Pacific Pest Detector News

A Quarterly Newsletter for First Detectors

NPDN
National Plant Diagnostic Network
WPDN
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In This Issue

Pacific Pest Detector News
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https://www.wpdn.org/newsletters

Pests in Brief

A new scale insect. The Chinese mussel scale has been intercepted more than 40 times in Florida since 1992, especially on lucky bamboo (*Dracaena braunii*). Its hosts include several plant species present in our islands. See page 2 of this issue.

Courtesy I. Stocks, Florida DPI

Another invasive plant. Tropical soda apple (*Solanum viarum*) is native to South America but is now in subtropical Asia and 11 states in the southeastern U.S. Like all successful weeds, it is fast growing and difficult to contain. For more on this "prickly" plant, see pages 3 and 4.

Courtesy J. Mullahey, University of Florida, Bugwood.org

Snail and slug pests. Many of the former American-Affiliated Pacific Islands are home to snail and slug pests. Some of you are familiar with the giantAfrican snail, rosy wolf snail, apple snail, or Cuban slug. If you are unaware of these pests or their potential impact, see our alert on pages 5 and 6.

Courtesy A. Derksen, USDA, APHIS, Bugwood.org

NOT WANTED

Chinese Mussel Scale

(*Lepidosaphes chinensis*)

All images courtesy of I. Stocks, Florida Department of Agriculture and Consumer Services, Division of Plant Industry

(A) Adult female Chinese mussel scale (*Lepidosaphes chinensis*) on lucky bamboo (*Dracaena braunii*). (B) Yellowing (chlorosis) and necrosis (arrows) caused by feeding is especially noticeable along leaf edges. These scale insects will also feed heavily on stems. (C) Parts of the waxy scale cover (arrows): a) cover of the first-stage crawler, b) cover of the second stage, c) developing cover of the adult. (D) Undersides of two adult females: a) unhatched eggs, b) eggs after hatching.

Distribution. Probable origin China and Hong Kong, spreading to Taiwan, Singapore, the Philippines. Intercepted more than 40 times in Florida in the past 20-plus years, but not known to be established yet in the U.S.

Hosts. Family Asparagaceae, *Beaucarnea recurvata* (elephant's foot), *Dracaena braunii* (lucky bamboo), *Liriope* sp. (creeping lilyturf), *Sansevieria trifasciata* (snake plant), *Yucca elephantipes* (spineless Yucca); Elaeagnaceae, *Elaeagnus umbellata* (Japanese silverberry); Euphorbiaceae, *Euphorbia elegans*; Lamiaceae, *Caryopteris incana* (bluebeard); Magnoliaceae, *Magnolia* sp.; Orchidaceae, *Cymbidium* sp.; Pandanaceae, *Pandanus* sp. (screw pine); Fabaceae, *Indigofera tinctora* (true indigo).

Impact. No published records of damage known. This insect is not established in the Western Hemisphere, but potential damage could be high in the orchid industry, on susceptible ornamental plants, and on endangered plant species.

For more information: http://www.freshfromflorida.com/Divisions-Offices/Plant-Industry/Plant-Industry-Publications/Pest-Alerts/Pest-Alert-Lepidosaphes-chinensis-Chamberlin

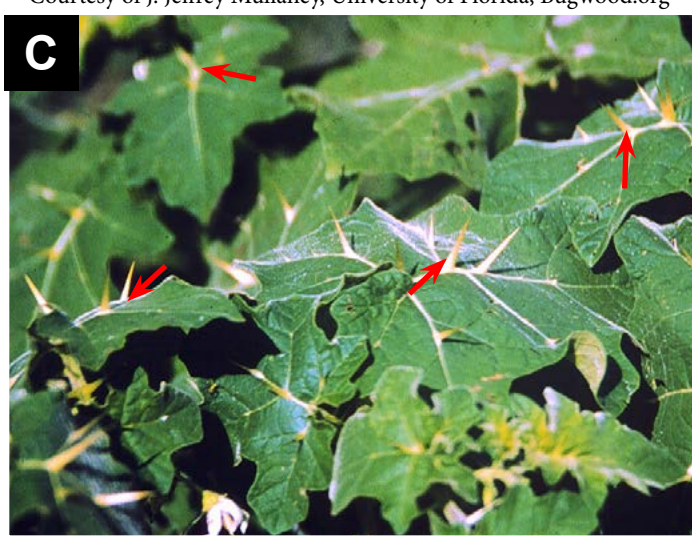
NOT WANTED

Tropical Soda Apple

(Solanum viarum)

