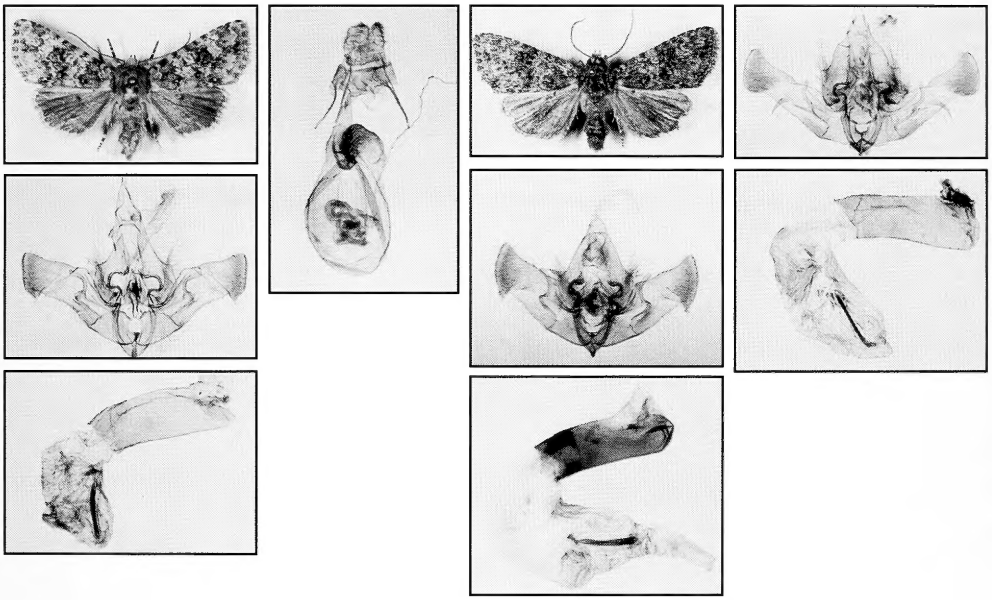
TWO NEW GENERA AND THIRTEEN NEW SPECIES OF OWLET MOTHS (LEPIDOPTERA: NOCTUIDAE), MAINLY FROM SOUTHERN CALIFORNIA

by

Tomas Mustelin, Ronald Leuschner, Kauri Mikkola, and J. Donald Lafontaine



No. 36
15 August 2000
Proceedings of the
San Diego Society of Natural History

ISSN 1059-8707

PROCEEDINGS

of the

San Diego Society of Natural History

Founded 1874

Number 36 15 August 2000

Two New Genera and Thirteen New Species of Owlet Moths (Lepidoptera: Noctuidae), Mainly from Southern California

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ABSTRACT.—This study describes fifteen new taxa of Noctuidae, mainly from southern California. *Acontia lagunae* Mustelin and Leuschner, sp. nov., has previously been treated as an isolated southern population of *A. flavipennis* (Grote). *Acronicta browni* Mustelin and Leuschner, sp. nov., and *Merolonche australis* Mustelin and Leuschner, sp. nov., are distinctive members of the subfamily Acronictinae. This study describes three new species of *Apamea*: *A. bernardino* Mikkola and Mustelin, sp. nov., and *A. gabrieli* Mikkola and Mustelin, sp. nov., are endemic to California; *A. scoparia* Mikkola, Mustelin, and Lafontaine, sp. nov., a sister species of the Palearctic *A. lateritia* (Hufnagel), is widespread in North America. *Aseptis murina* Mustelin, sp. nov., and *A. ferruginea* Mustelin, sp. nov., are close allies of *A. ethnica* (Smith), with which they are sympatric in the mountains of southern California. *Aseptis pseudolichena* Mustelin and Leuschner, sp. nov., has long been confused with *Andropolia lichena* Barnes and McDunnough, which we now also place in the genus *Aseptis*. *Orthomoia bloomfieldi* Mustelin, gen. nov. and sp. nov., is allied to *Xylomoia* but has straight male valves. *Lacinipolia subalba* Mustelin, sp. nov., is endemic to coastal San Diego County and is most closely related to *Lacinipolia pensilis* (Grote). *Fergusonix januaris* Mustelin and Leuschner, gen. nov. and sp. nov., a midwinter flier, represents a new genus in the subfamily Hadeninae. Finally, *Euxoa faulkneri* Mustelin and Leuschner, sp. nov., is a distinctive new member of the *infausta* group of *Euxoa*.

INTRODUCTION

The Noctuidae of southern California are poorly known in comparison to those in other parts of North America. During our studies of the noctuid fauna of southern California, we have encountered a number of specimens that did not seem to belong to any described taxon. Some we strongly suspected to represent undescribed species, and others had been treated as forms of geographically disjunct populations of known species. Detailed comparative analysis, including male and female genitalia, however, indicates that many of these moths warrant full species status. In this study, we name, describe, and illustrate the adults and the genitalic structures of thirteen new species belonging to the subfamilies Acontiinae, Acronictinae, Amphipyrinae, Hadeninae, and Noctuinae. We place two of these in their own new genera because of insufficient similarities to known genera. We extract three new species of *Apamea* from a planned revision of this genus by K. Mikkola and J. D. Lafontaine. We describe these here to facilitate their inclusion in a forthcoming comprehensive study of the entire noctuid fauna of southern California.

MATERIALS AND METHODS

This study is based on morphological examination of specimens from the following collections: the San Diego Natural History Museum, the Los Angeles County Museum, the University of California at Riverside, the Smithsonian/National Museum of Natural History in Washington, D.C., the Canadian National Collection in Ottawa, Ontario, Canada, the Zoological Museum in Helsinki, Finland, and the private collections of R. Leuschner and T. Mustelin. Male and female genitalia were dissected and prepared according to standard techniques. All holotypes and the majority of paratypes have been, or will be, permanently deposited in the aforementioned public collections, and representative genitalic slides are available at the San Diego Natural History Museum.

SYSTEMATICS

Family Noctuidae

Subfamily Acontiinae Guenée, 1838

Genus *Acontia* Ochsenheimer, 1816

Acontia lagunae Mustelin and Leuschner, sp. nov.

Figures 1a–d

Holotype.—1♂. CALIFORNIA: San Diego County, Laguna Mtns., Crouch Meadow Springs, 8 May 1980, J. W. Brown and D. K. Faulkner.

Paratypes.—71 specimens: CALIFORNIA: *San Diego County*, same locality, date, and collectors as holotype (23 specimens); Laguna Mtns., near Crouch Meadows, 14 June 1998, T. Mustelin (3); Laguna Mtns., elevation 2,000 m, 29 May 1964, F. T. Thorne (1); 5 mi N of Mt. Laguna, Witches Broom Trail, 2 May 1987, active dayflier, R. H. Leuschner (2♂, 1♀); Laguna Lakes, Laguna Mtns., elevation 1,830 m, 23 May 1964 (2), 6 June 1964 (1), from C. Henne collection; "purchased from C. Hill" [no locality data] (3); "purchased from C. Hill," Nellie, 1 May (1); Warner's Dam, 20 April 1916 (11); Will Valley, Palomar, 17 May, D. K. Faulkner (4); Mission Valley, 9 April 1938, D. S. Thornhill (1♂); Cuyamaca Lake, 27 April 1935, leg. C. Dammers (1); Palomar Sate Park, 20 May 1980, D. C. Hawks (2); San Diego, 12 April 1913, W. S. Wright (1); San Diego, 10 April 1915, W. S. Wright (3); San Diego, 5 April 1927, W. S. Wright (1); San Diego, 16 March 1908, G. H. Field (1); San Diego, 28 March 1908, G. H. Field (3); San Diego, 31 March 1908, G. H. Field (3); San Diego, 2 April 1908, G. H. Field (3).

The holotype and twenty-five paratypes are in the San Diego Natural History Museum; eight paratypes are in the Los Angeles County Museum; one paratype is at the University of California at Riverside; four paratypes are in the Canadian National Collection; four paratypes are at the Smithsonian/National Museum of Natural History; two paratypes are at the Zoological Museum in Helsinki, and fifteen are in the Leuschner and Mustelin collections. Representative genitalic slides (52 TM ♂ and 75 TM ♀) are deposited at the San Diego Natural History Museum.

Distribution.—The majority of records for this taxon is from a small area on the summit plateau of the Laguna Mountains of San Diego County, California. A few specimens are from nearby mountains at similar elevation (1,500–2,000 m), such as Mount Palomar, Warner (i.e., Hot Springs) Mountain, and the Cuyamaca Mountains. Older records include Mission Valley (1938) and Pasadena (no date), and it may be that the species had a wider distribution earlier this century. The moth is diurnal and flies in meadows, forest glades, and along trails in open woodland. The flight period is from late March to mid-June. The species is presumably univoltine. The larval food plants and immature stages are unknown.

Description.—A noctuid of less than average size. Antenna filiform in both sexes. Head small, covered with flat brown scales, labial palps white and brown, antennal scape brown with white underside, eyes reduced, oval. Thorax robust, covered with flat brown scales, tegulae with some white scales, venter covered with pale ochreous hairs. Legs brown with white scales, tarsi striped in brown and white. Abdomen narrow and short, brown with pale yellow scales, venter whitish. Wingspan: 20.4 mm ±1.2 mm (n = 37; range 18.5–23 mm). Forewing length: 9–11 mm. Ground color of forewing brown intermixed with some black and pale gray scales. Antemedian line pale gray, a large bulge around vein 2A. Postmedian line black, deeply incurved ventral to faint reniform spot. Subterminal line whitish, serrated, and more prominent towards anal corner of forewing. Terminal line black, with a black spot on veins. Fringe brown and white. Orbicular spot absent, but area between orbicular and reniform spots forming bright white rectangle with narrower extension to costa. Another smaller white rectangular spot on costa lateral of postmedian line. Hindwing dark yellow to light orange with some brown scales near wing base, discal spot small, marginal band dark brown. Fringe lighter yellow. Sexes similar. *Male genitalia* (Figures 1b and c): valve evenly broad with rounded apex, thin finger-like saccular extension, aedoeagus smooth, everted vesica curving around aedoeagus, with row of six large spines and apical diverticulum. *Female genitalia:* (Figure 1d): ovipositor lobes broad and short, eighth sternite unsclerotized, anterior and posterior apophyses similar in length, ductus bursae wide, diameter equal to ovipositor lobes, length 3× width, corpus bursae large, round, slightly kidney-shaped, length 2.5× width, surface smooth with longitudinal stripes laterally, distally with furrow-like constriction, no signa.

Diagnosis.—A relatively small noctuid that Smith (1900) considered to be an isolated southern population of *Acontia flavipennis* (Grote). *Acontia lagunae,* sp. nov., differs from true *A. flavipennis* in having a smaller white spot on the forewing anterior edge and much more yellow on the hindwing, the brown marginal shade being a thin and well-defined band instead of the broad and diffuse area of *A. flavipennis*. *A. lagunae* is also similar to *A. abdominalis* (Grote), which has a similar forewing pattern, but even less yellow on the hindwing. Figure 1 shows all three species. The male genitalia of *A. lagunae* are similar to those of both *A. flavipennis* and *A. abdominalis*; they differ from *A. flavipennis* in having longer saccular extensions and in the arrangement of the six stout spines on the everted vesica, which are closely packed and parallel in *A. lagunae*. There are only five spines in *A. abdominalis*, instead of six.

Etymology.—The specific name is derived from the type locality.

Remarks.—It seems likely that *Acontia flavipennis* and *A. lagunae* have recently evolved from a common ancestor. The male genitalia, however, are sufficiently distinct to justify species status for *A. lagunae*. Although all examined specimens of *A. lagunae* have a mostly yellow hindwing with a relatively narrow brown marginal band, the extent of yellow is more variable in *A. flavipennis*. Occasional specimens with a more extensive yellow area have been named as ab. *discolutea*. The other extreme, the lack of yellow on the hindwing, was called ab. *delutea*. This variation does not occur in *A. lagunae*, and we cannot consider the name *discolutea* applicable to *A. lagunae*. In the systematic order, we suggest placing *A. lagunae* after *A. flavipennis*, giving it number 9140.1 in the catalog by Hodges et al. (1983).

Subfamily Acronictinae Smith and Dyar, 1898

Genus *Acronicta* Ochsenheimer, 1816

Acronicta browni Mustelin and Leuschner, sp. nov.

