*Lymantria mathura**

Figure 1. *Lymantria mathura* female (David Mohn, Critters Page (Creatures Great and Small), Bugwood.org).

Scientific Name
Lymantria mathura Moore

Synonyms:
Lymantria aurora Butler
Lymantria aurora var. *fusca* Leech
Liparis aurora Swinhoe
Lymantria fusca Leech
Lymantria mathura aurora Schintlmeister

*This document is largely excerpted from the report: Davis, E.E., S. French, and R.C. Venette. 2005. Mini-Risk Assessment: Pink gypsy moth, *Lymantria mathura* Moore [Lepidoptera: Lymantriidae]. Available on-line at: http://www.aphis.usda.gov/plant_health/plant_pest_info/pest_detection/downloads/pra/lmathurapra.pdf.

Figure 2. *Lymantria mathura* male (David Mohn, Critters Page (Creatures Great and Small), Bugwood.org).

Common Name
Rosy moth, pink gypsy moth

Type of Pest
Moth

Taxonomic Position
Class: Insecta, **Order:** Lepidoptera, **Family:** Lymantridae*

*Recent classifications lower Lymantriidae to the subfamily Lymantriinae under the family Erebidae. See Pogue and Schaefer (2007).

Reason for Inclusion in Manual
CAPS Target: AHP Prioritized Pest List (2006 – 2013)

Pest Description
Eggs: “Egg masses are laid from ground-level up to about 18 m [approx. 60 ft.] of the trunk, but are most dense between the levels of 0.5 to 5 m [approx. 1½-16 ft]. They are flat, of an ovoid-elongate or other shape, with irregular edges, and vary in extent from about 0.5 x 1 cm to 6 x 15 cm [approx. $^{3}/_{16}$ x $^{3}/_{8}$ in to 2 $^{3}/_{8}$ x 5 $^{7}/_{8}$ in]. From a distance the egg masses are visible as characteristic white, fluffy patches

against the dark-coloured bark. Each egg-mass contains about 50 to 1,200 or more eggs which are laid 2 to 4 layers deep directly on the bark. An egg-mass is covered over with a nearly one-millimetre, white thick felt-like covering composed of long, white, silken hairs (... these hairs are shed by the female from the anal tuft. ...)" (Roonwal, 1979).

"After the majority of eggs have hatched, an egg mass presents a changed appearance. Firstly, the hair-covering which has hitherto (for several months in the case of the overwintering eggs) remained pure white, now becomes dull-coloured, a dirty cream, and, in a few cases, with irregular patches of pale buff. Secondly, the hair covering is pierced by numerous rounded holes of varying diameters (c. 0.5-3 mm [approx. $<1/16$ to $1/8$ in]) through which the newly hatched larvae have escaped. Beneath the thin, hole-pierced, hairy covering, there is a flat, hollow space containing the remnants of eggshells and a few remaining eggs which have not yet hatched" (Roonwal, 1979).

Larvae: A full description of the larvae can be found in Roonwal (1979) (by larval instar) and Pogue and Schaefer (2007).

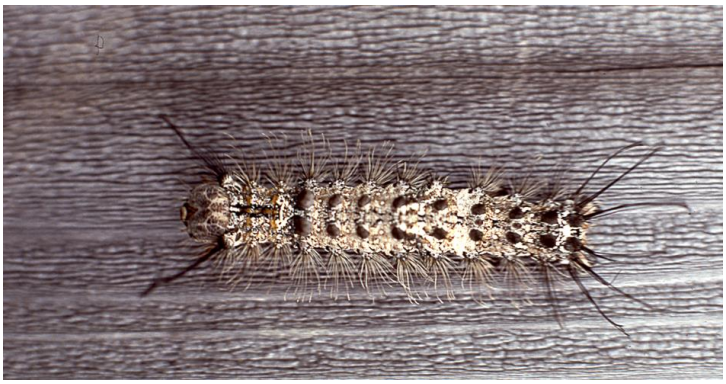

Figure 3. Larva of *L. mathura* (Image courtesy of Michael Pogue, USDA-ARS).