Courtesy of J. Jeffrey Mullahey, University of Florida, Bugwood.org

Courtesy of J. Jeffrey Mullahey, University of Florida, Bugwood.org



Courtesy of Charles T. Bryson, USDA ARS, Bugwood.org

Courtesy of Charles T. Bryson, USDA ARS, Bugwood.org

(A) Florida field covered with fast-growing tropical soda apple (*Solanum viarum*). (B) Single plants can grow to six feet high and spread rapidly by root suckers and seeds. (C) Thorn-like prickles also grow on the leaves of soda apple (arrows). (D) A single flower and fruit hanging among stems armed with long prickles.

Origin and Distribution. Native to Brazil, Paraguay, Uruguay, and Argentina. Introduced into Africa, India, Nepal, and areas of tropical Asia. It is reported from 11 southeastern states in the U.S. and Puerto Rico. It is most common in Florida.

Description. Perennial broadleaf shrub (in tropics), 3-6 ft (1-2 m) tall, leaves and stems with 1 in (2.5 cm) "thorns." Leaves 2-8 in (6-20 cm) long x 2-6 in (6-15 cm) wide. Flowers white, star-shaped, single or in small group. Fruit round berries 0.8-1 in (2-3 cm) diameter,. Green fruits turn yellow as they ripen, but seed may be viable in young fruits (~0.5 in, 1 cm). The root system is extensive.

Courtesy of John W. Everest, Auburn University, Bugwood.org

Courtesy of USDA APHIS PPQ, Oxford, N. Carolina, Bugwood.org

Courtesy of James Rollins, Bugwood.org

Courtesy of Charles T. Bryson, USDA ARS, Bugwood.org

(A) *Solanum viarum* is in the same genus as potatoes and tomatoes and has star-shaped flowers with long orange stamens. (B) Fruits of tropical soda apple change color from green, to green and white, to yellow as they mature. (C) Greenish yellow fruits contain from 250 to 500 reddish, lens-shaped, viable seeds. (D) The extensive root system of *S. viarum* can produce suckers that grow into "new" plants. To eliminate this plant pest by plowing or digging, all pieces of the root system must be removed to prevent regrowth.

Impact. On the Federal Noxious Weed List. Reduces biological diversity by replacing native plants. Prickles on plants inhibit grazing and keep some animals from moving through heavy growth. As a member of the Solanaceae, *S. viarum* contains solasodine, a chemical that is toxic to humans.

Likely Locations. Mainly in disturbed sites: pastures, sides of ditches and excavations, orchards, among sugarcane, areas overturned by rooting of feral pigs, but also occurs in wild and wooded areas. It thrives in soils with good drainage and can briefly tolerate wet but not flooded soils. Able to grow in dry climates and seeds can germinate under moderate drought conditions.

For more information:
***Solanum viarum* : http://plants.usda.gov/core/profile?symbol=SOVI2**
Weed of the Week: http://www.na.fs.fed.us/fhp/invasive_plants/weeds/tropical-soda-apple.pdf
U.S. Forest Service: http://www.fs.fed.us/database/feis/plants/forb/solvia/all.html

NOT WANTED
Snails and Slugs

Courtesy D. Robinson, USDA APHIS, PPQ, Bugwood.org

Photos www.jaxshells.org

Lissachatina fulica—giant African snail

Origin and Distribution. Native to East Africa. Distributed as food and in the pet trade. Reported in the Hawaiian Is., Marshall Is., American Samoa, Kosrae, Pohnpei, Truk, Palau, Guam, N. Mariana Is.

