



**NEW PEST ADVISORY GROUP (NPAG)**  
**Plant Epidemiology and Risk Analysis Laboratory**  
**Center for Plant Health Science & Technology**

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**NPAG Report**

***Darna pallivitta* Moore: Nettle Caterpillar**

Lepidoptera/Limnicodidae

NPAG Chair Approval Date: April 14, 2006

**Initiating Event, Notifier and Affiliation, Notification Date, and First Reported Date:** On July 16, 2005, Dr. Marc Epstein with the California Department of Food and Agriculture alerted NPAG to the spread of a new pest in Hawaii, *Darna pallivitta* (Devorshak, 2006). Although this pest has been present in Hawaii since 2001, it may spread to the conterminous U.S. This insect was first identified by Dr. Epstein when he was at the Smithsonian Institution (Conant *et al.*, 2002).

**Data sheet(s):** Hawaii Department of Agriculture (March 2002; Conant *et al.*, 2002). Cooperative Extension Service of Hawaii (September 2005; Chun *et al.*, 2005). No CABI data sheet was available (query January 27, 2006).

**Current PPQ Policy:** Neither *Darna pallivitta* or its genus *Darna* is listed in the PIN 309 database (Query 1/27/06). No *Darna* species are listed on the APHIS Regulated Plant Pest List (search 1/27/06). *Darna* has never been intercepted at any U.S. ports (PIN 309 query 1/27/06), but it has been intercepted six times by the California Department of Food and Agriculture (CDFA) between 2002 and 2004 (Wright, 2006).

**Pest Situation Overview:**

**Exotic Status:** *Darna pallivitta* is new to Hawaii and represents an imminent threat to the conterminous U.S. (Conant *et al.*, 2002).

**Biology:** Adult moths are approximately half an inch long (Chun *et al.*, 2005). Females lay up to 480 translucent eggs in small clusters on the underside of plant leaves. After hatching in about a week, larvae feed voraciously on plant leaves of a wide variety of hosts for 45-72 days. When larvae are ready to pupate, they migrate to protected areas of the host and pupate in clusters. The pupal stage lasts for 17 to 21 days. Within two days of emerging, adults begin mating (Chun *et al.*, 2005). Adults are good fliers and will live for 10 to 11 days (CDFA, 2005; Chun *et al.*, 2005). The entire life cycle of *D. pallivitta* lasts approximately 3 months (Chun *et al.*, 2005), indicating the potential of having up to four generations per year.

**Prevalence and global distribution:** *Darna pallivitta* is native to China, Taiwan, Thailand, Peninsular Malaysia, Java, and Borneo (Holloway, 2006; MoE, 2006). It is established and spreading in Hawaii and Japan (Chun *et al.*, 2005). Currently restricted to the Big Island, it has been present in Hawaii since at least 2001 (Conant *et al.*, 2002). On the Big Island, the infestation is located in the Pana'ewa area of Hilo where the pest has become relatively abundant (Conant, 2006). Pat Conant with the Hawaii Department of Agriculture reports getting up to three calls per day from people who have been stung by the caterpillar (Conant, 2006). He also stated that one resident has counted about 1000 moths per night on her bug zapper (Conant, 2006). *D. pallivitta* appears to be sensitive to cooler temperatures because it is not as abundant during the winter (Conant, 2006). It would probably only be able to establish in southern California, Florida, Puerto Rico and the U.S. Virgin Islands, and perhaps southern Texas as well.

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**Host Range:** *Darna pallivitta* is polyphagous feeding on 45 host species from multiple genera and families. It has been observed completing its life cycle on **Arecaceae:** *Areca*, *Caryota* (fishtail palm), *Cocos* (coconut palm), *Phoenix* (Phoenix palm), *Rhapsis* (Rhapsis palm), *Veitchia merrillii* (Manila palm); **Asteraceae:** *Adenostemma*; **Commelinaceae:** *Commelina diffusa* (honohono grass); **Euphorbiaceae:** *Breynia*; **Fabaceae:** *Vigna marina* (beach pea); **Liliaceae:** *Cordyline terminalis* (ti plant), *Dracaena* (cane plant, ‘Compacta’ & ‘Massangeana’ varieties), *Iris*; **Moraceae:** *Ficus*; **Oxalidaceae:** *Averrhoa carambola* (starfruit); **Rubiaceae:** *Coffea arabica* (coffee) and **Urticaceae:** *Pipturus albidus* (mamaki) (Chun *et al.*, 2005; Holloway, 2006). It has also been observed feeding, but not reproducing on **Apocynaceae:** *Alyxia oliviformis* (maile); **Araceae:** *Monstera* (monstera plant); **Arecaceae:** *Neodypsis decaryi* (triangle palm); **Asteraceae:** *Wedelia*; **Bromeliaceae:** *Tillandsia cyanea* (‘Pink Quill’ bromeliad); **Fabaceae:** *Desmodium uncinatum* (Spanish clover), *Erythrina sandwicensis* (wiliwili); **Lythraceae:** *Cuphea* (cigar plant); **Liliaceae:** *Beaucamea recurvata* (ponytail palm), *Cordyline marginata*, *Ophiopogon* (mondograss), **Melastomataceae:** *Clidemia hirta* (Koster’s curse), *Tibouchina*; **Musaceae:** *Musa* sp. (banana); **Myrtaceae:** *Psidium* (guava); **Oleaceae:** *Jasminum multiflorum* (Chinese star jasmine); **Orchidaceae:** *Arundina graminifolia* (bamboo orchid); **Poaceae:** *Panicum repens* (wainakugrass, torpedograss), *Paspalum conjugatum* (hilograss), *Pennisetum purpureum* (napiergrass); **Proteaceae:** *Macadamia*; **Rubiaceae:** *Gardenia* (Gardenia, chickweed, rabbitsfoot fern, ‘Golden Glory’ perennial peanut, California grass, glory bush, vasey grass, maunaloa vine, red and shampoo gingers, sleeping grass, walking iris, whaleback) (Chun *et al.*, 2005; Wright, 2006).