Figure 4. Larva of *L. mathura* (Image courtesy of David Mohn, Critters Page (Creatures Great and Small), Bugwood.org).

Three main color forms are found in mature caterpillars:

> "Form I (Grey-white): Ground colour dirty white tinged with grey. Dorsal: Head white with numerous black or brown spots; frons with a longitudinal median black streak; rest of body grey-white, with numerous fine dots forming paired patches. A transverse yellow-brown streak present between pro- and mesothorax, and another in middle of metathorax: abdominal warts blackish; paired lateral papules on abdomen white, with tufts of long white and brown hairs. Long pencil-like plumes of hairs on head and on, end of abdomen black. Ventral: Brownish pink; legs and prolegs brown, the latter with a black patch externally.

Form II (Intermediate): Dorsal: Ground colour pale brown, with a median white patch on abdominal terga 4 and 5. Ventral: As in Form I.

Form III (Blackish brown): Dorsal: Ground-colour dark brown to almost black; numerous black spots visible in brown larvae but merged with ground-colour in darker ones; several small white dots present on abdominal terga 4 to the last, and large white patches on terga 4-6. Ventral: Ashy, suffused with a little pink in the median parts; rest as in Form I" (Roonwal, 1979).

"In the masses of caterpillars on tree trunks the various colour types are mixed on individual trees; this fact has a protective value by making detection by enemies difficult" (Roonwal, 1979).

Pupae: "The pupa is of the 'obtect adecticus type,' and the appendages are firmly soldered to the body. It is buff to dark brown, about 20-36 mm [approx. ¾-1 ½ in] long, and shows sexual dimorphism; the female pupa is paler, larger and heavier than the male, as follows:

Female: Buff to pale brown. Length (including hair tufts) 30-36 mm [approx. 1 $^{3}/_{16}$ to 1 $^{7}/_{16}$]; maximum width 10-14 mm [approx. $^{3}/_{8}$ to $^{9}/_{16}$ in]. Weight 0.88 gm [0.03 oz] (average of 18 pupae).

Male: Very dark chocolate brown, Length (including hair tufts) 15-25 mm [approx. $^{9}/_{16}$ to 1 in]; maximum width 6-8 mm [approx. $^{1}/.14_{4}$ to $^{5}/_{16}$ in]. Weight 0.14 gm (average of 53 pupae) [0.005 oz]" (Fig. 4) (Roonwal, 1979).

Figure 5. *Lymantria mathura* pupae, female on the left, male on the right (David Mohn, Critters Page (Creatures Great and Small), Bugwood.org).

Adults: A full description of the adults can be found in Pogue and Schaefer (2007).

"*Lymantria mathura* Moore (Lepidoptera: Lymantriidae) is a moderate sized moth... There is marked sexual dimorphism in size and colour. The male is smaller (wing expanse male: 35-50 mm [~1½ to 2 in]; female: 75-95 mm [~3 to 3¾ in]), with the forewings brown and hindwings yellow. In females the forewings are white with dark markings, and the hindwings pink..." (Fig. 1) (Roonwal, 1979).

"[Male] Upperside-fore wing greyish white, markings brown, with pale-brown interspaces; with two or three black and yellow spots at the base; two transverse subbasal irregular lines, between which is a broad band; a round spot within the

cell and a blackish curved streak at its end; three transverse discal lunulated bands, the first broad, the others narrow; a marginal row of spots: hind wing dull yellow, with a blackish discal spot, narrow submarginal maculated band, and a marginal row of small spots. Underside dull yellow, suffused with pale brown between the veins, with darker-brown discal and marginal spots. Thorax white, with yellow and black spots. Abdomen yellow, tuft white, with dorsal, lateral, and a row beneath of black spots. Head at the sides, palpi in front, and legs yellow; palpi above and at the sides, and spots on the legs, black. Antennae brown. Expanse 2¼ inches" (Moore, 1865).

