IDENTITY OF MOMP Ha SEXSTREGElA (BRAUN), WITH TWO NEW NEARCTIC SPECIES (LEPIDOPTERA: MOMPHIDAE)

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ABSTRACT.—We resolve a potentially confusing species-level problem involving Momp ha sexstrigella (Braun) and two undescribed Momp ha species that are externally similar to M. sexstrigella. The new western North American moths are described as Momp ha achlyognoma n. sp. (California) and Momp ha cleidarotyopa n. sp. (Arizona); we provide illustrations and diagnoses for separating the three. We also reassign Momp ha complexa Svensson as a junior synonym of M. sexstrigella.

SAMENVATTING.—Er wordt een oplossing geleverd voor een mogelijk verwarrend soortenprobleem betreffende Momp ha sexstrigella (Braun); twee nieuwe soorten die uiterlijk gelijken op M. sexstrigella worden beschreven: Momp ha achlyognoma sp. n. (California) en Momp ha cleidarotyopa sp. n. (Arizona). Illustraties en diagnoses om de drie soorten te onderscheiden worden gegeven. Ook wordt Momp ha complexa Svensson als junior synoniem van M. sexstrigella aangewezen.

KEYWORDS: Arizona, biology, California, Colorado, distribution, Europe, Finland, hostplants, Momp ha achlyognoma n. sp., Momp ha cleidarotyopa n. sp., Montana, New Mexico, North America, Onagraceae, Oregon, Russia, Sweden, synonymy, taxonomy, USA, Washington.

Momp ha sexstrigella (Braun, 1921) was described from specimens reared from leaf mines on Chamaenerion angustifolium (Linnaeus) Scopoli (Onagraceae) in Montana, USA. During the course of our study of North American Momp haedae preparatory to our covering the family for the series, Moths of America North of Mexico, we became aware of two M. sexstrigella-like species: one was collected at light in Arizona, USA, the other was reared from larvae feeding on Epilobium brachycarpum Presl (Onagraceae) in California, USA. We determined both species to be distinct from M. sexstrigella (by comparison with the holotype), and both were undescribed. Dissection of several specimens identified as M. sexstrigella revealed that the series contained both M. sexstrigella and the California species. Considering that superficial similarity among these species has led to misidentification of M. "sexstrigella" in collections, and because the present nomenclatural confusion will affect western USA microlepidoptera checklists (at least one of which we know to be in progress), we submit the following information to clarify the identities of these three moths and to provide names for two new species.

Momp ha sexstrigella (Braun)
(Fig. 1, 4, 7)

Redescription.—Sexes similar. Forewing length 4.5-5.0mm. Head. Frons ochreous white with copper reflection toward clypeus; vertex shining gray with irrorated dark gray anteriorly, shining blackish brown posteriorly; collar shining dark grayish brown; labial palpus light gray, first segment very short, second segment more than 1.5x as long as third, both irrorated dark gray; antenna with scape shining dark brown dorsally, light gray ventrally; remainder of antenna shining dark gray. Thorax. Shining blackish brown, lighter posteriorly; legs blackish brown, foreleg with white apical band on tibia, and with white apical bands on first, second, and fourth tarsal segments; middle leg with white subbasal and medial streaks on tibia, and with white apical bands on first four tarsal segments; spurs dark gray basally, white apically. Forewing shining leaden gray, strongly irrorated blackish, especially at base; a white costal spot at 0.75 wing length, an orange spot below fold at 0.20; two tufts of raised blackish scales, the inner on fold before 0.50, the outer on posterior margin opposite the white costal spot; a small orange subcostal spot just beyond the inner scale tuft, and a similar tuft, larger and very indistinct, before the white costal spot; apical area orange brown, divided and outwardly edged by dark brown streaks; four to six white spots around apex, sometimes a small white spot on inner edge of outer scale tuft; two distinct cilia lines, cilia shining leaden gray around apex, ochreous gray posteriorly. Hindwing shining light gray, cilia ochreous gray. Underside of forewing shining grayish brown with white costal and apical spots indistinctly visible, cilia dark brown around apex; hindwing shining brownish gray in anterior half, shining gray in posterior half. Abdomen. Shining gray dorsally, segments with brown spots anteriorly; shining dark gray ventrally, segments with pale bands posteriorly; genital tuft ochreous white.

