

## A NEW NORTH AMERICAN CLEARWING MOTH AND NOTES ON A RARE SPECIES (SESIIDAE)

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**ABSTRACT.** A new species of Sesiidae from southwestern United States and northern Mexico, *Carmenta tildeni* Eichlin, is described and salient features illustrated. The female of *Synanthedon arctica* (Beutenmüller) is described and illustrated for the first time, with additional information provided on the species.

**Additional key words:** Types, genitalia, key, distribution, sex attractant, Ontario, Alaska, Arizona, Texas, Mexico.

Since the most recent revision of the Nearctic sesiid fauna north of Mexico (Eichlin & Duckworth 1988), a previously unknown species from southwestern United States and northern Mexico was discovered. Also, a male and female of a poorly known species, *Synanthedon arctica* (Beutenmüller), came to my attention. Both species are discussed below.

### *Carmenta tildeni* Eichlin, new species

(Figs. 1, 2, 3, 5, 6)

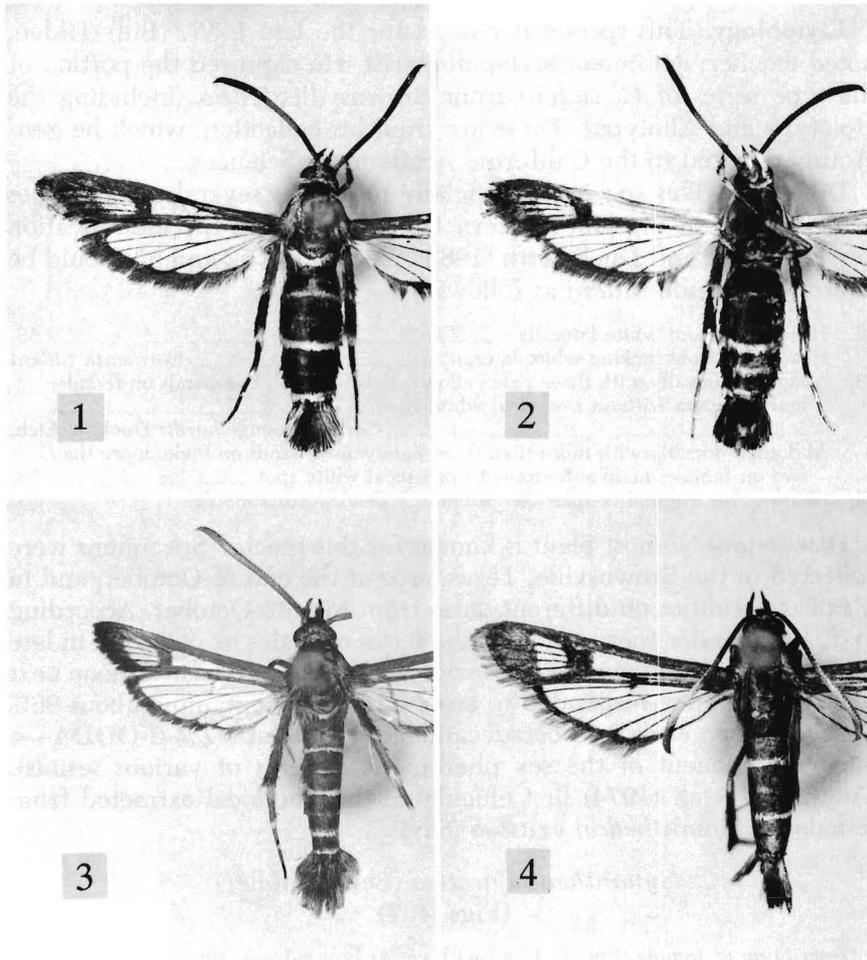
**Male** (Fig. 3). Head with vertex brown-black; front brown-black; occipital fringe pale yellow; antenna brown-black; labial palpus laterally mostly brown-black or pale yellow with apical half brown-black. Thorax brown-black, much yellow laterally beneath wings; metathorax mostly yellow dorsally. Abdomen brown-black, dorsally with yellow or pale yellow bands on segments 2, 4, 6, and 7; laterally yellow on segments 1 and 2; ventrally pale yellow banding on segments 4–7; anal tuft with yellow laterally. Legs brown-black, usually lacking white or pale yellow on forecoxa; hind tibia with pale yellow at tibial spurs and on joints of tarsal segments. Forewing with margins and broad discal spot brown-black with some pale yellow powdered between veins of apical margin and on distal edge of discal spot; ventrally with pale yellow more extensive on margins and discal spot. Wing length of males 6.5–8.0 mm. Genitalia as in Fig. 5, notably with distal portion of saccular ridge sharply pointed and extending beyond edge of valve; saccus nearly half as long as valve.

**Female** (Figs. 1, 2). Maculation as described for male but with pale yellow on abdominal segments 2, 4, and 6 dorsally; ventrally, with segments 4–6 mostly pale yellow; anal tuft brushlike, with pale yellow submedially. Wing length of females 8.0–10.0 mm. Genitalia as in Fig. 6.

