikimedia Commons

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