Male genitalia (Fig. 4). Cucullus with widest part subbasally, gradually tapering distally, apex rounded; sacculus as long as cucullus, rather abruptly curving to a blunt and curved apex, dorsal margin heavily sclerotized from base to 0.67, apically bifurcate; uncus slender and pointed; transtilla membranous, apparently absent; aedeagus slender with a large hook-shaped cornutus and several minute spines; juxta lobes long and pointed.
Female genitalia (Fig. 7). Seventh sternite rather heavily sclerotized, rugose laterally, posterior margin pronouncedly concave on either side of ostium bursae so that the lateral margins appear to be produced posteriorly; stigmata of two tapering lobes, united posteriorly; ostium bursae slightly bottle-shaped; posterior half of ductus bursae bottle-shaped and sclerotized with an unsclerotized band in widest part, anterior half unsclerotized, narrowing towards the corpus bursae and with a wide inception of the ductus seminalis at 0.33; corpus bursae with two sickle-shaped sigmas.

Material examined.— Holotype ♂: bears the following five labels: (1) "Glacier Nat. Pk/iss. viii. 14.20 Mont./Annette F. Braun" (printed, with issue date hand written); (2) "B.1056" (hand written); (3) "TYPE/collection of Annette F. Braun" (red, printed); (4) "Psacaphora/sexstrigella/Type Braun" (hand written); (5) "Collection of /THE ACADEMY OF/NATURAL SCIENCES/of Philadelphia (ANSP)" (printed); cleared abdomen in glycerin vial on specimen pin (ANSP).


Diagnosis.— Differs from Mompha achlyognoma (described below) in the more somber color of the forewing, in which the light-yellow tornal spot is absent and the orange spot below fold at 0.20 does not reach the posterior margin; forewing of Mompha cleidarotrypa (described below) differs from that of both other species by the white costal spot at 0.50 and by the strong coppery reflections. In male genitalia of M. sexstrigella, the transtilla is apparently absent and there is a heavily-sclerotized bifurcate projection on the dorsal margin of the sacculus; in female genitalia of M. sexstrigella, posterior margin of seventh sternite is concave, and the ductus bursae is bottle-shaped in its posterior half. With exception of the concave seventh sternite, these characters separate M. sexstrigella from M. cleidarotrypa.

Biology.— The larva of M. sexstrigella mines leaves of Chamaenerion angustifolium (Onagraceae) in August (Europe and USA); the mine begins as a gallery, ends as a blotch; pupation occurs within the mine. Probably univoltine.

Distribution.— Known from the western USA and from northern Europe. The host plant is native to both of these localities; therefore, M. sexstrigella appears to be a Holarctic species.

Remarks.— Mompha complexa was described from specimens collected in Savolaks, Imatra, Finland; in the description, it was also listed from California and Montana, USA. Genitalia of a female paratype of M. complexa match the holotype of M. sexstrigella; likewise, there are no differences in male genitalia between the two.
**Mompha achlyognoma** Koster & Harrison, new sp.

(Prop. 2. 5. 8)

**Description.**—Sexes similar. Forewing length 3.5mm. *Head*. Frons ochreous white, shining gray toward clypeus, vertex shining gray with dark gray irrorations anteriorly; collar shining dark gray; labial palpus dark gray irrorated white, first segment very short, white, second about 1.5x as long as third and with white apical ring, third segment with white basal ring and apex; scape dark gray, motiled white dorsally, light gray ventrally, remainder of antenna shining dark gray. *Thorax*. Shining dark gray, teguales lighter posteriorly. Legs dark gray, foreleg with white apical band on tibia and on tarsal segments one, two, and four; middle leg with white subbasal and medial streaks on tibia; hindleg with white medial and apical bands on tibia; spurs white. Forewing shining leaden gray and orange brown, strongly irrorated blackish, especially at base; a white costal spot at 0.75 wing length, below this a yellow-orange spot, a square yellow-orange spot from fold to posterior margin at 0.20, two small yellow-orange spots before and beyond middle, a light yellow spot, more basal than the white costal spot, on tornus, and an often indistinct yellow-orange streak in the apical area. Two tufts of raised blackish scales, the inner one before 0.50 wing length and below fold, the outer one on posterior margin opposite the white costal spot; four to six indistinct white streaks around apex; two distinct cilia lines; cilia grayish brown around apex, ochreous gray posteriorly. Hindwing shining light gray; cilia ochreous gray. Underside of forewing shining grayish brown, white costal and apical spots indistinctly visible; cilia speckled light gray at costa and with two dark-brown lines around apex; underside of hindwing shining brownish gray in anterior half, shining gray in posterior half, apex pale, almost white. *Abdomen*. Shining dark gray, segments speckled light gray midventrally; genital tuft ochreous white.