**Types.** *Holotype*: ♀ (CAS): Brownsville, Cameron Co., Tex., 30.X.1972; J. W. Tilden collector; James Wilson Tilden Collection, Bequest to California Academy of Sciences—1989.

*Allotype*: ♂ (CAS): same as Holotype, except “. . . 21.X.1972; CDF A Genitalia Slide #837 by S. A. Kinnee.”

*Paratypes* (8): 2 ♀♀ (CAS): (1) same as holotype; (1) “. . . southmost Cameron Co., Texas, 29.X.1963.” 1 ♂, 1 ♀ (UCB): (♂) Cordoba, Mex., Vera Cruz, 29.VI.1966; (♀) Temescal, Oax., Mex., 3.X.1963. 1 ♀ (UCD): 3 mi W Sta. Barbara, Chih., Mex., 22.VII.1967; R. C. Gardner, C. R. Kovacic, K. Lorenzen collectors. 1 ♂ (J. R. Heitzman): MEX: San Luis Potosí, 18 km S Tamazunchale, Hwy 85, km 256, 5.VII.1990, coll: J. K. Adams; CDF A Genitalia Slide #838 by S. A. Kinnee. 1 ♂ (R. O. Kendall): MEXICO: Nuevo Leon: Hotel Cola de Caballo grounds/gardens; door light, 5.V.1978, Roy O. Kendall & C. A. Kendall;



FIGS. 1-4. Adults of Sesiidae. 1, Holotype female of *Carmenta tildeni* (wing length 10 mm); 2, Holotype female (ventral view); 3, Allotype male of *C. tildeni* (wing length 8 mm); 4, Female of *Synanthedon arctica* (wing length 8 mm).

Kp-3. 1 ♂ (NMNH): MEXICO: 7 mi SW Poza Rica, Ver., 200', 20-22.VII.1963, Duckworth & Davis.

*Additional material.* Unfortunately, 6 conspecific males (CDFA) subsequently were severely damaged: (5) MEX: Nuevo Leon, 18 mi. W Linares, 2700', 24.IX.1975; J. Powell, J. Chemsak & T. Friedlander (1 with Genitalia Slide by M. R. Papp, CDA 018) and (1) MEX: Nuevo Leon, 4 mi. W Iturbide, 13/14.IX.1976. An Arizona male from the collection of Hermann Flaschka is labeled: AZ: St. Cruz Co., 5 mi SE Patagonia, 25.V-20.VII.1993 Lg. J. Brock, L103.

**Distribution.** Known from southeastern Arizona and southern Texas; in Mexico, from Chihuahua and Nuevo Leon south to Oaxaca.

**Etymology.** This species is named for the late J. W. (Bill) Tilden, noted teacher, entomologist/lepidopterist. He captured the portion of the type series of *C. tildeni* from Brownsville, Texas (including the Holotype and Allotype). These are from his collection, which he generously donated to the California Academy of Sciences.

**Diagnosis.** This species superficially resembles several other species of *Carmenta* in the southwestern United States. In the identification key in Eichlin and Duckworth (1988:72), couplets 52 and 53 should be altered to include *tildeni* as follows:

52. Head with front white laterally ..... 53,  
 – Head with front lacking white laterally ..... *Carmenta tildeni*  
 53<sub>a</sub>. Abdomen dorsally with three pale yellow bands on male, two bands on female;  
 male antenna without preapical white spot .....  
 ..... *Carmenta engelhardti* Duck. & Eich.  
 – Abdomen dorsally with more than three pale yellow bands on male, more than  
 two on female; male antenna with preapical white spot ..... 53<sub>b</sub>,  
 53<sub>b</sub>. (same as for original couplet 53—Eichlin & Duckworth 1988:72)