Figures 2a–d

Holotype.—1♂. CALIFORNIA: *Riverside County*, Pinyon Crest, elevation 1,400 m, 28 May 1978, R. H. Leuschner.

Paratypes.—15 specimens (9♂, 6♀): CALIFORNIA: *Riverside County,* same locality and collector as holotype, 14 April 1962 (3♂), 12 August 1967 (1♂), 14 August 1966 (1♂), 25 August 1991 (1♂), 3 September 1988 (1♂), 4 September 1988 (1♂, 1♀), 18 September 1981 (1♂, 1♀); Palm Springs, Chino Canyon, elevation 600 m, 22 April 1922, Karl R. Coolidge (1♀); Palm Village, 5 October 1953 (1♀); *San Diego County*, Jacumba, 13 May 1978, John W. Brown (1♀); *Imperial County*, Mountain Springs, In-Ko-Pah Gorge, 28 April 1998, T. Mustelin and N. Bloomfield (1♀).

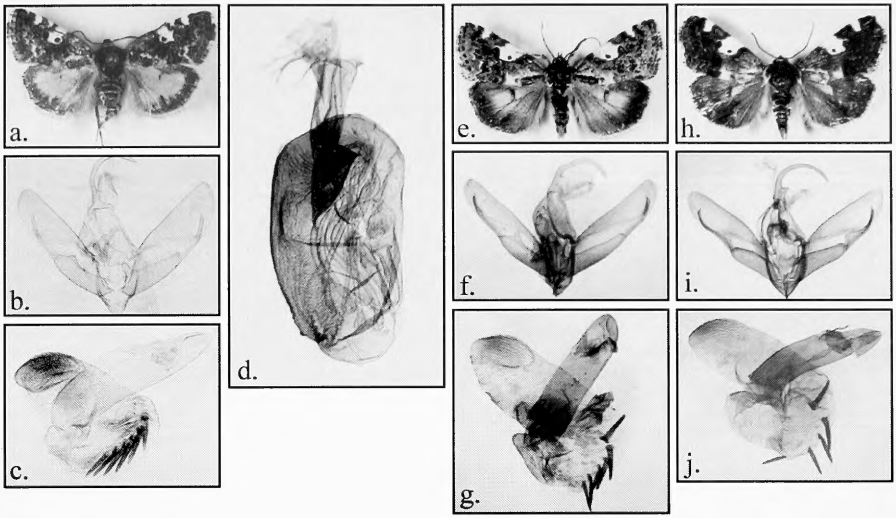

Figure 1. *Acontia lagunae* Mustelin and Leuschner, sp. nov. Holotype male (a), valves (b), aedoeagus with everted vesica (c), bursa copulatrix (d). For comparison, adult of *Acontia flavipennis* from Plumas County, California (e), its valves (f), aedoeagus with everted vesica (g); and adult of *Acontia abdominalis* from Texas (h), its valves (i), aedoeagus with everted vesica (j).

The holotype and one paratype are in the Los Angeles County Museum; two paratypes are in the San Diego Natural History Museum; one paratype is at the University of California at Riverside; one paratype is in the Canadian National Collection; one paratype is at the Smithsonian/National Museum of Natural History, and ten paratypes are in the Leuschner collection. Representative genitalic slides (88 TM ♂ and 73 TM ♀) are deposited at the San Diego Natural History Museum.

Etymology.—We take great pleasure in naming this species in honor of John W. Brown, an outstanding entomologist, who collected the only specimen known to date from San Diego County.

Distribution.—Specimens have been collected at low to moderate altitudes (600–1,400 m) on the desert-facing slopes of the In-Ko-Pah Mountains in southeastern San Diego County and southwestern Imperial County, and of the Santa Rosa Mountains in Riverside County, California. The moth probably occurs in similar localities between these two ranges. Collection dates are from mid-April to May and August to October, suggesting a bivoltine life cycle. The larval food plants and immature stages are unknown.

Description.—A medium-sized noctuid. Antenna filiform in both sexes. Head covered by pale gray hair-like scales, black around eyes and on dorsal side of labial palp; thorax covered with pale gray hairs, tegulae with black lateral margin. Wingspan: 33.0 ±1.3 mm (n = 12; range: 31.5–35.5 mm). Forewing length: 15.5–17.5 mm, wing shape as in other *Acronicta* species, e.g., *A. strigulata*. Ground color of forewing pale bluish-gray intermixed with dark gray and brownish scales giving forewing grainy appearance. Antemedian line missing; postmedian line black, thin, incurved between veins and almost disappearing at middle of wing. Subterminal line missing; terminal line white, fringes black and white. Orbicular spot missing, reniform spot reduced to pale black-rimmed triangle. Basal dash black, strong, but outwardly diffuse; another diffuse and broken black streak from lateral margin at veins R5 and M1 inward to reniform spot, and third dash near anal corner crossing postmedian line. Hindwing whitish with some brownish scales towards outer margin, veins dusted with brown, fringe light brownish-gray and white. *Male genitalia* (Figures 2b and c): valvae evenly broad with evenly rounded apex, length 4.1× width, sacculus prominent, 0.8× length of valva ventrally, curved harpe 1.4× width of valva, juxta narrow, clavus broader, uncus length equal to width of valva, tapering. Aedoeagus slightly curved, length 5× width, everted vesica triangular with 20 to 30 small cornuti distally. *Female genitalia* (Figure 2d): ovipositor lobes short and rectangular, weakly sclerotized; posterior apophyses short, anterior apophyses 1.5× as long and basally twice as wide; eighth sternite broad and sclerotized, opening of bursa large, lamella antevaginalis protruding anteriorly from eighth abdominal segment, ductus bursae half as wide as ovipositor lobes, corpus bursae proximally 3.5× width of ductus, apex tapering distally to 1.5× width of ductus; surface smooth, signa absent.

Diagnosis.—A typical member of the genus *Acronicta*, but nevertheless readily distinguishable by the grainy appearance of the forewing, the absence of an antemedian line, the relatively weak postmedian line, and the diffuse shape and location of the black dashes, particularly the long broken dash from below the apex to the reniform spot. *Acronicta strigulata* Smith, which also occurs in southern California, has a smoother wing color and well-marked, outward brown-shaded postmedian line and well-defined black dashes, the one near the apex reaching only to the postmedian line.

Remarks.—Although it is typical of the genus, we have found no particularly close North American allies for this species. The male genitalia are similar to those of *Acronicta tridens* (Denis and Schiffermüller), a Palearctic species, but the harpe is larger and does not have two smaller branches. We therefore suggest placing *A. browni* in the systematic list of Hodges (1983) after *Acronicta strigulata*, which resembles both *A. browni* and *A. tridens*, giving it number 9231.1.

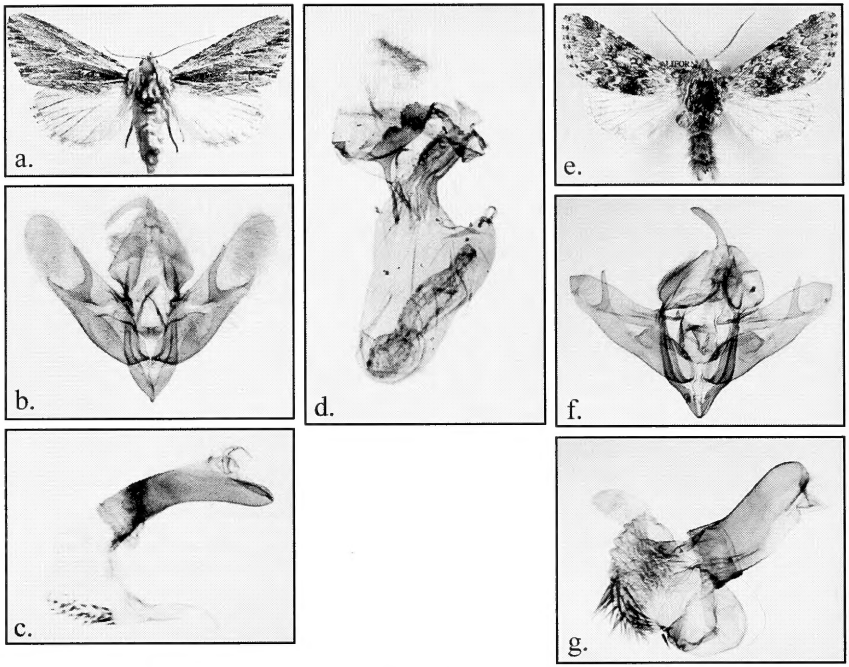

Figure 2. *Acronicta browni* Mustelin and Leuschner, sp. nov., and *Merolonche australis* Mustelin and Leuschner, sp. nov. Paratype male of *Acronicta browni* (a), valves (b), aedoeagus with everted vesica (c), bursa copulatrix (d). Holotype male of *Merolonche australis* (e), its valves (f), aedoeagus with everted vesica (g).

Subfamily Acronictinae Smith and Dyar, 1898

Genus *Merolonche* Grote, 1882

Merolonche australis Mustelin and Leuschner, sp. nov.

Figures 2e–g

Holotype.—1♂. CALIFORNIA: *San Bernardino County*, San Bernardino Mtns., Sugarloaf Mtn., elevation ca. 2,400 m, 10 June 1994, T. Mustelin.

Paratypes.—1♀. CALIFORNIA: *San Bernardino County*, San Bernardino Mtns., 6 km southeast of Big Bear City, 34.2°N, 116.7°W, 28 June 1998, elevation ca. 2,200 m, 28 and 29 June 1998, R. H. Leuschner.

The holotype is in the San Diego Natural History Museum; the paratype is in the Leuschner collection. Genitalic slide number 103 TM of the holotype is deposited at the San Diego Natural History Museum.

Etymology.—The specific name means "southern" and refers to the much more southern distribution of this taxon compared to other members of the genus.

Distribution.—Only two specimens are known. Both are from high-altitude locations in the coniferous zone of the San Bernardino Mountains. Both specimens were captured in June. The larval food plants and immature stages are unknown.

Description.—A medium-sized noctuid. Antenna pectinate in male, filiform in female. Head covered by flat, white and black hair-like scales, black streak laterally of eye, labial palp short; thorax covered with white and black hairs, abdomen by long blackish hairs. Wingspan: 39 mm (1♂), 45 mm (1♀). Forewing length: 18–21 mm, wing shape elongated, apex pointed as in other *Merolonche* species. Ground color of forewing very pale gray intermixed with black scales particularly in median field. Antemedian line double, black, serrate; postmedian line black, incurved between veins. Subterminal line absent, terminal line black between veins, fringe black and white checkered. Orbicular spot very small, round, black with white center; reniform spot small, black, filled with dark gray. Hindwing whitish with some gray scales towards outer margin, fringe white. *Male genitalia* (Figures 2f and g): valve tapering outward, length 2× basal width, apex bluntly pointed; harpe near apex, straight, length 0.5× basal width of valva; clavus broad. Aedoeagus short, slightly curved, length 2.5× width; everted vesica large, sack-like, bilobed with 20 to 30 spines distally.

Diagnosis.—Thoracic vestiture, antennae, wing shape and maculation typical of the genus but this species is easily recognized by its more extensive blackish maculation, particularly in the median field. The ground color is pale gray, not white as in *Merolonche lupini* from the Sierra Nevada of central California. Also, its postmedian line is located more distally than in the new species.

Remarks.—This is a typical, but distinct, member of the genus. We suggest placing it in the systematic list of Hodges (1983) after *Merolonche lupini*, giving it number 9275.1.

Subfamily Amphipyrinae Guenée, 1841

Genus *Apamea* Ochsenheimer, 1816

Apamea bernardino Mikkola and Mustelin, sp. nov.

Figures 3a–d

Holotype—1♂. CALIFORNIA, *San Bernardino County*, Barton Flats, San Bernardino Mtns., elevation 2,200 m, 10 August 1967, C. Henne.

Paratypes.—14 specimens (3♂, 11♀): CALIFORNIA, *San Bernardino County*, same locality as holotype, elevation 2,200–2,330 m, 5–17 August 1941–59, 10 August 1967, C. Henne (2♂, 5♀); same locality as holotype, 28 July 1953, L. Stunge (1♂); Green Canyon, SW of Baldwin Lake, San Bernardino Mtns., 30 August–5 September 1967, C. Henne (3♀); Upper Santa Ana River, 18 August 1946, J. L. Sperry (1♀); Forest Home, 3 and 18 August 1966, Sperry (2♀).