Description. (A) Reddish brown conical shell banded with lighter colors, usually 2-4 in (5-10 cm) long, but can exceed 8 in (20 cm) long by 3 in (8 cm) wide.

Impact. Voracious; feeds on agricultural and garden crops and ornamentals; public nuisance; carries rat lungworm disease; can spread the fungus-like organisms that cause black pod of cacao, taro leaf blight.

Likely Locations. In most humid areas of the tropics.

Euglandina rosea—rosy wolf (cannibal) snail

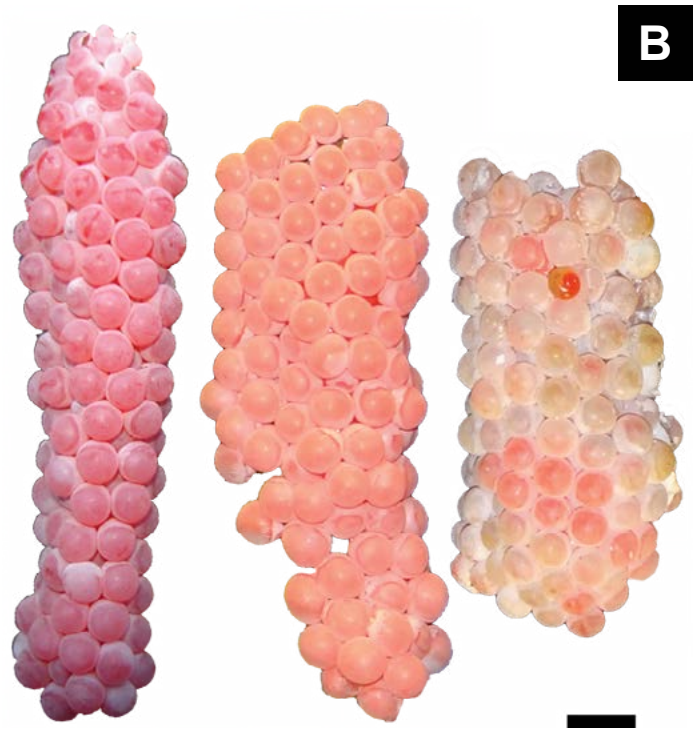
Origin and Distribution. Native to southeastern USA. Introduced to control the giant African snail. Reported in the Hawaiian Is., American Samoa, Palau, Guam, Saipan.

Description. (B) Brownish pink elongate shells 2-3 in (5-7.5 cm) long by 0.8-1 in (2-2.8 cm) wide, but variable; **(C)** middle shell 1.5 in (3.7 cm) long.

Impact. Ineffective control of African snail, but feeds on other snails and slugs. Endangers native snail populations, reportedly causing extinction of many species in Hawaii. Carries rat lungworm disease.

Likely Locations. Gardens, roadsides, forests; will follow prey into trees, even in water for a distance.

Who to contact: Diagnostic Clinics and Diagnosticians — Page 8



Courtesy K.A. Hayes, Howard University

Scale bars: shells = 1 cm, egge = 5 mm

Pomacea canaliculata—apple snail

Origin and Distribution. Native to Argentina and Uruguay. Introduced as food and for aquariums. Reported in Guam, Hawaiian Is.

Description. (A) Shell globular, yellowish to dark brown, 1.4-2.4 in (3.5-6 cm) long by 1.4-2.2 in (3.5-6 cm) wide. **(B)** Eggs in clusters, pink to orange (eggs on right ready to hatch); female can lay ~8,000 eggs each year.

Impact. Massive yield losses in rice, about 90% at 8 snails/square meter; 25% loss in taro with a 50% increase in labor. Carries rat lungworm disease.

Likely Locations. In fresh water. Important problem in wetland taro patches and rice paddies.