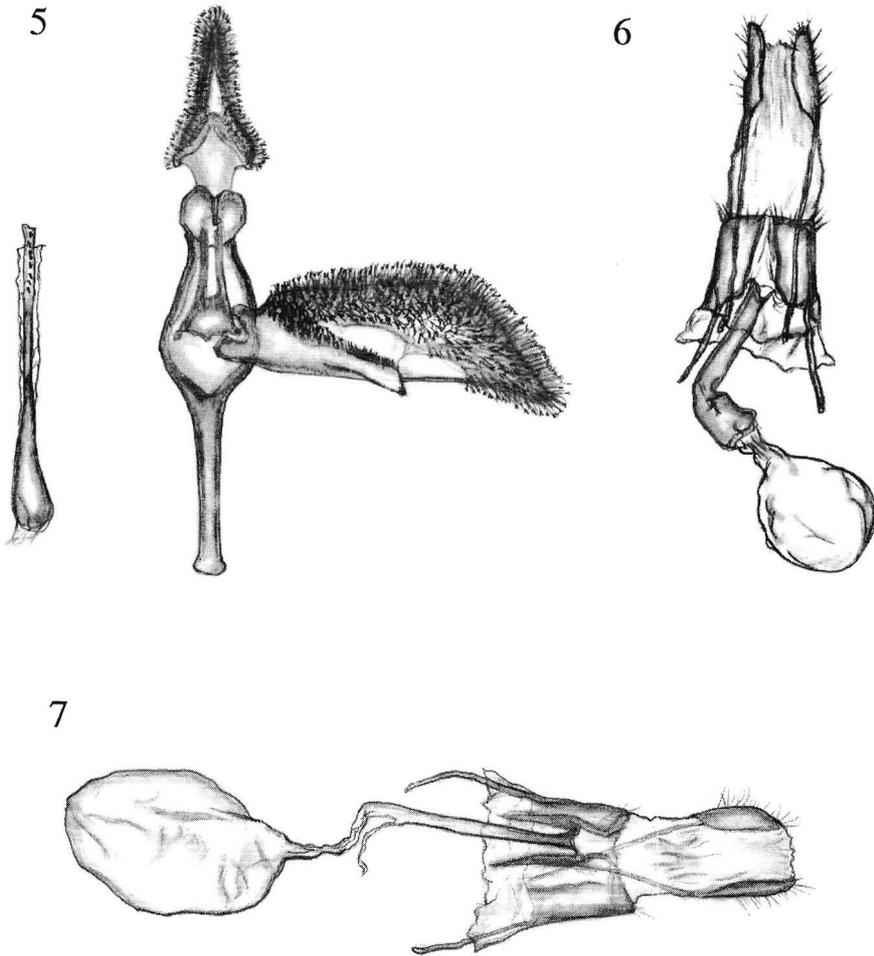
**Discussion.** No host plant is known for this species. Specimens were collected in the Brownsville, Texas, area at the end of October, and in Mexican localities on different dates from May to October. According to T. Friedlander (pers. comm.), the series of males he collected in late September from Nuevo Leon, Mexico, were taken in the afternoon next to a stream. They responded to a sex attractant containing about 96% of the Z,Z isomer of 3,13-octadecadiene-1-ol acetate (Z,Z-3-ODDA—a major component of the sex pheromone systems of various sesiids). Tumlinson et al. (1974) first elucidated this chemical extracted from females of *Synanthedon exitiosa* (Say).

### *Synanthedon arctica* (Beutenmüller)

(Figs. 4, 7)

**Description of female** (Fig. 4). Head with vertex brown-black, somewhat roughened; front brown-black; occipital fringe brown-black, mixed with pale yellow laterally; labial palpus somewhat roughened, brown-black, some pale yellow scales mixed ventrobasally; antenna brown-black, variously powdered with pale yellow on apical one-half. Thorax brown-black with yellow beneath wing. Abdomen brown-black with narrow pale yellow bands on posterior edge of segments 2 and 4, some yellow scales on 6; ventrally brown-black; anal tuft brushlike, not broadly truncate as described for the male. Legs brown-black, some pale yellow mesally on hindleg. Forewing with brown-black on broad apical margin and broad discal spot; ventrally strongly powdered yellow on veins and margins and between veins in apical area. Hindwing hyaline with very narrow margins and small triangular discal spot; ventrally with costal margin mostly powdered yellow. Wing length 8.0 mm. Genitalia as in Fig. 7.

**Discussion.** The female of *S. arctica* is similar to the male (see couplet 24, Eichlin & Duckworth 1988:70). In the same publication (p. 85), the authors wrote that *S. arctica* was known only from the male holotype from Kodiak (NMNH) and one other male from Ruby, Alaska (Carnegie



FIGS. 5-7. Genitalia of Sesiidae. 5, Male of *Carmenta tildenii* (aedeagus detached); 6, Female of *C. tildenii* (ventral view); 7, Female of *Synanthedon arctica* (ventral view).

Museum). The female described above was collected in the vicinity of Healy, Alaska, 8 July 1974, by Hazel I. and J. W. Tilden. These same two collectors captured a male in the vicinity of the Central Steese Highway, Alaska, 29 June 1974. I recently identified a male in excellent condition collected by J. P. Walas from the Thunder Bay area, Ontario, Canada, 20 July 1989. This male, representing a considerable extension in the known range of this species, was captured with the aid of a sex attractant: (E,Z) 2,13-octadecadiene-1-ol acetate (E,Z-2-ODDA), a

chemical first extracted from females of the grape root borer, *Vitacea polistiformis* (Harris) (Schwartz et al. 1983).

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#### LITERATURE CITED

- EICHLIN, T. D. & D. DUCKWORTH. 1988. Sesiioidea: Sesiidae, Fasc. 5.1:1–176. In Dominick et al. (eds.), *The moths of America north of Mexico*. E. W. Classey and The Wedge Entomol. Res. Found., London.
- SCHWARTZ, J., J. A. KLUN, B. A. LEONHARDT & D. T. JOHNSON. 1983. (E,Z)-2,13-octadecadien-1-ol acetate. A new pheromone structure for sesiid moths. *Tetrahedron Letters* 24:1007–1010.
- TUMLINSON, J. H., C. E. YONCE, R. E. DOOLITTLE, R. R. HEATH, C. R. GENTRY & E. R. MITCHELL. 1974. Sex pheromones and reproductive isolation of the lesser peach tree and the peach tree borer. *Science* 185:614–616.

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