The holotype and two paratypes are in the Canadian National Collection; six paratypes are in the Los Angeles County Museum; two paratypes are at the University of California at Berkeley, and two are in the Leuschner collection. Representative genitalic slides (95 TM ♂ and 96 TM ♀) are deposited at the San Diego Natural History Museum.

Distribution.—This species has been found only in the coniferous forest zone of the San Bernardino Mountains in southern California at elevations above 2,000 m, where it is on the wing from late July to early September. The larval food plants and immature stages are unknown.

Etymology.—The species name is derived from the type locality.

Description.—A medium-sized noctuid. Male's antenna as in most males of *Apamea*, weakly serrate and ciliated. Palpi covered by pale buff scales and hairs, laterally also by pale rusty scales. Head and thorax pale rusty brown, collar medially with pale area, surrounded by blackish line, patagia similarly with dark longitudinal line. Abdomen pale buff, basally with 3–4 pale brown tufts, anal tuft and lateral parts of abdomen pale rosy brown. Wingspan: 40.7 ±1.2 mm (n = 12; range 39–42 mm). Forewing length 19–20 mm, mainly pale rusty brown, antemedial and submarginal fields pale gray with purplish hue. Wing pattern as in *A. longula*, though median field posteriorly narrower and median dash shorter. Marginal field dark rusty brown. Submarginal line with weakly defined but deep W-mark, which has black wedge-shaped marks inward. Basal, subbasal, and median dashes well-defined, black. Ordinary spots marked with weak outline, but conspicuous as pale areas against darker background. Hindwing pale buff with dark veins, dark cloud near outer margin and slight reddish hue in fringe. *Male genitalia* (Figures 3b and c): uncus long and thin, juxta shield-like with relatively broad lateral appendages. Valva long and slender, except sacculus, which is stout; ratio of maximum width of sacculus to valva from crista cuculli

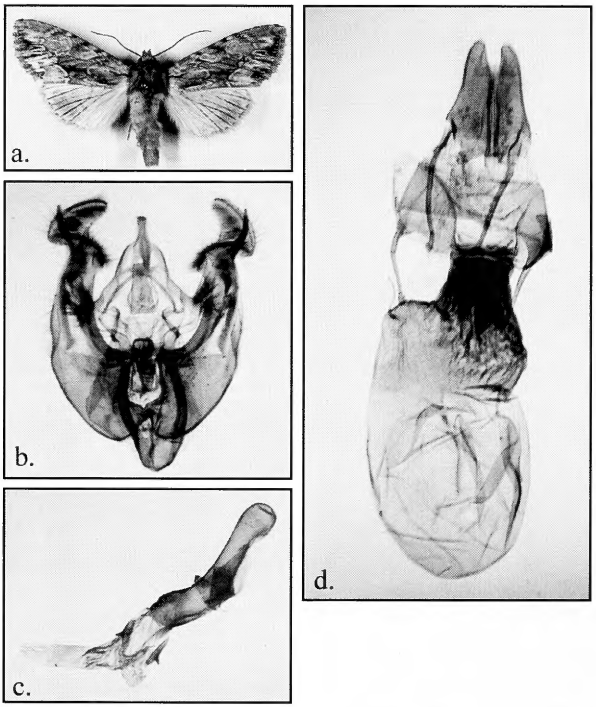

Figure 3. *Apamea bernardino* Mikkola and Mustelin, sp. nov. Paratype male of *Apamea bernardino* (a), valves (b), aedoeagus with everted vesica (c), bursa copulatrix (d).

around 2.7; dorsal extension of sacculus thumb-like. Cucullus dorsally biased; harpe with dorsal bulge, curved upward. Tip of aedoeagus with spined bulge. Left diverticulum of everted vesica turning ventrally, with one dorsal and one ventral cornutus, latter pointing to right; distally on vesica longitudinal pouch, which points to left. *Female genitalia* (Figure 3d): papillae anales and both pairs of apophyses of the general *Apamea* shape. Ductus bursae with large, distinct, sclerotized but flexible pouch ventrally, extending to the levels of right diverticulum, which is also flexible; ductus with two longitudinal pockets, ventrally on left and dorsally on right. Appendix bursae large and thick with ductus seminalis posteriolaterally. Ductus bursae well-constricted, corpus bursae roundish, tapering anteriorly, only slightly larger than posterior part of bursa; signa absent.

Diagnosis.—A medium-sized species confined to the high mountains of southern California. The coloration is reminiscent of *Apamea atrosuffusa* (Barnes and McDunnough, 1913), but the maculation and genitalia indicate a close relationship to *A. longula* (Grote, 1879). The forewing is narrower than in *longula*, and quite differently colored: at first sight it appears pale rusty brown, but the submarginal and antemedial fields are light gray with a purplish hue. Unlike *A. atrosuffusa*, the strongly crenulate postmedial line is visible all the way through the wing, and the anal dash is lacking. The median field usually tapers more toward the posterior margin than in *longula* and the median dash thus appears shorter. When faded, the moth is pale with a conspicuous median dash. The genitalia are as in *A. longula* except that the male sacculus is stouter and the pouches of the vesica are more medially oriented; corresponding differences can be seen in the female bursa, and the corpus bursae is much smaller.

Remarks.—This taxon was labeled as a new species by J. Franclemont in the 1950s, but its relationships were only recently determined. The new species appears reminiscent of *A. atrosuffusa*, but the genitalia show that it is closely related to *A. longula*, a southwestern disjunction of the latter. In the checklist of Hodges (1983), this taxon should be placed after *A. longula* as number 9383.1.

Genus *Apamea* Ochsenheimer, 1816

Apamea gabrieli Mikkola and Mustelin, sp. nov.

Figures 4a–e

Holotype.—1♂. CALIFORNIA, *Los Angeles County*, San Gabriel Mtns., Big Pines Area, elevation 2,260 m, 21 July 1966, C. Henne.

Paratypes.—5 specimens (4♂, 1♀): CALIFORNIA, *Los Angeles County*, same locality and collector as holotype, 17 July 1966 (1♂); same data, elevation 2,230 m, July 1963 (1♀); *San Bernardino County*, Lake Arrowhead, 16 July 1956, N. McFarland (1♂); San Bernardino Mtns., SW of Baldwin Lake, Gren Canyon, elevation 2,530 m, 30 August 1967, C. Henne (1♂); Big Bear Lake, elevation 2,230 m, 6 August 1978, R. H. Leuschner (1♂).

The holotype and one paratype are in the Canadian National Collection; three paratypes are in the Los Angeles County Museum; one paratype is in the Zoological Museum, Helsinki, and four paratypes are in the Leuschner collection. Representative genitalic slides (98 TM ♂ and 100 TM ♀) are deposited at the San Diego Natural History Museum.

Distribution.—This species has been observed only in the San Gabriel and San Bernardino Mtns. of southern California, where it flies at elevations of more than 2,000 m. The earliest date known is 16 July and the latest 30 August. The larval food plants and immature stages are unknown.

Etymology.—From the saint name for the type locality.

Description.—A larger than average noctuid. Male antenna dentate and bifasciculate. Wingspan: male 40.5–48.5 mm ($n = 4$), female 48.5 mm ($n = 1$). Forewing length: 20–22.5 mm, evenly pale brownish-red, paler as well as softer and more weakly marked than in *A. scoparia*, reniform stigma weaker, being outward pale buff, not white, and merging inward with the ground color. Of the orbicular spot and the transverse lines, at most weak traces are visible. Hindwing uniformly pale buff, with very little marginal suffusion, the veins dark, fringe usually clearly reddish. *Male genitalia* (Figures 4a and b): valva as in *A. lateritia*, (Figure 4g). Uncus wide, subapically slightly widened, tends to be stouter than in *A. lateritia*. Dorsal corner of penicillum produced, possibly more so than in *A. lateritia*, shield-like juxta with anterior bulge and indentation posteriorly. Dorsal extension of valva obliquely flat, valva long and slender. Ampulla long and thin, editum long and low. Digitus stout, tapering, arising in right angles from central sclerite. Cucullus large, slightly dorsally biased, with full corona and pollex. Aedoeagus with apical bulge equipped with stout spines. Everted vesica with basal bulge pointing posteriorly (in *lateritia* apically to left) and with one dorsal and one ventral cornutus, which point posteriorly (in *lateritia* these tend to point sideward or even anteriorly). On right there is a smaller ventral bulge. *Female genitalia* (Figure 4e): Corpus bursae similar to *A. scoparia*, but there is a distinct ventral bulge centrally where ductus bursae ends, and corpus bursae is more tapering on the left side; signa absent.

Diagnosis.—A larger than average noctuid with evenly pale brownish red forewing with little maculation. The taxon is closely related to *Apamea scoparia*, sp. nov., described below. The forewing color of *A. gabrieli* is considerably paler; the maculation is even more obscure, and the hindwing much lighter than in *A. scoparia*, terminally only weakly fuscous. Both *A. gabrieli* and *A. scoparia* are closely related to the Palearctic *A. lateritia* (Hufnagel, 1766), which is essentially indistinguishable from *A. scoparia* in external appearance (see Remarks under *A. scoparia*). Figure 4 illustrates all three.

Remarks.—This and the following species are very closely related. This is an exceptional case where there are no striking genitalic differences between two allopatric taxa, but they are interpreted as distinct species because of very clear-cut color differences in both wings. Males of both North American species can, however, be distinguished from *A. lateritia* based on the presence of coremata (Figure 4c), which are absent in males of *A. lateritia* (Figure 4i).

Genus *Apamea* Ochsenheimer, 1816

Apamea scoparia Mikkola, Mustelin, and Lafontaine, sp. nov.

Figures 4j and k

Holotype.—1♂. CANADA, *Ontario*, Ottawa, 19 June 1899.

Paratypes.—34 specimens (23♂, 11♀): CANADA, *Ontario*, Marmora; Thunder Bay Area; Ottawa; Larder Lake; Lake Abitibi; E. Ontario; Ogoki; Black Sturgeon Lake; Trenton; Belleville; Emo (14♂, 8♀); *Quebec*, Aylmer; Bradore Bay; Norway Bay; Forestville; Natashquan; Knowlton (6♂, 2♀); COLORADO, *Summit County*, Copper Mtn., elevation ca. 3,000 m, July 17, 1995, T. Mustelin (1♀); Aurora, 27 July 1972, R. H. Leuschner (1♂); *Routt County*, Yampa Camp, below Rabbit Ears Pass, 13 July 1955, R. H. Leuschner (1♂).

The holotype and twenty-nine paratypes are in the Canadian National Collection; two paratypes are in the Zoological Museum, Helsinki; one paratype is at the San Diego Natural History Museum, and two paratypes are in the Mustelin collection. Representative genitalic slides (99 TM ♀) are deposited at the San Diego Natural History Museum.

Distribution.—This is one of the most common, even if not abundant, and widely distributed species of *Apamea* of North America; it occurs from Newfoundland and Labrador to British Columbia, Northwest Territories and Alaska, in South Dakota and New Jersey, south to central California, Arizona, and Colorado. In the south the species flies at elevations of 2,000–3,000 m. It is on the wing from late June to late August.