Photo Vanessa Pulido

Photo http://datab.us/i/Veronicella%20cubensis

Veronicella cubensis—Cuban slug

Origin and Distribution. Native to Cuba. Moved by international trade. Reported in American Samoa, Pohnpei, Guam, N. Mariana Is. (Rota).

Description. Shades of brown to almost white, may have **(C)** two solid or **(D)** broken lines (spots) down its back; 2-2.8 in (5-7 cm) or longer.

Impact. (E) Large host range including taro, yam, noni, mango, papaya, citrus, ornamentals; damage by feeding, trails of slime and feces; garden pest; a nuisance in large numbers; carries rat lungworm disease.

Likely Locations. Humid environments or moist soils in varied habitats, from undisturbed areas to agricultural land and gardens.

For more information:
Global Invasive Species Database: http://www.iucngisd.org/gisd/100_worst.php
Snails in general: http://www.jaxshells.org

Pests of Concern

ARTHROPODS

Africanized honey bee (*Apis mellifera scutellata*) http://www.invasivespeciesinfo.gov/animals/afrhonbee.shtml

Asian citrus psyllid (*Diaphorina citri*) http://cisr.ucr.edu/asian_citrus_psyllid.html

coconut rhinoceros beetle (*Oryctes rhinoceros*) http://www.ctahr.hawaii.edu/adap/ASCC_LandGrant/Dr_Brooks/BrochureNo8.pdf **Oahu biweekly updates:** https://gallery.mailchimp.com/9a2eda30317f9dbc89fb881b9/files/CRB_2_13_2015.pdf

little fire ant (*Wasmannia auropunctata*) http://flrec.ifas.ufl.edu/entomo/ants/pest%20ants%20of%20fl/little_fire_ant.htm **Oahu biweekly updates:** https://gallery.mailchimp.com/9a2eda30317f9dbc89fb881b9/files/LFA_2_9_15_EM.pdf

naio thrips (*Klambothrips myopori*) http://cisr.ucr.edu/pdf/myoporum_thrips_hawaii.pdf

red imported fire ant (*Solenopsis invicta*) http://entnemdept.ufl.edu/creatures/urban/ants/red_imported_fire_ant.htm

red palm weevil (*Rhynchophorus ferrugineus*) http://www.aphis.usda.gov/import_export/plants/manuals/emergency/downloads/nprg-redpalmweevil.pdf

silverleaf whitefly (*Bemisia argentifolii*) http://www.entnemdept.ufl.edu/creatures/veg/leaf/silverleaf_whitefly.htm

varroa mite (*Varroa destructor*) http://entnemdept.ufl.edu/creatures/misc/bees/varroa_mite.htm

DISEASES

banana Xanthomonas wilt (*X. c.* pv. *musacearum*) http://apsjournals.apsnet.org/doi/pdf/10.1094/PDIS-93-5-0440

citrus canker (*Xanthomonas axonopodis*) http://www.apsnet.org/publications/imageresources/Pages/IW00011a.aspx

citrus greening (*Candidatus* Liberibacter asiaticus) http://www.crec.ifas.ufl.edu/extension/greening/index.shtml

coffee rust (*Hemileia vastatrix*) http://www.apsnet.org/edcenter/intropp/lessons/fungi/Basidiomycetes/Pages/CoffeeRust.aspx

downy mildews of corn http://maizedoctor.cimmyt.org/index.php?id=233&option=com_content&task=view

guava rust (*Puccinia psidii*) http://www.ctahr.hawaii.edu/oc/freepubs/pdf/PD-38.pdf

iris yellow spot http://aces.nmsu.edu/pubs/_h/H-255.pdf

lethal yellowing of palm (*Candidatus* Phytoplasma palmae) http://edis.ifas.ufl.edu/pp146

moko disease of banana (*Ralstonia solanacearum*) http://www.promusa.org/tiki-custom_home.php

