

New Moth

Host: Euonymus.

Coll: Adria Bordas and Eric Day, Fairfax Co., VA May 1, 2003

Lepidoptera: Zygaenidae, Genus Pryeria sinica,

Det. by John Brown.

Damage



Larvae



Moth



Mothwing



Biology Statement by John Brown

From: John W. Brown

Date: 6 May 2003

Subject: *Pryeria sinica* Moore (Lepidoptera: Zygaenidae) newly recorded for the United States.

In April and May of both 2001 and 2002, a homeowner in the City of Fairfax, Fairfax County, Virginia, noticed a large infestation of larvae on her ornamental *Euonymus* (Celastraceae); the larvae were causing significant defoliation of the plants. In May 2002, several larval specimens were sent to the Insect Identification Lab, Department of Entomology, Virginia Tech University, Blacksburg, Virginia for identification. The entomologist there (Eric Day) reared the larvae to adults, which emerged in November 2002 (n = 3). Additional adults (n = 4) were collected at the Fairfax site in December 2002 and submitted to the Insect Identification Lab. Because Eric was unable to identify the family of these unusual moths, he forwarded the adults to SEL in March 2003. Based on the available literature, comparison with specimens in the collection of the National Museum of Natural History, and consultation with Dr. Marc Epstein, the specimens were identified as *Pryeria sinica* Moore (Lepidoptera: Zygaenidae), which previously is unreported from the United States.

By coincidence, one of my neighbors in Fairfax, Virginia brought to me a live adult of this species last year from her yard (indicating that they were common). Because I did not recognize it, I stuck it in my freezer for future reference. I recently retrieved this specimen and found it to be conspecific with the others. The distance between the known site of infestation and my neighborhood is about 1.5 miles. Given the extremely limited dispersal ability of this species (based on its slow fluttering flight), the area of infestation certainly must extend beyond the immediate vicinity of the original find.

Visit to the original site on 1 May (by Eric Day) and 4 May 2003 (by John Brown) revealed the presence of considerable new damage and a larval populations estimated to be in excess of 200 individuals.

SYNONYMS

Pryeria sinica Moore, 1877, Ann. Mag. Nat. Hist. (4) 20: 86.

Neopryeria jezoensis Matsumura, 1927, J. Coll. Agric. Hokkaido Imp. Univ. 19: 75.

The genus name is infrequently misspelled as "Preyeria."

SYSTEMATICS

Pryeria is a monotypic genus that is moderately divergent from other zygaenids in several superficial and morphological features. Although formerly associated with *Phaуда* Walker (Inoue 1982), its assignment to Zygaeninae was convincingly demonstrated by Alberti (1954) and Naumann (1987, 1988). The genus represents the most primitive lineage of the subfamily (Naumann 1987).

DISTRIBUTION

Pryeria sinica is a Palearctic species that occurs from Russia (Far East) and China through Korea, Japan, and Taiwan (Yen & Horie 1997). The holotype of *P. sinica*, deposited in The Natural History Museum, London, is from China. The holotype of *N. jezoensis*, the only synonym of *P. sinica*, is from Japan. In Taiwan the species has been recorded primarily in the subalpine zone (Yen & Horie 1997).

HOSTS

The species appears to be restricted to the plant family Celastraceae, which contains acyanogenic compounds (Epstein et al. 1998). Two genera have been reported as host plants throughout the geographic range of *P. sinica* - *Celastrus* and *Euonymus*. Yen and Horie (1997) list specimens reared from *Celastrus punctatus*, *Euonymus sieboldianus*, and *Euonymus japonica*. They indicate that the geographical range of *Celastrus punctatus*, the documented host plant in Taiwan, extends to South China and Japan, which agrees well with the distribution of *P. sinica*. Sato (1969) reported rearing the larvae on *Euonymus sieboldianus*, *Euonymus alatus* f. *ciliatidentatus* and *Celastrus orbicularis*. Yen and Horie (1997) were unsuccessful in transferring larvae from *Celastrus* to *Euonymus* in the laboratory, suggesting the possibility of a degree of geographic host specialization.