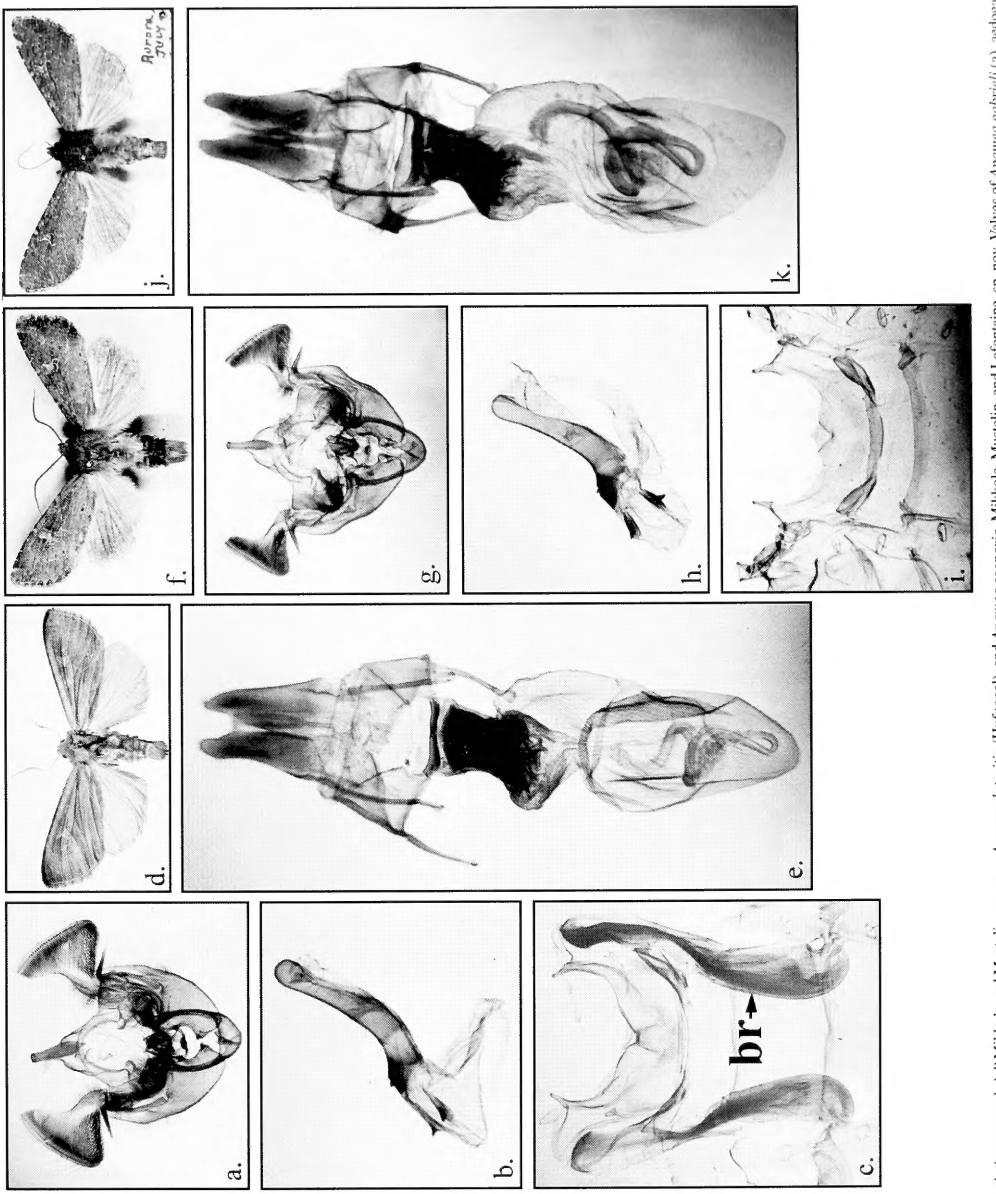

Figure 4. *Apamea gabrieli* Mikkola and Mustelin, sp. nov., *Apamea lateritia* (Hufnagel), and *Apamea scoparia*, Mikkola, Mustelin, and Lafontaine, sp. nov. Valves of *Apamea gabrieli* (a), aedoeagus with everted vesica (b), base of abdomen with brushes (br = brushes) (c), adult female (d), bursa copulatrix (e). For comparison, adult male of the Palearctic *A. lateritia* from Finland, Europe (f), valves (g), aedoeagus with everted vesica (h), base of abdomen (i); note the absence of brushes. Adult female of *A. scoparia* (j) and its bursa copulatrix (k).

Etymology.—The specific name means "with brushes" and is derived from *scopa,* Latin for "brush."

Description.—Larger than average noctuid. Male antenna dentate and bifasciculate. Forewing uniformly brick-colored with weak pattern; reniform distinct, with whitish lining outward, inward more smoothly gliding to background color; orbicular obscure, antemedian and postmedian lines hardly visible, except by blackish vein points, subterminal line indistinct pale spots. Terminal line double, blackish and luteous, fringe suffuse, weakly spotted. Hindwing suffuse, with darker veins and obscure central lunule, basally only weakly paler, fringe weakly reddish. Under surface of wings pale with dark central spot on hindwing and clear postmedian lines on both wings. *Male genitalia:* As in *A. gabrieli. Female genitalia* (Figure 4k): Papillae anales of general *Apamea* structure. Ostium bursae wide, ductus bursae narrower medially (in *A. lateritia* ostium is narrower and ductus parallel-sided). Flexible diverticulum in corpus bursae on right, appendix bursae flexible with ductus seminalis in extreme posterior corner. Corpus bursae medially well constricted (less so in *A. lateritia*); bursa sack roundish (more tapering in *A. lateritia*); signa absent.

Diagnosis.—A relatively large member of the genus with dull brick-red forewing. In outer appearance, this taxon is hardly distinguishable from the Eurasian *Apamea lateritia* (Hufnagel), the name that has been applied to the North American species also from the mid-nineteenth century. There are, however, small differences in appearance and in the male genitalia, which originally arouse suspicions about the status of the taxon. Single female specimens cannot be conclusively determined, but males can be distinguished from *A. lateritia* by the presence of coremata, the hair brushes at the base of the abdomen (compare Figures 4c and 4i). These are discussed below.

Remarks—This taxon is very closely related to *A. lateritia* but differs sufficiently in a number of structural characters. The presence of coremata in the males warrants status as a separate species. These coremata are also present in *A. gabrieli* (Figure 4c). The coremata in *A. scoparia* are present at the base of the abdomen in complete paired form, i.e., with Dufour's glands medially, the levers and hair brushes in the posterior margin of the second segment, and pockets for the hair brushes in the third and fourth segments. Their presence or absence is considered a specific character since these organs are connected with sex-pheromone production and are important for copulatory ability of the male. The freshly everted coremata produce a strong scent easily perceived even by the human nose giving associations somewhere between vinegar and carrots (Mikkola, unpublished).

Genus *Aseptis* McDunnough, 1937

Aseptis murina Mustelin, sp. nov.

Figures 5a–d

Holotype.—1♂. CALIFORNIA: *San Diego County,* Inaja Picnic ground, elevation 1,000 m, 9 July 1997, leg. T. Mustelin (1♂).

Paratypes.—14 specimens (9♂, 5♀): CALIFORNIA: *San Diego County,* same locality and collector, 9 July 1997 (6♂, 1♀); Laguna Mtns., elevation ca. 1,700 m, 28 July 1995, T. Mustelin (1♀); 2 mi S of Lake Henshaw, elevation ca. 1,000 m, 15 August 1998, T. Mustelin (1♀); Mount Palomar, elevation ca. 1,600 m, 8–13 August 1999, T. Mustelin and N. Bloomfield (1♀); Miramar Airstation, elevation ca. 100 m, 18 July 1996, leg. N. Bloomfield (2♂); *Riverside County*, Pinyon Crest, 5 June 1987, leg. K. M. Leuschner (1♀); *Santa Barbara County*, San Marcus Pass, 22 July 1965, leg. S. Buckett (1 ♂).

The holotype and three paratypes are in the San Diego Natural History Museum; one paratype is in the Canadian National Collection; one paratype is at the Smithsonian/National Museum of Natural History, and the balance are in the Leuschner and Mustelin collections. Representative genitalic slides (53 TM ♂ and 70 TM ♀) are deposited at the San Diego Natural History Museum.

Distribution.—Records for this taxon are from southern California, including localities in southern San Diego County, and as far north as Santa Barbara County. It flies at elevations of 100 to 2,000 m in coastal chaparral, foothills, and in the higher mountains.

Etymology.—The specific name refers to the mouselike fuzzy gray coloration of the species.

Description.—Antenna filiform in both sexes. Head dark brownish-gray, antennal scape and labial palp concolorous with lighter tips. Thorax covered by dark brownish-gray hairs, patagia raised, venter concolorous. Abdomen dorsally and ventrally concolorous, whitish hair pencil on basoventral side of abdomen. Wingspan 40.0 ±1.0 mm (n = 12; range 39–42 mm). Forewing length 18.5–20 mm, broad, triangular as in *Aseptis ethnica* (Smith 1899), ground color evenly mouse gray with fine black dusting, costal edge cream-colored. Antemedian line indicated by some dark scales or missing altogether; postmedian line present as a row of dark dots on veins; subterminal line serrated, pale, weak, or missing; orbicular spot indicated by few dark scales or missing; reniform spot diffuse, large, filled with dark gray scales, usually most prominent feature on wing. Hindwing deep brownish-gray, lighter than forewing at base, darkening to forewing color or darker at half the distance to outer margin, outer edge with indentation at vein M2. Sexes similar. *Male genitalia* (Figures 5b and c): Valve straight, width equal from base to cucullus, aedoeagus short and wide, length 2.5× width, everted vesica an oval sack, length similar to aedoeagus, width 0.5× length. Slender, sharp spine from distal end of vesica pointing towards aedoeagus, length equal to width of vesica. *Female genitalia* (Figure 5d): Ovipositor lobes pointed, length 1.5× width and with prominent spines, posterior apophyses very long and narrow, anterior apophyses 0.5× as long, ductus bursae with distal constriction, corpus bursae with constriction at one-fifth of length from ductus, length of corpus bursae 2.5× maximal width, oval, surface smooth; signa absent.

Diagnosis.—A broad-winged noctuid reminiscent of *Aseptis ethnica* (Smith), with which it is sympatric in southern California. It differs from that species by being grayer with more diffuse maculation, by having a cream-colored anterior forewing edge, by having darker hindwings, and in the structure of the male genitalia. *A. murina* is sympatric with *A. ethnica* at higher altitudes in southern California but also flies in coastal lowlands, where *A. ethnica* does not occur. Figure 5 shows both species.

Remarks.—There is very little variation in this species, although the cream-colored forewing edge is much more clearly defined in fresh specimens and tends to disappear in worn specimens. *A. murina* flies with *A. ethnica* at higher altitudes, and with *A. ferruginea* (described below) at moderate altitudes in San Diego County, but also at lower elevations than either of the two other species. Since all three species show little intraspecific variation, they are easily distinguished from each other on the basis of general appearance. Genitalic structure, however, suggests that *A. murina* and *A. ethnica* are closely related. The main difference is in the shape of the cucullus, which is less pointed and turned more laterally in *A. murina*. Since *A. murina* is closely related to *A. ethnica*, we suggest placing it after this species in the systematic order. In the list by Hodges (1983), it will become 9531.1.

Genus *Aseptis* McDunnough, 1937

Aseptis ferruginea Mustelin, sp. nov.

Figures 5e–h

Holotype.—1♂. CALIFORNIA: *San Diego County*, Wynola, elevation 1,000 m, 9 July 1997, leg. T. Mustelin.

Paratypes.—15 specimens (9♂, 6♀): CALIFORNIA: *San Diego County*, same locality, date, and collector; Kitchen Creek Road, Laguna Mtns., elevation ca. 1,700 m, 16 July 1998, L. Kaila (2♂);

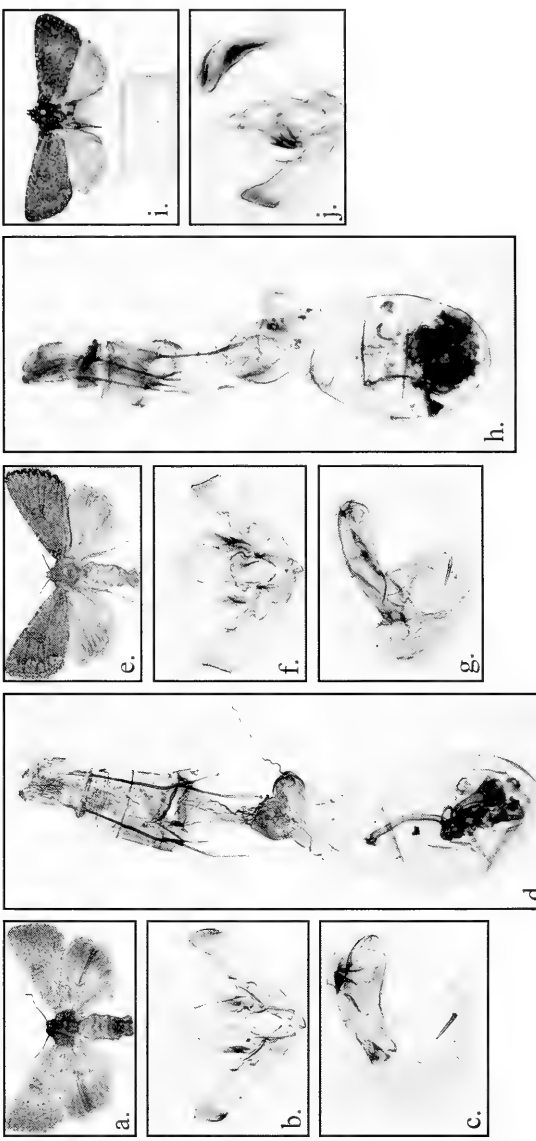

Figure 5. *Aseptis murina* Mustelin, sp. nov., *Aseptis ferruginea* Mustelin, sp. nov., and *Aseptis ethnica* (Smith). Holotype male of *Aseptis murina* (a), valves (b), aedoeagus with everted vesica (c), and bursa copulatrix (d). Holotype male of *Aseptis ferruginea* (e), valves (f), aedoeagus with everted vesica (g), bursa copulatrix (h). For comparison, the holotype male of *Aseptis ethnica* (i), and its valves and aedoeagus (j).

