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The cabbage moth, *Mamestra brassicae* (Linnaeus), is a highly polyphagous pest in Europe and Asia. Larvae are reported to feed on more than 77 plant species in 22 families. Most larval hosts are *Brassica* spp. but other known hosts include apple, beetroot, onion, potato, rhubarb, tomato, and tobacco. Large infestations can cause significant product loss, although this is usually due to secondary fungal and bacterial infections, and aesthetic damage resulting from large amounts of frass production.

Mamestra brassicae is a member of the Noctuidae (subfamily Hadeninae), the family of moths (Lepidoptera) with the largest number of total species and also including many well-known pest species. In North America there are approximately 2,500 species of noctuids, which are often referred to as “owlet moths,” “cutworms,” or “miller moths.” Most noctuids are medium-sized with relatively drab brown or gray coloration, although they can range in size from very small to very large and some species are brightly colored. *Mamestra brassicae* is a common species throughout Northern Africa, Asia, and most of Europe and Britain, becoming less common further north. There are a few records of the cabbage moth from Hawaii, but none from the Americas, although the predicted range for *M. brassicae* based on habitat suitability includes eight USDA plant hardiness zones (3-10).

The cabbage moth has a forewing length of 14-22 mm and a wing pattern similar to many other noctuid species in several genera, particularly those in the subfamily Hadeninae. Typical of the Hadeninae moths, they are recognized by the “hair” on the surface of the eyes. Forewings are brown and mottled and have a reniform stigma with a prominent white outline, and a deep but faint “W” in the subterminal line. There is relatively low variability in forewing coloration between individuals. Other important general features include the prominent brown or black slightly curved tibial spur on the forelegs and thoracic dorsal scale tufts. Examination of dissected male genitalia is needed to positively distinguish *M. brassicae* from *M. configurata* and *M. curialis* which are both native to North America.

This aid is designed to assist in the sorting and screening *M. brassicae* suspect adults collected from CAPS bucket traps in the continental United States. It covers basic sorting of traps and first level screening, all based on morphological characters. Basic knowledge of adult Lepidoptera morphology is necessary to screen for *M. brassicae* suspects.



Fig. 1. *Mamestra brassicae* adult resting (photo by Heidrun Melzer, www.lepiforum.de).



Fig. 2. *Mamestra brassicae* adult resting (photo by S. van der Moor, www.ipm.msu.edu).

Mamestra brassicae pheromone traps should be sorted initially for the presence of moths of the appropriate size, color, and shape. Traps that contain moths meeting all of the following requirements should be moved to Level 1 Screening (Page 3):

- 1) Moths have a forewing length of 14-22mm (0.5-0.9 inches) (Fig. 3).
- 2) Moths have an overall shape that is similar to the outline depicted in Fig. 3, but be aware that moths sometimes do not die in a natural position when captured in traps.
- 3) Moth forewings are a mottled brownish-gray (Fig. 4).
- 4) Moth antennae are filiform (threadlike - Figs. 3-4) and not feathery or plumose.

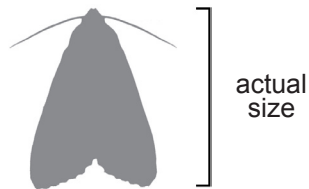


Fig. 3. Resting position of *Mamestra brassicae* adult.



Fig. 4. Wing pattern and coloration of typical *M. brassicae* adults.

Level 1 Screening

Cabbage Moth *Mamestra brassicae* (Linnaeus)

Suspect adults should be pinned and properly labeled. A combination of wing, eye, and tibial characters are used to identify suspect specimens for Level 1 screening.

Hairy Eyes

Moths in the subfamily Hadeninae have “hairs” on the compound eyes (Fig. 5). These hairs are easily observed under low magnification.

Forewing Coloration and Pattern

Most individuals of *M. brassicae* have mottled gray-brown forewings with markings consisting of two primary elements: a basal “orbicular spot” and a discal “reniform spot.” In *M. brassicae* the orbicular spot is round with a blackish margin while the conspicuous reniform spot is kidney shaped and encircled by white scales. Similar markings are found in many other species of noctuids. Also present is a thin white subterminal line that forms a wide faint “W”, and a series of black spots along the lateral margin (Fig. 6.)

Foretibial Spur

Typical of *Mamestra* spp. is a large, dark, curved spine on the foretibia that is easily seen under low magnification (Fig. 7).

The following is a summary of suspect *M. brassicae* adult characters:

- 1) Medium sized noctuid moth
- 2) “Hairy” eyes
- 3) Grayish-brown forewings
- 4) Conspicuous reniform spot ringed in white scales
- 5) Large foretibial spur

Suspect *M. brassicae* specimens should be sent forward for identification. Specimens must be pinned, properly labeled, and carefully packed to avoid damage during shipping.



Fig. 5. “Hairy” eyes characteristic of Hadeninae moths.