> Male genitalia: "Tegumen with lateral process present; uncus of moderate length with rounded apex; valve bifurcate with prominent dorsal and ventral processes, valves fused ventrad; dorsal process bifurcate with dorsal-most process shorter than ventral process; juxta reduced to a faint V-shaped sclerotization in membrane just dorsal to fused valves; sacculus undifferentiated from valve; saccus broad, U-shaped; vesica ovate; cornuti small to minute spiculi" (Pogue and Schaefer, 2007).
>
> Female genitalia: "Ovipositor moderately telescopic; papillae anales kidney-shaped, dorsal margin with a slight dip before apex; anterior apophysis longer than posterior apophysis, apex of posterior apophysis wider than anterior apophysis; ostium bursae membranous with a small, slightly sclerotized dorsal lobe; ductus bursae sclerotized and shorter than corpus bursae; corpus bursae oblong; signa absent" (Pogue and Schaefer, 2007).

Biology and Ecology

In its native range of Asia, *L. mathura* is univoltine or bivoltine (Beeson, 1941; Browne, 1968; Roonwal, 1979; Baranchikov et al., 1995; Lee and Lee, 1996). The first generation occurs between April and October. Flight activity is not well known for this species, but is thought to coincide with peak flight activity of two closely related species, *L. dispar* and *L. monacha* (Anon., 2001). Males are scarcely seen and die about a week before females. Females congregate in groups of 6 or more near egg masses and become inactive after laying eggs (Roonwal, 1979).

Eggs are laid between mid-April and mid-June and hatch in 3 to 4 weeks. Females lay between 50 to 1,200 eggs are in white, distinctive, silky hair-covered masses on trunks and large branches of deciduous hosts (Browne, 1968; Roonwal, 1979). Females usually oviposit eggs underneath bark scales and cover exposed edges of egg masses with whitish hairs from their abdomens. Females will lay eggs on non-host material when populations are high (Pogue and Schaefer, 2007).

Larvae occur from early June to late September. After eggs hatch, the egg mass becomes darker in color. The group of newly hatched larvae remains near the

hair-covered mass for 2 to 3 weeks. It is not known whether the larvae receive some nutritive benefit from the mass prior to feeding on foliage (Roonwal, 1979). The insect progresses through six instars. Early instar *L. mathura* larvae possess the ability to disperse by dropping on a trailing silk thread and utilizing air and wind currents to “balloon” to other locations (Zlotina et al., 1999). *Lymantria mathura* larvae may disperse farther than *L. dispar* via wind (Zlotina et al., 1999). Late instar larvae exhibit a diurnal feeding behavior. Although they are inactive during most daylight hours, late instars begin to twist distinctively before dusk, then crawl to the tree crown to feed until dawn, followed by a rapid descent to the trunk (Roonwal, 1979; Zlotina et al., 1999). Larvae are known to rest in an inverted “J” position where both the anterior and posterior ends point downward on the trunk of the tree (Pogue and Schaefer, 2007).

Pupae are present from late July to late October. Pupation often occurs in groups of 40 to 50 in protected areas of branches, in leaf litter at the base of trees, or on the back or underside of signs or other objects (Browne, 1968; Roonwal, 1979).

In the second or overwintering generation, eggs are laid between early September to mid-October, and embryos develop within 6 weeks. This generation overwinters as developed embryos within eggs which hatch between February and early April, depending on temperature.

In outbreak years, *L. mathura* tends to lay eggs on many tree species, including non-hosts. In an outbreak in the Western sub-Himalayan range, *L. mathura* eggs were laid on 185 different host species, and of these, 22 tree species were later defoliated by feeding larvae, and 6 species were heavily defoliated. *L. mathura* has historically demonstrated food preferences, but these preferences depend on which hosts are available (Roonwal, 1979; Baranchikov et al., 1995). The selection of a location for egg deposition may also depend on the presence or density of other egg masses, host preference, and the extent of feeding that has already occurred on a host (Roonwal, 1979).

When the population density is high, parasitism by hymenopterans or infection by polyhedral viral disease may result in high mortality of larvae and pupae (Roonwal, 1979).