Panama disease of banana TR 4 (*Fusarium oxysporum* f.sp. *cubense*, tropical race 4) http://www.agric.wa.gov.au/objtwr/imported_assets/content/pw/ph/dis/fn/fs01200.pdf

papaya ringspot http://www.apsnet.org/publications/apsnetfeatures/Documents/2004/ControllingPapayaRingspotVirus.pdf

sudden oak death (*Phytophthora ramorum*) http://www.suddenoakdeath.org/

tomato yellow leaf curl http://www.ctahr.hawaii.edu/oc/freepubs/pdf/PD-70.pdf

PLANTS

cogongrass (*Imperata cylindrica*) http://www.issg.org/database/species/ecology.asp?si=16&fr=1&sts=sss&lang=EN

fireweed (*Senecio madagascariensis*) http://www.hawaiiinvasivespecies.org/pests/fireweed.html

fountain grass (*Pennisetum setaceum*) http://www.nps.gov/plants/alien/fact/pdf/pese1.pdf

miconia (*Miconia calvescens*) http://www.hawaiiinvasivespecies.org/pests/miconia.html

Siam weed (*Chromolaena odorata*) http://plants.usda.gov/java/profile?symbol=CHOD

Tropical soda appple (*Solanum viarum*) http://plants.usda.gov/core/profile?symbol=SOVI2

Pests listed in **'BOLD'** are not, to our knowledge, present in the American Affiliated Pacific Islands.

Websites

PEST INFORMATION

American Samoa: http://www2.ctahr.hawaii.edu/adap2/ascc_landgrant/technical_papers.asp#brochures

Bugwood (images): http://bugwood.org/

Crop Knowledge Master: http://www.extento.hawaii.edu/kbase/Crop/crop.htm

Hawaii Invasive Species Council: http://dlnr.hawaii.gov/hisc/

Plant Pono: http://www.plantpono.org/

Hawaii Department of Agriculture (new pest advisories): http://hawaii.gov/hdoa/pi/ppc/new-pest-advisories

Hawaiian Ecosystems at Risk (Pacific invasive species): http://www.hear.org/

Master Gardeners (national pest list): http://wiki.bugwood.org/npdn-mg-training

Western Micronesia Regional Invasive Species Council: http://guaminsects.net/gisac/index.php?title-Main_Page

DIAGNOSTIC CLINICS AND DIAGNOSTICIANS

American Samoa Community College, Land Grant: Mark Schmaedick (insects) m.schmaedick@amsamoa.edu (684) 699-1575; Ndeme Atibalentja (plant diseases) n.atibalentja@amsamoa.edu

University of Guam: Robert Schlub (plant diseases) rlschlub@uguam.uog.edu (671) 735-2089; Aubrey Moore (insects) amoore@uguam.uog.edu (671) 735-2141

Hawaii Department of Agriculture: Janis Matsunaga (insects) Janis.N.Matsunaga@hawaii.gov (808) 973-9536; Mann Ko (plant diseases) Mann.P.Ko@hawaii.gov (808) 973-9546

University of Hawaii (diagnostic clinics): Honolulu adsc@ctahr.hawaii.edu, (808) 956-6706 ; Komohana Research Extension Center, Hilo komohana@ctahr.hawaii.edu, (808) 981-5199

ORGANIZATIONS

Guam Department of Agriculture: http://www.nasda.org/cms/7195/8617/8761.aspx

National Plant Diagnostic Network http://www.npdn.org/

Western Plant Diagnostic Network https://www.wpdn.org/index.php

Western Pacific Tropical Research Center (Guam) http://www.wptrc.org/

EDUCATION AND TRAINING

Extension Disaster Education Network http://eden.lsu.edu/Pages/default.aspx

NPDN First Detector Training Sites: http://www.npdn.org/first_detector

NPDN First Detector Newsletter: http://www.npdn.org/newsletter

Protect U.S. invasive species network http://www.protectingusnow.com/

WPDN Homepage: https://www.wpdn.org/index.php

WPDN and Pacific First Detector Newsletters: https://www.wpdn.org/newsletters

IF A LINK IS INOPERABLE, TRY COPYING AND PASTING IT DIRECTLY INTO YOUR BROWSER