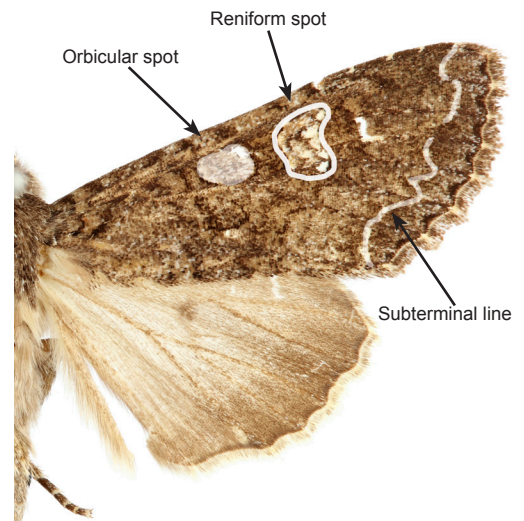


Fig. 6. Typical forewing pattern.

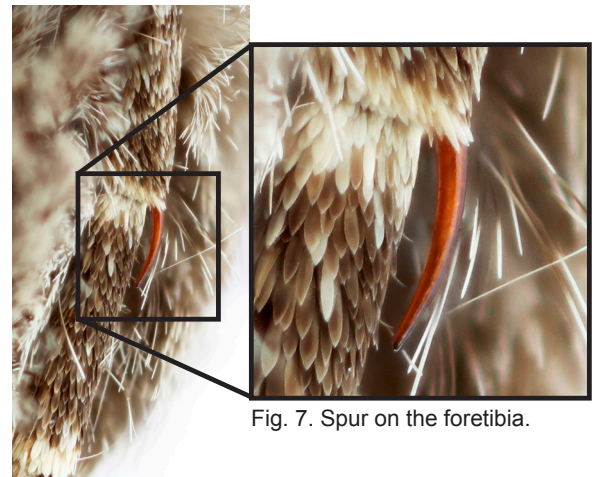


Fig. 7. Spur on the foretibia.



Fig. 8: *Amphipoea americana**



Fig. 9: *Amphipoea velata**



Fig. 10: *Feltia jaculifera**



Fig. 11: *Orthodes crenulata**



Fig. 12: *Abrostola urentis**



Fig. 13: *Anarta trifolii**



Fig. 14: *Anarta trifolii**



Fig. 15: *Mythimna oxygala**



Fig. 16: *Mamestra configurata*



Fig. 17: *Mamestra curialis*



Fig. 18: *Melanchra adjuncta*



Fig. 19: *Melanchra adjuncta*



Fig. 20: *Orthodes detracta**



Fig. 21: *Papestra brenda*



Fig. 22: *Polia imbrifera**



Fig. 23: *Polia nimbosa**



Fig. 24: *Spiramater lutra*

A sampling of North American non-targets (Figs. 8-24). Names with an * denote species that were collected in cabbage moth sticky traps between 1987 and 1992. In general, non-targets expected to be encountered in *M. brassicae* pheromone traps include other Hadeninae along with other noctuids. Note that some of the above species have not been verified to be attracted to *M. brassicae* traps and that non-targets encountered during CAPS surveys will vary by region. Non-target data were obtained from five sources: the Exotic Pest Detection (EPD) Manual; J. Knodel's (1987) letter to OTIS; West Virginia's 1987 results (J. Messineo, T. Sutton); Marc Epstein's 1987 report; and the results of the 1992 survey performed in the Reynoldsburg Lab (see Passoa 1993).

Key to Sort and Screen *Mamestra brassicae* Suspects in the United States

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|-----|--|------------------------------------|
| 1. | Forewings 14-22mm; overall shape is typical for a noctuid (Fig. 3); antennae filiform; and forewings are a mix of brown, gray, white and black (Fig. 4) | 2 |
| 1'. | Forewing length less than or larger than 14-22 mm; overall shape not typically noctuid; antennae feathery or plumose; or forewing color not brown, gray, white and black | Not <i>M. brassicae</i> |
| 2. | Eyes "hairy" (Fig. 5) | 3 |
| 2'. | Eyes not "hairy" (naked) | Not <i>M. brassicae</i> |
| 3. | Foreleg tibia with spur (Fig. 7) | 4 |
| 3'. | Foreleg tibia lacking spur | Not <i>M. brassicae</i> |
| 4. | Forewings grayish brown with a prominent reniform spot highlighted in white; black spots along the lateral margin and a broken white subterminal line with a faint deep "W" (Fig. 6) | <i>M. brassicae suspect</i> |
| 4'. | Forewings not grayish-brown or lacking prominent reniform spots, black spots along lateral margin and broken white subterminal line with faint deep "W" | Not <i>M. brassicae</i> |

Citation

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References for more information on *M. brassicae* and non-targets

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Acknowledgments

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