Damage

Lymantria mathura larvae are gregarious defoliators. The larvae are able to consume whole leaves and sometimes avoid tough veins in older foliage growth. Larvae may also feed on flowers and tender young shoots (Browne, 1968; Roonwal, 1979). Damage of this nature can result in decline in overall growth and development of host trees, a reduction in yield or total crop loss in fruit crops, or even tree death (Singh, 1954; Roonwal, 1979). This species has been known to defoliate apple orchards in Japan (Pogue and Schaefer, 2007).

Egg masses or larvae may also be evident on trees (reviewed in Rosovsky, 2001).

Pest Importance

Lymantria mathura is a major defoliator of deciduous trees in the Palearctic, primarily in eastern Asia from India to the Russian Far East (Roonwal, 1979; Baranchikov et al., 1995; reviewed in EPPO, 2005). Spurred by concerns surrounding *L. mathura*, the United States Department of Agriculture Animal and Plant Health Inspection Service, US Forest Service, and Russian counterparts have developed an early warning system to alert U.S. pest officials about periods of increased insect activity and prevent the introduction of this insect (Anon., 2001). U.S. officials are also alerted when New Zealand finds a Russian freighter to be infested with this insect (reviewed in USDA, 2001).

In India, *L. mathura* is an economically important forest pest, which defoliates *Shorea robusta* and several other deciduous forest and fruit tree species. Roonwal (1953, 1962, 1979) states that outbreaks are periodic, and prior to the worst epidemic of this pest on record in India during 1953, *L. mathura* was considered unimportant. The outbreak extended from the western sub-Himalayas to West Bengal, encompassing several adjacent forest divisions. In the Russian Far East, there has been only one reported outbreak in the Primorie region, where losses amounted to hundreds of hectares of deciduous forests (Baranchikov et al., 1995). Damage to chestnut resulted from an outbreak of *L. mathura* in areas of Kyonggi province, Korea (Lee and Lee, 1996).

Establishment of *L. mathura* in the United States could also adversely impact trade. This insect has been proposed as an A2 quarantine pest in Europe, a status reflecting its limited presence (EPPO, 2005). Potentially infested products within the United States could become the focus of domestic or international quarantines.

Risks associated with *L. mathura* have been evaluated previously. In the Exotic Forest Pest Information System, *L. mathura* was considered to pose a very high risk to North America forests relative to other forest pests and pathogens, and this assessment was given with a very high degree of certainty (Rosovsky, 2001).

Known Hosts

Lymantria mathura is a polyphagous pest of taxonomically diverse deciduous trees. *L. mathura* reportedly feeds on more than 45 genera in 24 families. Numerous accounts of preferential feeding are reported, but these reports are somewhat inconsistent (Roonwal, 1979; Baranchikov et al., 1995).

Main hosts

Roonwal (1979) states that the following are preferred host species:

Quercus leucotrichophora (=*Q. incana**) (Himalayan oak), *Q. serrata* (Konara oak), *Shorea robusta** (sal tree), *Syzygium cumini** (Java plum), *Terminalia arjuna* (arjuna), and *T. myriocarpa* (East Indian almond).