Boulevard/Manzanita, elevation ca. 1,200 m, 10 June 1979 (2♀), 30 June 1979 (1♂), 12 July 1979 (1♂), R. Meissner; McCain Valley, Sacatone Spring, elevation ca. 1,300 m, 25 July 1998, T. Mustelin (1♂); 2 mi S of Lake Henshaw, elevation ca. 1,000 m, 15 August 1998, T. Mustelin (1♂); 2 mi NE of Julian, elevation ca. 1,300 m, 15-17 August 1998 (3♂, 3♀); Pine Valley, 1 August 1927, Kelsey (1♀).

The holotype and five paratypes are in the San Diego Natural History Museum; two paratypes are in the Los Angeles County Museum; two paratypes are in the Canadian National Collection; two paratypes are in the Zoological Museum, Helsinki, and the balance are in the Mustelin collection. Representative genitalic slides (56 TM ♂ and 92 TM ♀) are deposited at the San Diego Natural History Museum.

Distribution.—This taxon is presently known only from a small area surrounding the higher mountains of San Diego County, California, mostly below the coniferous forest zone at altitudes of 1,000 to 1,800 m. The localities vary from oak forest to mountain–desert transition zone habitats. Records are from early June to mid-August.

Etymology.—The specific name refers to the rusty color of the species.

Description.—Antenna filiform in both sexes. Head dark brownish-gray, antennal scapes and labial palps concolorous with intermixed lighter scales. Thorax covered by dark brownish-gray hairs, patagia raised, laterally paler, venter dark-gray. Abdomen dorsally and ventrally dark brownish-gray, whitish hair pencil on basoventral side of abdomen. Wingspan 36.4 ±0.5 mm (n = 6; range 35.5–37 mm). Forewing length 17–19 mm, broad, triangular as in *Aseptis ethnica* (Smith 1899), ground color red-brown, veins black, three cream-colored and black spots on costal margin, four smaller cream-colored spots distally. Antemedian and postmedian lines missing, subterminal line serrate, thin, cream-colored, area beyond paler ground color, fringe brown. Orbicular and reniform spots brown and diffuse, reniform spot with blackish outline. Hindwing evenly glistening pale brownish-gray. Sexes similar. *Male genitalia* (Figures 5f and g): Valve straight, width equal from base to cucullus, shorter than in *A. murina* and *A. ethnica*, outer margin of cucullus straight. Aedoeagus short and wide, length 2.5× width, everted vesica as in *A. murina*. *Female genitalia* (Figure 5h): Ovipositor lobes pointed, length 1.8× width and with prominent spines, posterior apophyses very long and narrow, anterior apophyses 1.8× as long, ductus bursae with distal constriction, corpus bursae with constriction at one-third of length from ductus bursae, length of corpus bursae 2.2× maximal width, oval, surface smooth; signa absent.

Diagnosis.—A broad-winged noctuid similar to *A. ethnica*, from which it differs by being less robust, slightly less broad-winged, by having a reddish tone, and in the structure of the male genitalia. In the new species the valve is shorter, straight, and rectangular with a straight perpendicular apex. In *A. ethnica*, the valve is more curved dorsally and the apex is oblique and pointed dorsally. Also, the harpe is differently shaped; it is evenly curved in *A. ethnica* and points dorsally, while in *A. ferruginea* it is S-shaped and points more laterally. *A. ferruginea* is sympatric with both *A. ethnica* and *A. murina* in southern California. Figure 5 shows all three species.

Remarks.—The discovery of *A. ferruginea* was not anticipated, but in hindsight the species is very distinct and displays minimal variation. The specimens of *A. ferruginea* used for dissections as comparative material for *A. murina* were initially thought to represent a reddish form of *A. ethnica*. However, we obtained the genitalic slide of the holotype male of *A. ethnica* (courtesy of Dr. J. W. Brown), and it became clear that *A. ethnica* had different male genitalia compared to the reddish taxon. With this new information, it became relatively easy to segregate *A. ferruginea* from the series of darker specimens more closely resembling the holotype of *A. ethnica*. Dissection of these darker (not reddish) specimens showed that they had a genitalic structure essentially identical to the holotype of *A. ethnica*. Thus, the two species are sympatric in the mountains of southern California, although *A. ethnica* is more common at higher elevations in the coniferous forest zone while *A. ferruginea* prefers the oak forests at somewhat lower altitudes. Fresh specimens of the two species are easily segregated based on the reddish tone and black veins of *A. ferruginea*. The forewing of *A. ethnica* is darker, more yellowish-brown and the veins are marked only by a row of dark spots at the postmedian line. The valves of the two species have different shapes; brushing off the scales on the tip of the abdomen reveals this difference. Considering genitalic morphology, we conclude that *A. ferruginea* is not as closely related to *A. ethnica* as to *A. murina*. We suggest placing *A. ferruginea* after *A. murina* in the systematic order. In the list by Hodges (1983), it will become 9531.2.

Genus *Aseptis* McDunnough, 1937

Aseptis pseudolichena Mustelin and Leuschner, sp. nov.

Figures 6a–d

Holotype.—1♂. CALIFORNIA, *Los Angeles County*, East Fork of Woodwardia Camp, San Gabriel Mtns., elevation 762 m, ex. larva collected 8 December 1946 on *Ribes malvaceum*, emerged 28 January 1947, leg. C. Henne.

Paratypes.—149 specimens: CALIFORNIA, *Los Angeles County*, type locality and collector, emerged from 1 February 1947 to 5 April 1947 (5♂, 4♀); Burbank, 12 May 1961, R. H. Leuschner (1♀); Placerita Canyon, 610 m, 24 May 1974, R. H. Leuschner (1♂, 1♀); Bouquet Canyon, 25 May 1957, R. H. Leuschner (1♂); Bouquet Canyon, 31 May to 14 June 1937, L.M. Martin and Nils Westerland (15); Mt. Lowe, 6–12 June 1928, ex. C. Hill coll. (1); *San Bernardino County*, Camp O-ongo, Running Springs, elevation 920 m, 7 August 1965, 31 August 1967, leg. C. L. Hogue (1♂, 2♀); Crestline, San Bernardino Mtns., 23 July 1955, M. Douglas (1♂); Angelus Oaks, elevation 1,798 m, 26 July 1980, 16 August 1991 R. H. Leuschner (3♂); Rimforest, elevation 1,707 m, 11 July 1959, R. H. Leuschner (1♂); Blue Jay, near Lake Arrowhead, 11 July 1956, N. McFarland (3♂, 1♀); Fallsvale, San Bernardino Mtns., 18 June 1960, D. S. Verity (1♂, 2♀); *Riverside County*, Pinyon Crest, elevation 1,280 m, 3 June 1966, R. H. Leuschner (1♂); Soboda Hot Springs, 16 June 1947, C. W. Kirkwood and leg. R. H. Reid (2); *Orange County*, Santa Ana Mtns., Silverado Canyon, elevation ca. 1,500 m, 11 June 1979, G. A. Marsh (1♀); *San Diego County*, 1 mi N of Mt. Laguna, 21 June 1968, G. Gorelick (1); San Diego, 8 June 1921, E. Piazza, ex. C. Hill coll. (has second label: "Bryomima sp., probably new, HGD" Dyar?) (1); Pine Valley, 4 June 1928, F. W. Kelsey (genitalic slide number 31 TM 1♂); Laguna Mtns., elevation 1,676–1,829 m, 9 May 1997, 20 June 1997, 27 June 1998, T. Mustelin and N. Bloomfield (18); Pine Valley, elevation 1,555 m, 9 May 1997, T. Mustelin and N. Bloomfield (1); Kitchen Creek, elevation 1,372 m, 20 June 1997, T. Mustelin and N. Bloomfield (6); *Kern County*, 2.5 mi N of Greenhorn Summit, elevation 1,555 m, Kern County, 3 July to 7 September 1982–84, R. J. Ford (65); Tehachapi Mtn. Park, 20 July 1963, J. Lane (1); Shirley Meadows, Greenhorn Mtns., elevation 2,134 m, 1 July 1940, C. Henne (1); *Tulare County*, North Fork Tule River, 6 mi N of Springville, elevation 549 m, 29 July 1982 (2); Sequoia National Park, 19 August 1940, C. Henne (1♂); *Toulumne County*, Yosemite, elevation 1,158–1,219 m, 14 June 1931 (1♀); Kennedy Meadows, 9 August 1958, T. W. Davies (1♀); Yosemite National Park, Camp 19, 15 July 1937, F. L. Cramer (second label: "McD needs"), (third label: "Andropolia lichena B and McD., Det. Dr. J. Mcdunnough"), (fourth label: "Probably misplaced in "Andropolia" - McD") (1♀).

The holotype and 114 paratypes are in the Los Angeles County Museum; 20 paratypes are in the San Diego Natural History Museum; 2 paratypes are at the University of California at Riverside; 4 paratypes are in the Canadian National Collection; 4 paratypes are at the Smithsonian/National Museum of Natural History; 2 paratypes

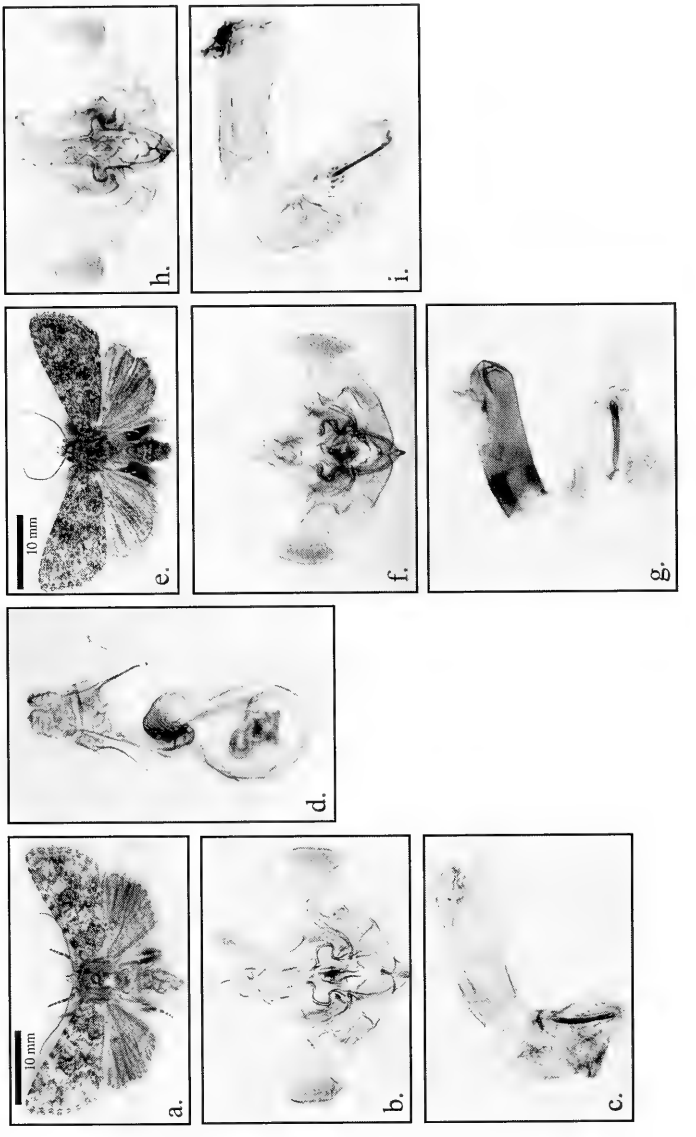

Figure 6. *Aseptis pseudolichena* Mustelin and Leuschner, sp. nov., *A. lichena* (B. and McD), and *A. paviae* (Strecker). Holotype male of *Aseptis pseudolichena* (a), valves (b), aedoeagus with everted vesica (c), bursa copulatrix (d). For comparison, male of *A. lichena* (e), its valves (f) and aedoeagus with everted vesica (g), and the valves of *A. paviae* (h), aedoeagus with everted vesica (i).

are in the Zoological Museum, Helsinki, and the balance are in the Leuschner and Mustelin collections. Representative genitalic slides (30 TM ♂ and 91 TM ♀) are deposited at the San Diego Natural History Museum.