**Male genitalia** (Fig. 5). Cucullus widest at base, gradually tapering distally, apex rounded; sacculus as long as cucullus, gradually tapering to a curved and pointed apex, a transverse peglike projection on dorsal margin of sacculus, and by the funnel-shaped ostium bursae.

**Female genitalia** (Fig. 8). Seventh sternite unmodified; sternigma two lobes, rounded distally, tapering anteriorly; ostium bursae funnel-shaped and slightly sclerotized; ductus bursae narrowing towards corpus bursae, inception of ductus seminalis at 0.33; corpus bursae with two sicle-shaped signa.


**Etymology.**—From Greek, αχλυγονμα “gloom, darkness”; and γενετικ “a mark, judgement”; in reference to the rather somber vestiture of this species, which is typical for morphid moths of this color-group.

**Diagnosis.**—Differs from the other two species discussed in this paper by presence of a transverse peglike projection on dorsal margin of sacculus, and by the funnel-shaped ostium bursae.

**Biologie.**—The larva is a leaf miner on *Epilobium brachycarpum*, the mines occurring in September in Contra Costa Co., California. Phenology and voltinism largely unknown (see field-collection dates and rearngement dates above).

**Distribution.**—Known from several states in the western USA.
Fig. 4-6. Male genitalia: 4) *Mompha sexstrigella*. 5) *M. achlyognoma*. 6) *M. cleidarotrypa* (scale bar = 0.5mm) (illustrations by J. C. Koster).

Fig. 7-9. Female genitalia: 7) *Mompha sexstrigella*. 8) *M. achlyognoma*. 9) *M. cleidarotrypa* (scale bar = 0.5mm) (illustrations by J. C. Koster).
Female genitalia (Fig. 9). Seventh sternite sclerotized in posterior third, its posterior margin in ventral view deeply U-shaped so that the lateral margins appear to be produced posterad; lamella antevaginalis with anterior margin deeply bilobed, 0.33 as wide as seventh sternite, extending from posterior margin to 0.33 length of seventh sternite; lamella postvaginalis with posterior end at 0.50 length of eighth sternite, where it is shallowly bilobed and approximately half as wide as lamella antevaginalis, narrowing slightly as it runs anteriad until, at 0.50 length of lamella antevaginalis, it expands abruptly into a circular region that extends anteriad to 0.50 length of seventh sternite; ductus bursae membranous, narrowest at about 0.50 its length, broadening slightly and gradually until meeting the large corpus bursae; a small, dome-shaped sclerite lies immediately to the right of midline near inception of ductus seminalis; two sickle-shaped signa, each with a curved, hook-like element and an I-shaped element, the latter embedded transversely in the middle of a crescent-shaped sclerite.


Etymology. From Greek, κλειδαροτρυπα "keyhole"; in reference to the shape of the lamella postvaginalis, which roughly resembles an old-fashioned door keyhole when the genitalia are viewed inversely from the aspect in Fig. 9.

Diagnosis. The male differs from M. sexstrigella and M. achlyognoma in having a relatively short, broad valve with no accessory modifications; the female differs by presence of a large, anteriorly-bilobed lamella antevaginalis and a keyhole-shaped lamella postvaginalis.

Biology. Known only from flown adults; immature stages unknown.

Distribution. The species has been collected only in Arizona, USA.

Abbreviations of Institution Names
ANSP Academy of Natural Sciences of Philadelphia, PA, USA
EL Collection of E. Laasonen, Helsinki, Finland
JCK Collection of J. C. Koster, Callantsoog, Netherlands
MZLU Department of Zoology, Lund University, Sweden
USNM United States National Museum of Natural History, Smithsonian Institution, Washington, DC, USA
VdW Collection of H. W. van der Wolf, Nuenen, Netherlands
ZMAS Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia
ZMUH Zoological Museum, University of Helsinki, Helsinki, Finland

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LITERATURE CITED