Other hosts

Abelicea spp., *Abies* spp. (fir), *Abies nephrolepis* (Manchurian fir)**, *Acrocarpus* spp., *Acrocarpus fraxinifolius** (pink cedar), *Alnus* pp. (alder), *Alstonia* spp. (alstonia), *Alstonia scholaris* (blackboard tree), *Anogeissus* spp. (anogeissus), *Anogeissus lalifolia* (dhaoda), *Ammora* spp., *Aphanamixis polystachya* (rayana), *Artocarpus lacucha* (monkey-jack tree), *Betula* spp. (birch), *Butea* spp. (butea), *Butea monosperma* (Bengal kino), *Carya* sp. (hickory), *Castanea* spp. (chestnut), *Castanea mollissima* (Chinese hairy chestnut), *Castanea sativa* (European chestnut), *Cedrela* spp. (cedrela), *Cleyera* spp. (cleyera), *Dimocarpus longan* (longan), *Duabanga* spp., *Duabanga grandiflora* (duabanga), *Elaeodendron* spp. (Ceylon tea), *Elaeodendron glaucum* (Ceylon tea), *Eugenia* spp.(stopper), *Fagus* spp. (beech), *Fagus grandifolia* (American beech)**, *Fagus sylvatica* (European beech)**, *Ficus benghalensis* (Indian banyan), *Fraxinus* spp. (ash), *Grewia sapinda*, *Haldina cordifolia* (haldu), *Hippophae rhamnoides* (seaberry)**, *Juglans* spp. (walnut), *Jugans mandshurica* (Manchurian walnut), *Larix* spp. (larch), *Liquidambar formosana* (Formosan sweetgum), *Litchi* spp. (lychee), *Litchi chinensis* (lychee), *Mallotus philipinensis* (kamala), *Malus* spp. (apple), *Malus mandshurica* (Manchurian crabapple), *Malus prunifolia* (Chinese apple)**, *Mangifera* spp. (mango), *M. indica** (mango), *Mellotus* spp., *Melia* spp. (melia), *Melia azedarach* (china berry tree), *Millettia pinnata* (pongame oil tree), *Morus alba* (white mulberry), *Neolamarckia cadamba* (kadam), *Pinus* spp. (pine), *Pinus koraiensis* (Korean pine)**, *Pongamia* spp., *Populus* spp. (cottonwood), *Prunus* spp. (plum), *Prunus cerasoides* (wild Himalayan cherry), *Pseudotsuga menziesii* (Douglas fir), *Pterygota alata* (Buddha's coconut), *Pyrus* spp. (pear), *Quercus* spp. (oak), *Quercus alba* (white oak)**, *Quercus acuta* (Japanese evergreen oak), *Quercus dentata* (Daimyo oak), *Quercus glauca* (ring-cup oak), *Quercus mongolica* (Mongolian oak), *Quercus prinus* (chestnut oak)**, *Quercus variabilis* (Chinese cork oak)**, *Rhus* spp. (sumac), *Rosa rugosa* (rugosa rose)**, *Salix* spp. (willow), *Salix fragilis* (crack willow)**, *Shorea* spp. (shorea), *Syzygium* spp. (syzygium), *Terminalia* spp. (tropical almond), *Terminalia belerica* (beleric), *Terminalia elliptica* (asna), *Tilia mandshurica* (Manchurian linden), *Terminalia pyrifolia*, *Toona ciliata* (Australian red-cedar), *Toxicodendron succedaneum* (Japanese waxtree), *Ulmus* spp. (elm), *Ulmus davidiana* (Japanese elm), *Zelkova* spp. (zelkova), *Zelkova serrata* (=*Z. acuminata*) (Japanese zelkova) (Wileman, 1918; Browne, 1968; Roonwal, 1979; Mohn, 1993; Zhang, 1994; Baranchikov et al., 1995; Wallner et al., 1995; Lee and Lee, 1996; Pucat and Watler, 1997; Zlotina et al., 1998; Gries et al., 1999; Rosovsky, 2001; Yurchenko and Turova, 2002; Funakoshi, 2004; Yamazaki and Sugiura, 2004; reviewed in Pogue and Schaefer, 2007).

*These were the most heavily defoliated trees in India (Roonwal, 1979).
**Experimental hosts (Baranchikov et al., 1995; Zlotina et al., 1998).

Pathogen or Associated Organisms Vectored

This species is not known to vector any pathogens or other associated organisms.

Known Distribution

Asia: Bangladesh, China, India, Japan, Kashmir, Korea, Kurile Islands, Myanmar, Nepal, Pakistan, Russia, Sri Lanka, Taiwan, Thailand, and Vietnam (Wileman, 1918; Browne, 1968; Lee and Lee, 1996; Pucat and Watler, 1997; Rosovsky, 2001; Pogue and Schaefer, 2007).