Distribution.—This species has been widely collected in southern and central California, including many different localities from San Diego County, Riverside County, Los Angeles County, and north to Tuolumne County. The moth seems to fly in many different habitats at moderate to high altitude in southern California, including open pine and oak forest, open areas with grass and scrub, and foothill chaparral. The species can be locally abundant with tens of specimens attracted to a black light at night. The flight period seems to be from early May into August, with a tendency for later flight periods at higher elevations and in central California. Larva has been raised on gooseberry (*Ribes*).

Etymology.—The specific name refers to the confusion with *Andropolia lichena*.

Description.—Medium-sized noctuid. Antenna filiform in both sexes. Head pale greenish-tan with dark-brown stripe in front of eye, labial palps and antennal scape pale ochreous with few dark-brown scales. Thorax covered by pale greenish-tan hairs, venter paler ochreous. Abdomen pale greenish-tan, venter paler. Wingspan 33.2 ±1.2 mm ($n = 14$; range 30.5–35 mm). Forewing length 15–17 mm, ground color varying from pale greenish-tan to darker gray, with darker gray and black markings and dusting especially near wing base and in outer part of median field. Antemedian and postmedian lines double, brown, and serrate. Subterminal line distinct, lighter than ground color. Orbicular round and filled with ground color; reniform black-ringed and with dark gray center. Area beyond reniform devoid of darker scales and forming pale patch, in some specimens having more ochreous scales. Terminal lunules black, fringe tan with some black scales. Hindwing brown, with indentation at vein M2 typical of genus. Fringe tan. *Male genitalia* (Figures 6b and c): Valve short and broad, ventral margin weakly concave, dorsal margin with clear ventral angle, cucullus triangular with apical nipple, harpe finger-like hook. Aedoeagus short and broad, everted vesica short and sack-like, curved at right angle from aedoeagus, width 1.5× that of aedoeagus, length equal to that of vesica, prominent distal spine pointing towards aedoeagus, length of spine equal to width of aedoeagus. *Female genitalia* (Figure 6d): Ovipositor lobes pointed, oval, with spines except at apex, anterior and posterior apophyses equal in width and length; ductus bursae with distal sclerotized area around which appendix curves, corpus bursae oval, width 2× length, surface smooth; signa absent.

Diagnosis.—This new taxon is recognized by its tan to olive-gray ground color overlaid by dark maculation, pale area distal of the reniform spot, and the indentation and fold on the hindwing at vein M2. This maculation and hindwing morphology, as well as the genitalic structure, is typical of the genus *Aseptis*. Superficially, *A. pseudolichena* is closest to *A. catalina* (Smith), but on the basis of genitalic structure, *A. pseudolichena* is closer to *A. paviae* (Strecker) (Figure 6h). In collections, *Aseptis pseudolichena* has often been confused with *Andropolia lichena* Barnes and McDunnough (Figures 6e–g), which we also transfer to *Aseptis* (see below).

Remarks.—This species has been confused with *A. lichena*, which was described and illustrated in black and white (Figure 11 on Plate II) by Barnes and McDunnough (1912). Although quite similar in overall maculation, *Aseptis pseudolichena* is distinct from that species and usually considerably paler in coloration. On the basis of overall maculation, hindwing structure, and, particularly, genitalic similarities, *A. pseudolichena* belongs in the genus *Aseptis*, not in *Andropolia*. In fact, *Andropolia lichena* is misplaced in *Andropolia*, as it shows a much stronger affinity for *Aseptis* (see below). Superficially, *A. pseudolichena* seems closely related to *Aseptis catalina* (Smith), but based on genitalic structure, particularly of the everted vesica, *A. pseudolichena* is more similar to *A. paviae*, which has a slightly more elongated vesica, but a very similar long spine from its distal end (Figure 6i). Other species of *Aseptis* also share this single long spine (Figure 6), but some species; e.g., *Aseptis fumosa* (Grote) and *Aseptis pausis* (Smith), have a second shorter spine more proximally. From the latter species, *A. pseudolichena* is best recognized by the somewhat broader wing shape, the more diffuse maculation, the larger and more prominent pale area terminal to the reniform spot, and several details of the dark markings. In the systematic order, as published by Hodges (1983), we propose placing *Aseptis pseudolichena* after *A. pavioae* as number 9534.1.

Aseptis lichena Barnes and McDunnough, new combination

Figures 6e–g

As discussed above, *Aseptis lichena* is a close relative of the new *A. pseudolichena*; it has the characteristic notch at vein M2 of the genus *Aseptis*, as defined by McDunnough (1937). This feature was overlooked by Barnes and McDunnough in their original description of the species only because the type is a female and therefore has a much less pronounced notch. *A. lichena* also has valves of the general *Aseptis* type and the long solitary spine on the vesica found in most species of *Aseptis*.

Genus *Orthomoia* Mustelin, gen. nov.

Etymology.—The name is derived from "ortho-," meaning "straight" (from the shape of the valva), and "-moia" by analogy to *Xylomoia*. The name is feminine.

Description. Antenna filiform in both sexes. Eyes naked. Head small, covered with narrow scales; frons smooth. Thorax wide and rounded, dorsally covered in flat and narrow scales, ventrally in hair-like scales. Abdomen dorsally covered in flat scales, ventrally in short hair-like scales. Legs with tibial spines as in tribe Apameini; hair tufts absent. Forewing short and rounded. Hindwing with trifid veination. *Male genitalia* (Figures 7b and c): Valve narrow and straight, cucullus dorsally pointed, harpe curved, aedoeagus slender, everted vesica of similar diameter, length equal to aedoeagus, slightly curved and with small cornuti at mid-length. *Female genitalia* (Figures 6b and c): Ovipositor lobe triangular, length 2× width, eighth sternite wide, length 0.3× width, ductus bursae tapering, length 3× length of ovipositor lobe, corpus bursae with constriction at one-third of length from ductus bursae, length 2.3× maximal width, oval, surface smooth; signa absent.

Diagnosis.—This new genus is superficially similar to *Xylomoia* Staudinger but differs quite significantly from that genus in overall structure of the male genitalia. Most notably, the valves are straight instead of being ventrally curved as in all species of *Xylomoia*, as discussed in a recent generic revision (Mikkola, 1998). The genus is presently monotypic, the species being *Orthomoia bloomfieldi* Mustelin, sp. nov., described below. This species is superficially close to *Xylomoia didonea* (Smith) and *Xylomoia chagnoni* Barnes and McDunnough, with which it shares the prominent and outcurved postmedian line and size, although it is more robust and has broader and rounder forewings. Moreover, the clearly different morphology of the male genitalia suggests that the resemblance of the new species to *Xylomoia* may be only superficial. Thus, it would likely be incorrect to place the new species in *Xylomoia*. We have therefore erected the new genus *Orthomoia* to avoid erroneous assumptions of close relatedness.

Orthomoia bloomfieldi Mustelin, sp. nov.

Figure 7

Holotype.—1♂. CALIFORNIA, *San Diego County*, Miramar Airstation, 4 May 1997, leg. N. Bloomfield.

Paratypes.—31 specimens (29♂, 2♀): CALIFORNIA, *San Diego County*, Miramar Airstation, 1 May 1998 (1♂), 4 May 1997 (1♂), 10 May 1998 (1♂), 17 May 1998 (4♂), 24 May 1998 (6♂), 8 June 1998 (7♂, 2♀), 20 June 1998 (8♂), N. Bloomfield; Torrey Pines State Park, 31 May 1969, leg. R. H. Leuschner (1♂).

The holotype and ten paratypes are in the San Diego Natural History Museum; two paratypes are in the Canadian National Collection; two paratypes are at the Smithsonian/National Museum of Natural History; two paratypes are in the Zoological Museum, Helsinki, and the balance are in the Leuschner and Mustelin collections. Representative genitalic slides (94 TM ♂ and 97 TM ♀) are deposited at the San Diego Natural History Museum.

Distribution.—This taxon is currently known from only two localities in San Diego, California, both on the coastal plateau within a few miles of the Pacific Ocean. The majority (thirty-one of thirty-two) is from one of these localities, a riparian corridor through chaparral in San Clemente Canyon, Marine Corps Air Station Miramar. The moth flies during May and June. Food plants and immature stages are unknown.

Etymology.—We take great pleasure in naming this species for Norris Bloomfield, who collected the type specimen and thirty of the thirty-one paratypes.

Description.—Smaller than average noctuid. Antenna filiform in both sexes. Head small, covered with narrow gray-brown and pale tan scales. Thorax covered in gray-brown and pale tan scales, venter and legs concolorous with thorax. Abdomen dorsally and ventrally concolorous with thorax. Wingspan: 23–24 mm (n = 2). Forewing length 12.5–13 mm, ground color gray-brown with slight greenish hue. Basal dash dark and antemedian line weak, pale gray, laterally black-rimmed; median field with variable dark bar from antemedian to postmedian line; orbicular and reniform spots faintly outlined in dark and filled with barely paler scales than ground color; postmedian line white or pale gray, medially black-rimmed, outcurved close to outer forewing margin; subterminal space darker with three pale gray patches near apex and at veins Cu1 and Cu2. Ventral side of both wings paler with prominent dark discal spots and median lines. *Male genitalia* (Figures 7b and c): As for genus. *Female genitalia* (Figures 6b and c): As for genus.

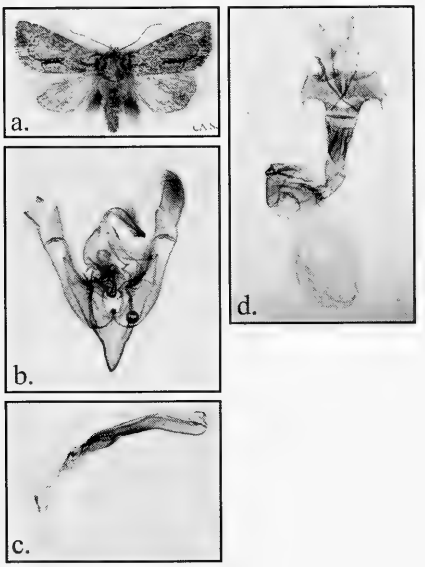

Figure 7. *Orthomoia bloomfieldi* Mustelin, gen. nov. and sp. nov. Paratype male (a), valves (b), aedoeagus with everted vesica (c), bursa copulatrix (d).

Diagnosis.—A relatively small noctuid reminiscent of *Xylomoia didonea* (Smith) and *X. chagnoni* Barnes and McDunnough, neither of which occurs in southern California. *Orthomoia bloomfieldi* has a rounder forewing apex, a more robust body, and also differs in maculation. It lacks the brownish tint of the *Xylomoia* species and has a pronounced curved pale postmedian line, which is the most prominent feature of the forewing maculation.

Remarks.—This species is placed after *X. chagnoni* in the systematic list in Hodges (1983) and given the number 9433.1.

Subfamily Hadeninae

Genus *Lacinipolia* McDunnough, 1937

Lacinipolia subalba Mustelin, sp. nov.

Figure 8

Holotype.—1♂. CALIFORNIA: *San Diego County*, south rim of Los Peñasquitos Canyon, elevation 76 m, 4 October 1997, leg. T. Mustelin.