**Potential pathways and spread:** Because *D. pallivitta* flies well, once established in an area, it is expected to slowly spread and form satellite colonies as it has in Hawaii (Conant, 2006). *D. pallivitta* can also be readily spread on nursery and field grown ornamentals. It has already been detected once on a nursery shipment to the island of Maui (Loope, 2005), and it has been intercepted six times by the CDFA (Wright, 2006). Because *D. pallivitta* is strongly attracted to night lights (Conant, 2006), it may spread to other regions on commercial flights if airplane cargo holds are loaded at night.

**Potential economic and environmental impact, and trade implications:** *Darna pallivitta* is a folivore causing direct injury to plants (Chun *et al.*, 2005). The Crop Protection Compendium (CABI, 2005) lists several other species of *Darna*, stating that although they are typically considered to be minor pests, outbreaks frequently occur that result in significant economic damage. In one outbreak, as many as 2000 larvae per palm frond were recorded, with palm leaf area being reduced by up to 60% (CABI, 2005). Spread of *D. pallivitta* into natural areas may negatively impact threatened and endangered species such as the endangered *Vigna o-wahuensis* (USFWS, 2005). Also of concern is *D. pallivitta*’s potential impact on human health. It is covered in stinging hairs that are painful and irritating if touched (Chun *et al.*, 2005). Particularly sensitive people react more strongly to the poison by swelling in the area of contact (Conant, 2006). Severe infestations by other species of *Darna* have delayed nursery work because of this painful nuisance (CABI, 2005).

**NPAG teleconference(s):** None held.

**Current response and activities, and technology and knowledge gaps and needs:** The Hawaii Department of Agriculture is not taking any regulatory action against the spread of this pest in Hawaii because of its potential for natural spread (Conant, 2006). However, the department is working with researchers to identify biocontrol agents for release in Hawaii; currently a parasitoid shows good potential for use as a biocontrol agent (Chun *et al.*, 2005; Conant, 2006). A cytoplasmic polyhedrosis virus infecting lab-reared larvae can cause high mortality. USDA-ARS is trying to identify and produce a pheromone lure for *D. pallivitta* to allow its rapid detection (USDA-ARS, 2006). Due to recent interceptions of *D. pallivitta* from Hawaii in California (Wright, 2006), the California Department of Food and Agriculture is concerned about its establishment in the state (Holloway, 2006). California currently takes regulatory action on all interceptions of *D. pallivitta* (Wright, 2006); however, outside of nurseries, they do not survey for this pest (Wright, 2006). In addition to biological control, cultural practices and some pesticides may help in controlling this pest (Chun, 2005).

**NPAG Approved Recommended Regulatory Status (May 05, 2006):** The NPAG recommends establishing PPQ policy regarding *Darna pallivitta* by listing it as reportable/actionable. **Action Leader: Joe Cavey, PPQ-NIS.**

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**Approved Recommendations (May 05, 2006):**

- 1.) PPQ policy for *Darna pallivitta* will be reportable/ actionable. **Action Leader:** Joe Cavey (NIS).
- 2.) *Darna pallivitta* will be assessed for the APHIS Regulated Plant Pest List. **Action Leader:** Christina Devorshak (CPHST).
- 3.) A survey for *Darna pallivitta* in Hawaii will be considered. **Action Leader:** Coanne O'Hern (EDP).
- 4.) PPQ will notify appropriate plant inspection stations of *D. pallivitta* in Hawaii and ensure this pest is included in Hawaii's pre-clearance program. **Action Leader:** Gary Carpenter (WR).

**Refer to ET:**

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