Pathway

This species has not been intercepted at United States ports of entry. However, specimens identified only to genus level have been intercepted 6 times, mostly on non-host material (AQAS, 2012; queried January 25, 2012).

This species would most likely be able to move through international trade similarly to *L. dispar* as females lay egg masses on non-host material when populations are high. *Lymantria mathura* has been found to be attracted to ship and port lighting in the Russian Far East (Rosovsky, 2001).

Gninenko and Gninenko (2002) proposed a scoring system to evaluate the relative propensity of different lymantriids to be moved by international shipping. These authors suggest that *L. mathura* is less likely than *L. dispar* or *L. monacha* to be moved by shipping, but it is more likely to be moved than 26 other species of Lymantriidae. Limited biological information about lymantriids of the Russian Far East, including *L. mathura*, complicates the assessment of risk (Gninenko and Gninenko, 2002).

Potential Distribution within the United States

In general, *L. mathura* occurs in cool, temperate to warm climates with variable seasonal rainfall and dry periods. The currently reported distribution of *L. mathura* suggests that the pest may be most closely associated with biomes characterized as: temperate broadleaf and mixed forests; temperate coniferous forests; tropical and subtropical dry broadleaf forests; and tropical and subtropical moist broadleaf forests.

Lymantria mathura has a moderately high risk of becoming established in most parts of the eastern United States. It also has a moderate risk of becoming established in on the West Coast as well as portions of the southwestern part of the United States.

Survey

CAPS-Approved Method*:

The CAPS-approved method is a trap and lure combination. The trap is a wing trap (Figure 6). The lure is effective for 84 days (12 weeks).

The wing trap is available in a plastic or paper version; either type may be used for this target. Either of the following Trap Product Names in the IPHIS Survey Supply Ordering System may be used:

1) Wing Trap Kit, Paper
2) Wing Trap Kit, Plastic

The Lure Product Name is "*Lymantria mathura* Lure".

Figure 6. Wing trap (Image courtesy of John Crowe, USDA-APHIS-PPQ).

The lure (a string dispenser) should be stapled to the inside of the upper half (lid) of the trap on the non-sticky area.

IMPORTANT: Do not place lures for two or more target species in a trap unless otherwise recommended.

Trap Spacing: When trapping for more than one species of moth, separate traps for different moth species by at least 20 meters (65 feet).

*For the most up-to-date methods for survey and identification, see Approved Methods on the CAPS Resource and Collaboration Site, at http://caps.ceris.purdue.edu/.

Survey Site Selection:

Traps should be placed in the immediate vicinity of host trees. Although *L. mathura* feeds on a variety of trees, they seem to prefer members of Fagaceae, like oaks (*Quercus* sp.) and particularly beech (*Fagus* sp.) (Lance, 2006).

Time of year to survey:

"Seasonal timing of flight for *L. mathura* in cooler areas will be roughly comparable to that of *L. dispar* or *L. monacha* [for *L. dispar*, flight occurs from May to June in very warm areas to September in colder climates]. This species, however, is reportedly bivoltine in warmer portions of its range (e.g., India), with adults present in the spring (e.g., April) and again in late summer. Presumably, bivoltinism could also occur in southern portions of the United States. Appearance of *L. mathura* should be distinct enough from other lymantriids to avoid confusion, unless trapped specimens are in poor condition" (Lance, 2006).

Literature-Based Methods:

Several tools are available to assist with surveys for *L. mathura*. Pheromone-baited traps are particularly useful for regional surveys while visual inspections are necessary for conveyances that may be bringing *L. mathura* into an area. Inspectors should look for egg masses on any products originating from infested areas. Egg masses may be deposited on logs, nursery stock, forest products, or sea containers (Pucat and Watler, 1997). Females prefer to deposit eggs on a rough surface (Roonwal, 1979).