Paratypes.—45 specimens (31♂, 14♀): CALIFORNIA, *San Diego County*, same locality and collector as holotype, 23 September 1996 (1♂), 26 September 1997 (1♂), 22 September 1997 (1♂), 5 October 1997 (1♂), 12 October 1998 (1♂), 13 October 1998 (1♀), 17 October 1998 (1♂, 1♀), 8 October 1999 (1♂), 11 October 1999 (1♂), 19 October 1999 (1♂); Miramar Airstation, 22 September (1♂), 1 October 1996 (2♂, 3♀), 5 October 1996 (1♂, 1♀), 7 October 1996 (1♂), 9 October 1996 (5♂, 1♀), 13 October 1996 (3♂, 3♀), 15 October 1996 (2♂), 18 October 1996 (1♂), N. Bloomfield; La Mesa, 1 October 1956, A. A. Lee (1♀); San Diego, [no date], W. S. Wright (4♂, 3♀); *Orange County*, Rancho Mission Viejo, 28 September–3 October 1999, N. Bloomfield (2♂).

The holotype and twenty paratypes are in the San Diego Natural History Museum; four paratypes are in the Los Angeles County Museum; four paratypes are in the Canadian National Collection; four paratypes are at the Smithsonian/National Museum of Natural History, and the balance are in the Leuschner and Mustelin collections. Representative genitalic slides (19 TM ♂ and 87 TM ♀) are deposited at the San Diego Natural History Museum.

Etymology.—The specific name refers to the pure white hindwings of the male. It also means "less than white," referring to the soiled white hindwings of the female.

Description.—Smaller than average noctuid. Antenna bifasciculate in males, filiform in females. Eye hairy. Head, including labial palp and antennal scape, covered with pale gray scales with white tips, labial palp darker laterally, black scales in front of eye, collar pale steel-gray with black transverse line. Thorax covered with pale steel-gray scales, patagia with black scales laterally, venter paler gray. Abdomen pale gray with whitish tufts dorsally at base, venter paler. Forewing length: 11.5–14 mm, narrow, ground color pale steel-gray with some very pale brown scales in median field; basal dash black; antemedian line weak, dark-gray and does not reach posterior edge of wing; postmedian line black, thin, outwards lined with white, touches reniform spot, upper half very weak or missing, turns inward under

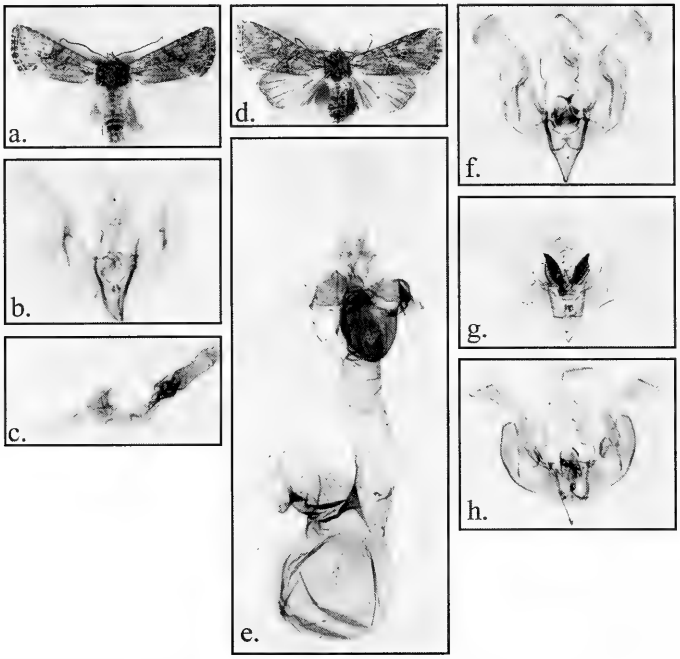

Figure 8. *Lacinipolia subalba* Mustelin, sp. nov. Holotype male (a), valves (b), aedoeagus with everted vesica (c), paratype female (d), bursa copulatrix (e). For comparison, valves of *Lacinipolia pensilis* (f), *Lacinipolia vicina* (g), and *Lacinipolia illaudabilis*.

vein Cu2; subterminal line a row of dark gray dots between veins with white dot under vein Cu2; area between postmedian line and subterminal line paler than rest of wing under vein Cu2; terminal line black, broken at veins, rimmed with white; fringe gray. Orbicular spot round, large, outlined in black, filled with ground color or paler gray; reniform spot outlined in black, filled with ground color or paler gray, lower portion diffusely darker gray; claviform spot outlined in black. Male hindwing white with thin brown terminal line, veins with brown dusting in some specimens. Female hindwing pale gray darkening towards outer margin. *Male genitalia* (Figures 8b and c): Valve basally broad, ventrally convex, distal third narrowing to 0.25× basal width forming narrow neck, apex broadening to rounded triangle 0.7× as broad as base of valve; harpe square-shaped at center of valve, saccular extension with two finger-like projections. Aedoeagus smooth with distal crown of spines; vesica 3× length of aedoeagus, spiral-shaped, proximal width equal to aedoeagus, distal third tapered. *Female genitalia* (Figure 8e): Ovipositor lobes pointed, triangular; anterior apophyses thin and long; ductus bursae with proximal sclerotized area, length 5× width, width 2× width of ovipositor lobe; corpus bursae round, sack-like, width 2.5× width of ductus bursae, surface smooth, signa absent, appendix bursae large and curved.

Diagnosis.—A noctuid belonging to the *Lacinipolia vicina* (Grote) group, the new taxon is particularly closely related to *L. pensilis* (Grote) but differs from it in lacking all brown tones and instead having a pale steel-gray ground color and pure white hindwings in males. The species is generally smaller and has narrower forewings than other related species of *Lacinipolia*. It also differs in genitalic structure. For comparison, the male genitalia of *L. pensilis*, *L. vicina*, and *L. illaudabilis* (Grote) are also shown in Figure 8.

Remarks.—This species has been known for several years as either a new species (R. Robertson, personal communication) or a pale coastal race of *L. pensilis*. Genitalic structure, however, indicates that it is a distinct species. Notably, the lateral margin of the valve is evenly rounded, while in *L. pensilis* it is shaped like a rectangle. We suggest placing it in the systematic order after *L. pensilis,* giving it number 10395.1 in the list edited by Hodges (1983).

Subfamily Hadeninae

Genus *Fergusonix* Mustelin and Leuschner, gen. nov.

This new genus is superficially quite similar to *Miodera* Smith. Both genera contain smaller than average, densely haired noctuids adapted to flying during the coldest part of the year. The new genus is presently monotypic, the sole member being *Fergusonix januaris* Mustelin and Leuschner, new genus and species, described below. This species resembles *Miodera stigmata* Smith, 1908, in having its head, thorax, and abdomen covered in long hair-like scales, in overall coloration and maculation. However, the new taxon differs in having filiform antennae in both sexes, while males of *M. stigmata* and *M. eureka* Barnes and Benjamin, have broadly pectinate antennae. The morphology of the male genitalia also differ too much for placement of the new species in the same genus. In the new genus the

valves are long and evenly slender with a rounded apex and the harpe is a large curved spine, while M. stigmata has broad and curved valves with a laterally turned cucullus and a small flap-like harpe.

Etymology.—We take great pleasure in naming the new genus in honor of Douglas Ferguson, a pioneer lepidopterist in North America.

Description.—Antenna filiform in both sexes. Eyes hairy. Head, including labial palps and antennal scape, and thorax densely covered by long hair-like scales. Legs with tibial spurs as in subfamily, tarsi striped in dark and white. Abdomen covered in long hair-like scales. Forewing triangular, veination as in subfamily. Hindwing with trifid veination as in subfamily. *Male genitalia* (Figures 9b and c): Valve narrow and relatively straight with small angle medially, apically rounded. Harpe prominent curved hook. Aedoeagus smooth, everted vesica with subbasal diverticulum, 1.5× width of aedoeagus, with three short cornuti, distally another cornutus. Length of vesica twice that of aedoeagus. *Female genitalia* (Figure 9e): Ovipositor lobe narrow and pointed, eighth abdominal segment sclerotized, 3× as wide as ovipositor lobes, ductus bursae thick, diameter equal to ovipositor lobes, length 3× width, bursa copulatrix round and with sac-like appendix longer than bursa and twisted around bursa with ductus seminalis pointing away from ductus bursae. Three long signa on corpus bursae.

Fergusonix januaris Mustelin and Leuschner, sp. nov.

Figure 9

Holotype.—1♂. CALIFORNIA, *Riverside County*, Glen Ivy Hot Springs, 25 January 1946, leg. Fred H. Rindge.

Paratypes.—91 specimens (78♂, 13♀): CALIFORNIA, *Riverside County*, Pinyon Crest, elevation 1,400 m, 6 March 1965 (1♂), 12 February 1967 (1♂, 1♀), 26 February 1972 (1♀), leg. R. H. Leuschner; Aguanga, 9 February 1968, leg. R. H. Leuschner (1♀); Bundy Canyon, 9 mi S. of Perris, elevation 550 m 17 December 1974 (1♂); 27 January 1982 (1♂), 3 February 1980 (1♂); 17 February 1982 (1♂); 21 February 1982 (1♂, 1♀); Rancho La Sierra, 22 January 1946, Fred Rindge (1♂); Perris, 12 February [C. Hill's writing] (1♂); *San Bernardino County*, Indian Cove, Joshua Tree National Monument, 11 April 1964, leg. R. H. Leuschner (1♂); *San Diego County*, San Diego [no precise locality data] 11 December 1913, G. H. Field (1♀); south rim of Peñasquitos Canyon, 4 January 1997 (1♂), 18 October 1997 (1♂), 1 January 1998 (1♀), 23 February 1998 (1♂), leg T. Mustelin; Inaja Picnic Ground, 2 mi east of Santa Ysabel, 11 April 1997, leg. T. Mustelin (1♀); Miramar Airstation, 21 January 1996 (4♂, 1♀), 23 January 1996 (1♂), 14 February 1996 (1♂), 16 February 1996 (2♂), 29 February 1996 (1♀), 19 March 1996 (5♂), 13 December 1996 (2♂), 28 December 1996 (1♀), 1 January 1997 (1♂, 1♀), 24 February 1997 (1♂), 22 March 1997 (1♂), 29 January 1998 (1♂), 11 March 1998 (2♂), leg. Norris Bloomfield; Del Mar, 23 February 1947, leg. John A. Comstock (1♂); McCain Valley, 28 April 1998, N. Bloomfield and T. Mustelin (2♂); Oriflamme Canyon, Oriflamme Mtns., elevation 1,300 m, 19 March 1988, leg. J. P. and K. E. S. Donahue (1♂); Pine Valley, 5 March 1931 (probably from C. Hill collection) (1♂); Rainbow, 1 February 1964, leg. R. H. Leuschner (3♂); 5 mi E of El Cajon, 7 February 1987, leg. R. H. Leuschner (1♀); Alpine, 13 February 1971, leg. R. H. Leuschner (3♂, 1♀); Pala, 5 November 1983 (2♂), 15 January 1983 (17♂), 19 January 1986 (11♂), 24 February 1985 (4♂) leg. R. H.

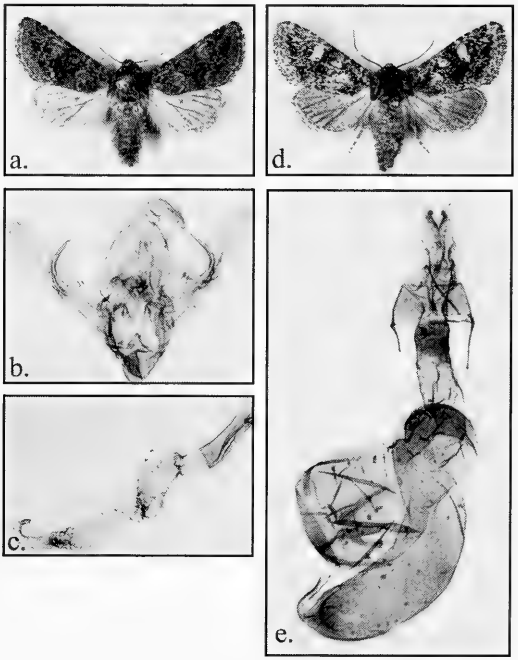

Figure 9. *Fergusonix januaris* Mustelin and Leuschner, gen. nov. and sp. nov. Holotype male (a), valves (b), aedoeagus with everted vesica (c), paratype female (d), bursa copulatrix (e).

Leuschner.

