

LepIntercept

An identification resource for intercepted Lepidoptera larvae

[Keys](#)[About](#)[Fact Sheets](#)[Glossary](#)[Larval Morphology](#)[References](#)

[<< Previous fact sheet](#) [Next fact sheet >>](#)

PLUTELLIDAE - *Plutella xylostella* (Linnaeus) *Non-Rep*

Taxonomy

Yponomeutoidea: Plutellidae: Plutellinae: *Plutella xylostella* (Linnaeus)

Common names: diamondback moth

Synonyms: [too many to list; Moriuti (1986) details the taxonomy]; the diamondback moth was previously known as *Plutella maculipennis*.

Larval diagnosis (Summary)

- Seven setae on A9
- SD1 hairlike on A9
- Abdominal L2 and L1 setae widely spaced
- Abdominal crochets in a circle
- Found on Brassicaceae and Capparaceae

Host/origin information

Larvae of *P. xylostella* are frequently intercepted on members of the Brassicaceae or Capparaceae from a number of countries. The most common origin/host combinations are listed here:

Origin	Host(s)
Canada	<i>Brassica</i>
China	<i>Brassica</i>
Colombia	<i>Aster, Matthiola, Solidago</i>
Ecuador	<i>Matthiola</i>
Mexico	<i>Brassica, Matthiola</i>
Netherlands	<i>Brassica</i>
Peru	<i>Brassica, Lactuca</i>

Recorded distribution

A native of the Mediterranean region, *P. xylostella* has spread to every continent (except Antarctica) (Hill 1975).

Identification authority (Summary)

Because *P. xylostella* is cosmopolitan, origin provides no clues. However, the host is helpful and identifications of the diamondback moth should be restricted to larvae associated with members of the Brassicaceae or Capparaceae. Similar species make species-level identification difficult in several regions; see the Detailed Information tab for details.

Pest characterization

(Based on Cavey 2001, Hill 1975)

- Taxonomy: **High**. Species identification is often possible.
- Distribution: **Low**. *Plutella xylostella* is present in the U.S.
- Potential Impact: **High**. *Plutella xylostella* is a pest species.

This ranking characterizes *P. xylostella* as not quarantine significant for the U.S.

Larval diagnosis (Detailed)

According to Moriuti (1977: 29), larvae of the Plutellinae have the following characters: V1 of the head microscopic, V1 of the meso- and metathorax on the coxa, prolegs at least as long as broad, and L2 on its own pinaculum on A9.



Fig. 1: Late instar, lateral view



Fig. 2: A9



Fig. 3: Proleg



Fig. 4: Crochets



Fig. 5: Head



Fig. 6: Hypo. complex



Fig. 7: Mandible

The larva of the diamondback moth, *Plutella xylostella* (= *maculipennis*) (Linnaeus) was at least partially described by Ripper (1928), Jayewickreme (1940), Werner (1958), Peterson (1962), Moriuti (1977, 1986), and Stehr (1987). Being a cosmopolitan species, it was included in several keys to intercepted organisms and crucifer pests, for example, Habeck and Workman (unpublished), Emmet (1980), Weisman (1986), and Schnitzler et al. (2011).

The caterpillar of *P. xylostella* has seven setae on A9. D1 and D2 are on the same or separate pinacula and SD1 is hairlike (Weisman 1986, Moriuti 1977). There are only two L setae and L2 is closer to SD1 than L1 (photograph in Schnitzler et al. 2011: 224). Abdominal prolegs of the diamondback moth are longer than broad with a few crochets in a circle (Weisman 1986, Schnitzler et al. 2011). The prothoracic and anal shields of *P. xylostella* have a characteristic pattern of spotting and the setae are dark and thick (Emmet 1980). Unfortunately, yponomeutoid larvae are poorly known and it is unclear how many of these characters are distinctive for the world fauna. Kyrki (1984) listed feeding on Brassicaceae and Capparidaceae (=Capparaceae) as an apomorphy of the "*Plutella*" group. Moriuti (1986) noted pore Afa is absent in *P. xylostella*; this is significant.