The origin of the Fairfax population of *Pryeria sinica* is unknown, but introduction via nursery stock (*Euonymus* from the Far East seems to be the most likely pathway). However, neither the homeowner nor adjacent neighbors indicated that they recently acquired new plant material of *Euonymus*.

ECONOMIC IMPORTANCE

This species has not been reported previously as a pest. However, in the U.S. numerous species of *Euonymus* are used in ornamental landscaping. If this species is a "generalist" on this genus, it has the potential to become an important nuisance pest of ornamentals, at least in the northeastern U.S. Based on the local success of the species - surviving the winter and producing considerable progeny - and the degree of damage at the site of the infestation, control measures likely would be required in urban situations where *Euonymus* is used as an ornamental.

LIFE CYCLE

The life cycle of *P. sinica* has been studied in detail by several workers (e.g., Ishii et al. 1983, Shiotsu & Arakawa 1982, Shiotsu & Tsubaki 1986, Tamura 1981, Tamura & Ouchi 1977, Tsubaki 1981, Tsubaki & Shiotsu 1982, Wipking & Naumann 1992). Eggs are laid in clusters on the stems of the host plant in November and December. They are ovoid, flattened, and covered with scales from the female abdominal hair tufts. At 10-

18°C, the egg stage lasts about 80 days. Larvae hatch in March and April and exhibit a group-feeding behavior (Tsubaki 1981, Tsubaki & Shiotsu 1982). They may be found on the upper or under surface of the leaves of the food plant. They readily drop on a line of silk if disturbed. Pupation occurs in May, with an obligate pupal diapause that lasts until November, when adults emerge. Adults are diurnal, with a slow, fluttering flight generally about 1-5 m above the ground. Adults are active from about 0900-1500 hours. They typically mate during the daytime and remain coupled for about 20 hours. Oviposition takes place during the day, usually within a few hours after copulation.

The species is attacked by a single parasitoid - *Agrothereutes minousubae* (Hymenoptera: Ichneumonidae) (Shiotsu & Arakawa 1982, Shiotsu & Tsubaki 1986). Based on laboratory studies, larvae of *P. sinica* produce an (E)-phytol that induces predation by the generalist predatory stinkbug, *Eocanthecona furcellata* (Heteroptera: Pentatomidae) (Yasuda 1998).

DESCRIPTION

The adult is a medium-sized wasp-mimic, with a forewing length of 10-13 mm in the male and 12-14 mm in the female. The wings are transparent with a few scattered black scales and a small, diffuse patch of yellow-orange scales in the basal portion of the forewing. Antennae are bipectinate in males, non-pectinate but clubbed in females. The distinct forewing coloration, highly reduced proboscis, and tufts of orange scales at the end of the abdomen distinguish this species from all other Zygaenidae. Illustrations of the adult can be found in Yen and Horie (1997), Epstein et al. (1998), and on the web (http://szmn.eco.nsc.ru/picts/Heterocera/Zygaenidae/Pryeria_sinica.htm).

The mature larva is 15-22 mm in length. The color is assumed to be aposematic: a white ground color with dorsal, subdorsal, medial, and submedial black longitudinal stripes (comprised of adjacent spots), and a yellow venter. Chaetotaxy is described in detail by Yen and Horie (1997); illustrations of the larva can be found in Nakajima (1987) and Yen and Horie (1997). The larva will key to Zygaenidae in Stehr (1987), but lack the prominent verrucae described for the family in that work.

The pupa is 8-10 mm in length, 4.0-4.5 mm in width. It is stout and dorsoventrally compressed, and enclosed in a tough greyish white, flattened, semispherical cocoon. Coloration of the pupa is similar to that of the larva with dorsal, subdorsal, submedial, and medial black longitudinal stripes (see Yen and Horie 1997 for illustrations).

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