Trapping: Sex pheromones for *L. mathura* have been identified and can be used for detection surveys. Early research (reviewed in Gries et al., 1999) indicated that males of *L. mathura* were attracted to *cis*-7,8-epoxy-2-methyloctadecane and 2-methyl-*Z*7-octadecene (Odell et al., 1992). Males also demonstrated electrophysiological responses to (*Z*3,*Z*6,*Z*9)-nonadecatriene and (9*S*,10*R*)-9,10-epoxy-*Z*3,*Z*6-nonadecadiene in extracts from abdominal tips of *L. mathura* females (Oliver et al., 1999). Subsequent research revealed that major sex pheromone components include a blend of (9*R*,10*S*)-*cis*-9,10-epoxy-*Z*3,*Z*6-nonadecadiene (named (+)-mathuralure) and (9*S*,10*R*)-*cis*-9,10-epoxy-*Z*3,*Z*6-nonadecadiene (named (-)-mathuralure) in a 1:4 ratio (Gries et al., 1999). Neither component is attractive alone (Gries et al., 1999). Khrimian et al. (2004) explain that the enantiomer (-)-mathuralure is equivalent to the compound identified by Oliver et al. (1999) and provide a detailed protocol for the synthesis of (+)-mathuralure and (-)-mathuralure in a 1:4 ratio. The pheromone is most effectively deployed using PVC-coated string dispensers with 64 µg pheromone per cm (Khrimian et al., 2004). Traps baited with (+)-disparlure will also attract male *L. mathura* (Odell et al., 1992).

Pheromone lures have been used with delta sticky traps (Gries et al., 1999) or 3.8 L milk carton traps (Odell et al., 1992). Traps are generally hung 1.5 to 2 m (~5 to 6.5 ft) above the ground (Odell et al., 1992; Gries et al., 1999). To improve diffusion of the pheromone, traps have been suspended 0.6 m (2 ft) from the trunk of a tree on wooden stakes nailed to the tree (Odell et al., 1992). For research purposes, traps were placed 20 to 25 m apart (65.6 to 82 ft) (Gries et al., 1999), but standard protocols for detection of gypsy moth in uninfested states should be appropriate.

Not recommended: Wallner et al. (1995) evaluated several light sources (e.g., diffuse coated sodium lamps; phosphor-coated, high-pressure mercury lamps; and blacklight lamps) and found that *L. mathura* were most attracted to blacklight lamps. However, light traps are generally considered ineffective and impractical for regional monitoring of this insect (reviewed in CAB, 2004).

Key Diagnostics/Identification

CAPS-Approved Method*:

Morphological. Adults and late instar larvae are easily identified.

*For the most up-to-date methods for survey and identification, see Approved Methods on the CAPS Resource and Collaboration Site, at http://caps.ceris.purdue.edu/.

Easily Confused Pests

Lymantria mathura is very similar to *L. flavida*. "The male forewing shape is more pointed in *L. mathura*…and more rounded in *L. flavida*…veins are white in *L. mathura* and yellow in *L. flavida*; and the hindwing fringe is white in *L. mathura* and yellow in *L. flavida*. The female has a narrow V-shaped reniform spot at the end of the discal cell in the forewing in *L. mathura*; this spot is much wider in *L. flavida*. The pink on the dorsal surface in *L. mathura* extends approximately 2/3 the length of the abdomen, whereas in *L. flavida* it extends to about half the abdominal length" (Pogue and Schaefer, 2007).

Commonly Encountered Non-targets

According to Lance (2006) there are a number of geometrids that respond to compounds found in the *L. mathura* lure. Two species known to respond to the primary component of the *L. mathura* pheromone include *Epirrhoe sperryi* (small argent and sable) and *Prochoerodes transversata* (large maple spanworm moth) (Wong et al., 1985).

Gypsy moths have also been captured in pheromone baited traps for *L. mathura* in the Russian Far East, but it was unclear if this was due to cross-attraction or cross-contamination with disparlure due to small catch numbers (Lance, 2006).

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This datasheet was developed by USDA-APHIS-PPQ-CPHST staff. This pest is included as a target in the Asian Defoliator Survey. Additional information can be found in the **Asian Defoliator Pathway-based National Survey Guidelines** http://caps.ceris.purdue.edu/survey/asian-defoliator/reference/2013]. Cite this document as:

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