When compared to *Prays*, another genus of pests, Weisman (1986) considered the setae of A9 to be widely spaced in *P. xylostella*. He illustrated D1 and D2 of A9 on separate pinacula. This contrasts with Moriuti (1977: fig. 504K) who showed the D setae of A9 in *P. xylostella* were fused on one pinaculum. Weisman (1986: fig. 200) and Schnitzler et al. (2011: fig. 222) illustrated the anal proleg with crochets in a circle; this is incorrect, both illustrations refer to the abdominal prolegs. The anal prolegs of *P. xylostella* are in a semicircle (Moriuti 1977).

Identification authority (Detailed)

Moriuti (1986) discussed the recognition of *P. xylostella* in the Old World. In southeast Asia and Australia, *Leuoperna sera* (previously placed in *Caunaca* or *Rhigognostis*) is also found on crucifers and could be confused with *P. xylostella*. The mandible of *L. sera* has a small inner tooth, pore Afa is present, and the abdominal crochets are in a mesal penellipse. *Plutella xylostella* has no inner tooth, lacks pore Afa, and the crochets are in a complete circle.

Plutella antiphona is native to New Zealand and has a larva associated with crucifers (Dugdale 1973). Therefore, interceptions from New Zealand are best left at the genus level.

In the United States and Europe, *Plutella porrectella* is similar to *P. xylostella* but the former usually feeds on *Hesperis* instead of economically important plants (Smith and Sears 1984, Moriuti 1986). There are no sibling species in Latin America. Interceptions from crops can be identified as *P. xylostella*, but larvae from other hosts should be examined very carefully.

Because *P. xylostella* is cosmopolitan, origin provides no clues. However the host is helpful, identifications of the diamondback moth should be restricted to larvae associated with members of the Brassicaceae or Capparaceae. First instar larvae of *P. xylostella* are leaf miners (Jayewickreme 1940) and are difficult to identify.

Origin records

Plutella xylostella has been intercepted from the following locations:

Argentina, Australia, Bahrain, Bolivia, Brazil, Canada, Chile, China, Colombia, Costa Rica, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, France, Germany, Greece, Guatemala, Guyana, Haiti, Hawaii, Honduras, India, Iran, Israel, Italy, Jamaica, Japan, Kuwait, Lebanon, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Nigeria, Palestinian Territory, Panama, Peru, Philippines, Poland, Portugal, Saudi Arabia, Singapore, South Africa, South Korea, Spain, St. Kitts and Nevis, St. Vincent and the Grenadines, Switzerland, Taiwan, Trinidad and Tobago, United Arab Emirates, Venezuela, Viet Nam, Zimbabwe

Host records

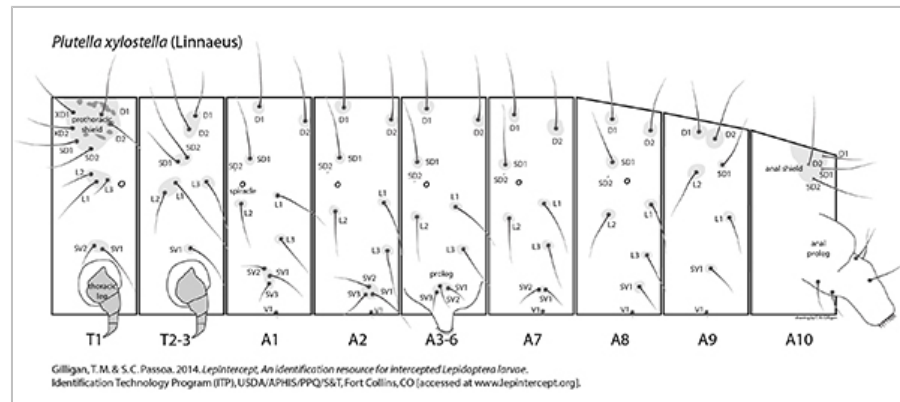
Plutella xylostella has been intercepted on the following hosts:

Abelmoschus esculentus, *Achillea millefolium*, *Achillea* sp., *Aconitum* sp., *Agapanthus* sp., *Allium fistulosum*, *Allium porrum*, *Alstroemeria* sp., *Amaranthus* sp., *Ammi majus*, *Ananas comosus*, *Ananas* sp., *Anethum graveolens*, *Antirrhinum majus*, *Antirrhinum* sp., *Apium graveolens*, *Apium graveolens* var. *dulce*, *Apium* sp., *Artemisia dracunculus*, *Asparagus officinalis*, *Asparagus* sp., *Aster* sp., *Astilbe* sp., *Bambusa* sp., *Beta vulgaris* var. *vulgaris*, *Brassaia* sp., *Brassia* sp., *Brassica campestris*, *Brassica chinensis*, *Brassica juncea*, *Brassica napus*, *Brassica oleracea*, *Brassica oleracea* var. *acephala*, *Brassica oleracea* var. *alboglabra*, *Brassica oleracea* var. *botrytis*, *Brassica oleracea* var. *capitata*, *Brassica oleracea* var. *gemmifera*, *Brassica oleracea* var. *italica*, *Brassica pekinensis*, *Brassica rapa*, *Brassica rapa* ssp. *chinensis*, *Brassica rapa* ssp. *pekinensis*, *Brassica rapa* var. *parachinensis*, *Brassica* sp., *Brassicaceae*, *Bromelia* sp., *Calathea crotalifera*, *Campanula* sp., *Capsicum annuum*, *Capsicum* sp., *Carthamus* sp., *Celosia* sp., *Chrysanthemum* sp., *Cicer arietinum*, *Cichorium* sp., *Coccinea grandis*, *Cocculus* sp., *Colocasia esculenta*, *Coriandrum sativum*, *Cucumis sativus*, *Cucurbita* sp., *Cymbidium* sp., *Daucus* sp., *Delphinium* sp., *Dianthus barbatus*, *Dianthus caryophyllus*, *Dianthus* sp., *Dracaena deremensis*, *Dracaena* sp., *Epipremnum* sp., *Eruca sativa*, *Eruca* sp., *Eruca vesicaria*, *Eryngium foetidum*, *Eryngium* sp., *Erysimum cheiri*, *Erysimum* sp., *Fernaldia pandurata*, *Freesia* sp., *Gaultheria shallon*, *Gerbera* sp., *Gladiolus* sp., *Godethia* sp., *Gypsophila* sp., *Helianthus annuus*, *Helianthus* sp., *Hydrangea* sp., *Hypericum* sp., *Iris* sp., *Lactuca sativa*, *Lactuca* sp., *Laurus nobilis*, *Leucadendron* sp., *Leucospermum* sp., *Liatris* sp., *Lilium* sp., *Limonium sinuatum*, *Limonium* sp., *Lisianthus* sp., *Luffa* sp., *Magnoliophyta* sp., *Malva neglecta*, *Maranta* sp., *Matthiola* sp., *Matthiola incana*, *Matthiola* sp., *Melaleuca* sp., *Mentha* sp., *Moluccella* sp., *Molucella* sp., *Musa* sp., *Nasturtium officinale*, *Ocimum basilicum*, *Odocoileus virginianus*, *Olea europaea*, *Olea* sp., *Opuntia* sp., *Orchidaceae*, *Origanum majorana*, *Origanum* sp., *Origanum vulgare*, *Ornithogalum* sp., *Oryza sativa*, *Petroselinum* sp., *Phaseolus* sp., *Phlox* sp., *Phormium* sp., *Pisum sativum*, *Pithecellobium dulce*, *Prunus persica*, *Punica granatum*, *Ranunculus* sp., *Raphanus sativus*, *Raphanus* sp., *Rosa* sp., *Rosmarinus officinalis*, *Rubus* sp., *Rumex* sp., *Rumohra* sp., *Ruscus* sp., *Salvia officinalis*, *Salvia* sp., *Sechium edule*, *Solidago* sp.,

Spinacia oleracea, *Spinacia* sp., *Statice* sp., *Stromanthe* sp., *Syringa* sp., *Thlaspi arvense*, *Thymus* sp., *Thymus vulgaris*, *Trachelium* sp., *Treculia africana*, *Trigonella foenum-graecum*, *Vaccinium* sp., *Veronica* sp., *Wasabia japonica*, *Xanthosoma brasiliense*, *Xanthosoma sagittifolium*, *Zea mays*

Hosts listed here that are not members of the Brassicaceae or Capparaceae need confirmation.

Setal map



Plutella xylostella setal map



[Click here to download a full-size printable PDF of this larval setal map](#)

LepIntercept - An identification resource for intercepted Lepidoptera larvae by Todd M. Gilligan and Steven C. Passoa

Identification Technology Program (ITP), Fort Collins, CO. Last updated February 2014.