The holotype and ten paratypes are in the Los Angeles County Museum; twenty-five paratypes are in the San Diego Natural History Museum; four paratypes are in the Canadian National Collection; four paratypes are at the Smithsonian/National Museum of Natural History, and the balance are in the Leuschner and Mustelin collections. Representative genitalic slides (21 TM ♂ and 71 TM ♀) are deposited at the San Diego Natural History Museum.

Distribution.—This species seems to be relatively widely distributed in southern California. Records of it exist from many parts of San Diego County and western Riverside County. A single specimen was taken in southwestern San Bernardino County. Habitats include coastal chaparral and canyons from sea level to open oak forest at 1,400 m elevation in the foothills. Several specimens have also been collected in drier inland habitats and in the mountain–desert transition zone. Near the coast, the flight period is from early January or late December into late February. Inland, the flight probably starts later, and fresh specimens can be captured into April. Food plants and immature stages are unknown.

Etymology.—The specific name is derived from the peak flight period of the moth, which occurs in January near the coast.

Description.—Somewhat smaller than average noctuid. Head, including labial palps and antennal scape covered by mixture of dark gray-brown and whitish hair-like scales, thorax similarly covered with tegulae having more paler hairs centrally and more dark ones laterally, anterior rim of patagia also paler, venter lighter. Legs brown, tarsi striped in brown and white. Abdomen lighter gray-brown, venter same color. Wingspan: 28.8 ±1.1 mm ($n = 66$; range 27–31 mm). Forewing length 12–14 mm, ground color dark gray-brown with black, particularly in median field and proximal to subterminal line, and some greenish scales in fresh specimens. Antemedian line black, forming three outward bulges, postmedian line black, double, serrate. Orbicular spot round, filled with ground color or lighter, reniform large, kidney-shaped and filled with lighter brown to cream color. Subterminal line present as border between proximal dark and the lighter subterminal space, terminal line of black lunules; fringe basally pale yellow; otherwise of ground color with some yellowish scales. Hindwing light yellowish gray in males, darker gray in females; veins, discal spot, and terminal line dark gray; fringe basally light yellow; otherwise light yellowish gray. *Male genitalia* (Figures 9b and c): As in genus. *Female genitalia* (Figure 9e): As in genus.

Diagnosis.—This species is superficially quite similar to *Miodera stigmata* Smith, 1908, which also flies in midwinter in southern California and often flies with *Fergusonix januaris*. Males of the two species are readily distinguished based on antennae: Males of *M. stigmata* have broadly pectinate antennae while those of *F. januaris* are filiform. Females of *F. januaris* are generally larger than females of *M. stigmata*, and also differ by wing shape, absence of W-mark on subterminal line, and absence of dark scales in lower end of reniform spot.

Remarks.—This species has been known for several years as a probable new species of undetermined genus (J. W. Brown, personal communication). Its placement in a new genus results from its insufficient similarity to any described genus. We suggest placing it in the systematic order after the genus *Miodera,* giving it number 10624.1 in the list edited by Hodges (1983).

Subfamily Noctuinae Latreille, 1809

Genus *Euxoa* Hübner, 1821

Euxoa faulkneri Mustelin, sp. nov.

Figure 10

Holotype.—1♂. CALIFORNIA, *San Diego County*, Laguna Mtns., Kitchen Creek Rd., elevation 1,676 m, 11 July 1996, T. Mustelin (1♂).

Paratypes.—58 specimens (31♂, 27♀): CALIFORNIA, *San Diego County*, type locality and collector (2♂, 2♀); Laguna Mtns., elevation 1,800 m, 9 May 1997 (1♂), 20 June 1997 (1♀), 25 July 1998 (2♂, 1♀), 28 July 1995 (2♀), 15 July 1999 (1♂, 1♀), leg. T. Mustelin; Mount Palomar, elevation ca. 1,600 m, 13–17 June 1999 (2♂), 18–19 June 1999 (3♂, 3♀), 21–26 June 1999 (3♂, 2♀), 27–30 June 1999 (6♂, 1♀), 27 June–2 July 1999 (2♀), 4–7 July 1999 (3♂, 2♀), 8–14 July 1999 (2♂, 1♀), 12–15 July 1999 (1♂), 28–31 July 1999 (1♀), T. Mustelin and N. Bloomfield leg.; *San Bernardino County*, Rimforest, 3 mi SW of Lake Arrowhead, elevation 1,700 m, 11 July 1959, R. H. Leuschner (2♂, 3♀); Big Bear Lake, elevation 2,100 m, 6 August 1978, R. H. Leuschner (2♀); Boulder Bay, Big Bear Lake, elevation 2,100 m, 1–3 July 1989, L. Fall (1♀); Angelus Oaks, elevation 1,750 m, 26 July 1980, R. H. Leuschner (1♀); Wrightwood, elevation 1,850 m, 9 July 1964, C. A. Hill (1♂). *Mono County*, Mammoth Tavern, below Mammoth Lake, elevation 2,500 m, (no date), M. Douglas (1♂).

The holotype and four paratypes are in the San Diego Natural History Museum; two paratypes are in the Los Angeles County Museum; four paratypes are in the Canadian National Collection; two paratypes are at the Smithsonian/National Museum of Natural History, and the balance are in the Leuschner and Mustelin collections. Representative genitalic slides (90 TM ♂ and 65 TM ♀) are deposited at the San Diego Natural History Museum.

Distribution.—This taxon is known from the Laguna Mountains, Mount Palomar, the San Bernardino Mountains, and southern Sierra Nevada and flies in the coniferous forest zone at elevations above 1,700 m. We have also seen a worn specimen from the San Jacinto range in Riverside County, which is not included in the type series. This species is on the wing from May into August.

Etymology.—We take great pleasure in naming this species in honor of David K. Faulkner, a pioneer entomologist in San Diego County, California.

Description.—Medium-sized *Euxoa*. Antenna weakly fasciculate in male, filiform in female. Head covered in brown and ash-gray scales, prothoracic collar with thin dark-brown stripe. Thorax brown with some ash-gray scales, venter pale buff. Abdomen brown, venter paler. Wingspan: 32.4 ±1.6 mm ($n = 20$; range 29–35 mm). Forewing length: 13–15.5 mm, ground color pale brown with light ash-gray dusting in basal field and variably beyond postmedian line, median field and subterminal area reddish brown. Antemedian line black, postmedian line black and serrate, subterminal line yellow preceded by reddish brown. Claviform spot outlined in black, filled with ground color; orbicular spot round, thinly outlined in black and filled with pale ash gray, reniform spot more incompletely outlined in black, filled with light yellow with ash-gray to brown middle, dark cubital vein cuts into lower third of reniform spot. Terminally thin black lunules, fringe basally dark, distally pale brown. Hindwing brown, darkening towards outer margin, fringe basally pale yellowish, then dark, distally white. *Male genitalia:* (Figures 10b and c): Very similar to *Euxoa satis* (Harvey, 1876) (see illustration in Lafontaine 1987), uncus slender, tapering towards apex, sacculus length 0.3× valve, two long and slender extensions: lateral pointed, as long as valva, medial blunt-ended, 0.5× as long as valva. Valva with straight lateral edge, medial edge incurving, length 3× width. Aedoeagus shorter than in *E. satis*, slightly curved, vesica shorter, but with similar subbasal and subapical diverticula as in *E. satis*. *Female genitalia* (Figure 10e): Ovipositor lobes rounded, blade-like, anterior apophysis 0.3× as long as posterior apophysis, apically broad as in *E. selenis* (see illustration in Lafontaine 1987). Ductus bursae narrow, corpus bursae shaped as in *E. brunneigera*.

Diagnosis.—A member of the *infausta* group of *Euxoa* (Lafontaine, 1987), which consists of *E. infausta* (Walker), *E. satis* (Harvey), *E.*

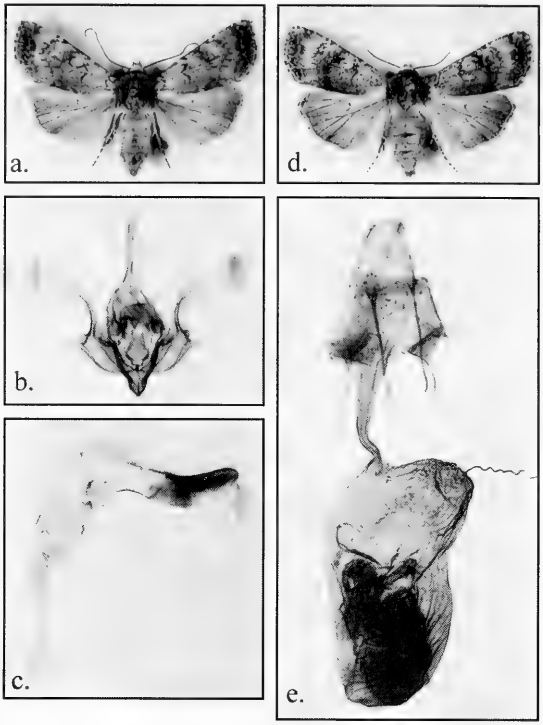

Figure 10. *Euxoa faulkneri* Mustelin and Leuschner, sp. nov. Holotype male (a), valves (b), aedoeagus with everted vesica (c), paratype female (d), bursa copulatrix (e).

brunneigera (Grote), *E. selenis* (Smith), *E. piniae* Buckett and Bauer, *E. bicollaris* (Grote), and *E. inyoca* Benjamin. The new taxon differs from other members of this group in being more contrastingly marked with ash gray in basal and postmedian areas, rusty brown in median field, and more or less pronounced light yellow in reniform spot. It also has a thinner black line across the prothoracic collar than other group members. The genitalia of both sexes also suggest that *E. faulkneri* is a distinct member of this group, although it resembles the others very closely.

Remarks.—This species is quite distinct in outer appearance but very closely related to other members of the *infausta* group in genitalic morphology. It is sympatric with several members of this group in the mountains of southern California. We suggest placing it in the systematic order after *E. infausta,* giving it number 10785.1 in the list edited by Hodges (1983).

DISCUSSION

We have described twelve new species of Noctuidae from southern California and one new species more widely distributed in North America. Most of the new species are restricted to southern California, some to San Diego County, in the southernmost part of the state. These include *Acontia lagunae*, which is largely restricted to the summit plateau of the Laguna Mountains, and *Aseptis ferruginea*, which occurs mainly on somewhat lower elevations surrounding the same mountains. These two species, with *Merolonche australis*, *Apamea bernardino*, *Apamea gabrieli*, and *Aseptis murina*, and *Euxoa faulkneri* are likely to represent geographically isolated southern populations, presumably Pleistocene relicts, of more northern taxa that have evolved into new species. Accordingly, these noctuids are restricted to the highest mountains of southern California: *Merolonche australis*, *Apamea bernardino*, and *Apamea gabrieli* to the Transverse Ranges, *Aseptis pseudolichena*, to both Coast Ranges and Transverse Ranges and the Sierra Nevada as far north as Yosemite, where it may overlap with *Aseptis lichena*. *Euxoa faulkneri* also occurs from the Laguna Mountains north to Mono County.

Two new species are endemic to coastal San Diego County, namely, *Orthomoia bloomfieldi* and *Lacinipolia subalba*; two others, *Aseptis murina* and *Fergusonix januaris*, fly over a larger area of southern California from the coastal plateau through the foothills and mountains, but only south of the Transverse Ranges. Finally, one species, *Acronicta browni*, occurs only on the desert side of the Coast Ranges in the mountain–desert transition zone. Presently, we are not aware of any specimens of the new taxa from Mexico, but given the proximity of some habitats to the U.S.-Mexican border, we find it very likely that *Acronicta browni* occurs immediately south of the border near Jacumba and that populations of *Acontia lagunae*, *Aseptis ferruginea*, *Aseptis pseudolichena*, and *Euxoa faulkneri* will be found

in the higher mountains of Baja California. *Aseptis murina*, *Orthomoia bloomfieldi*, *Lacinipolia subalba*, and *Fergusonix januaris* are likely to occur in coastal habitats in Baja California.

The description of the new taxa represents a step toward a more thorough understanding of the noctuid fauna of southern California. It is likely that several unrecognized taxa remain to be studied and described in this area, which is remarkably rich in endemic species. A number of such undescribed species are currently under study.

ACKNOWLEDGMENTS

We thank the San Diego Natural History Museum, the Los Angeles County Museum of Natural History, and Marine Corps Air Station Miramar (contract No. N68711-95-LT-C0048) for allowing us to collect specimens on the base.

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