

NEW SPECIES OF HIPPEMELAS AND ACMAEODERA FROM WESTERN NORTH AMERICA (Coleoptera: Buprestidae)¹

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ABSTRACT

New species described include *Hippomelas fulgida* from southern Idaho, *H. lariversi* from northwestern Nevada, *H. imperialis* from southeastern California, *Acmaeodera knowltoni* from the Great Basin area, and *A. idahoensis*, which occurs predominately in the Pacific Northwest.

The following five new species are described at this time to make their names available for use in several forthcoming publications. Two of these species are dedicated to Dr. Ira LaRivers, University of Nevada, and Dr. George F. Knowlton, Utah State University, in recognition of their many and varied contributions to entomology.

Hippomelas (Gyascutus) fulgida Barr, new species (Fig. 1)

MALE. Robust, moderately convex; shining, metallic blue-green, head, pronotum, and ventral surface with a brassy luster.

Head rather densely clothed with short, suberect, white hairs, especially along eyes and across vertex; front finely, irregularly punctured, with numerous small and irregular, strongly elevated, smooth callosities, broadly depressed at middle above clypeus; supra-antennal ridges well developed, subangulate near sides and merging into clypeus at middle; clypeus finely, irregularly punctured laterally, nearly smooth along front margin and at middle, front margin broadly, shallowly, arcuately emarginate at middle, broadly rounded laterally; vertex finely, densely punctured; antenna elongate, extending to about elytral humerus, segments 2 and 3 subcylindrical with 3 about twice as long as 2, segments 4 through 10 subflattened, feebly serrate, outer lateral margin of each very broadly rounded, segment 4 very slightly longer than 3 and with a small band of densely placed, sensory punctures near outer lateral margin, segment 5 subequal to 4 in length but with band of sensory punctures longer and wider, segments 6 through 11 progressively shorter but with band of sensory punctures better developed, segment 11 subflattened, deeply, rectangularly notched at outer angle.

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Pronotum nearly one and one-half times wider across base than length at middle; front margin very broadly and shallowly lobed at middle; sides broadest at base, broadly and gradually, sinuately narrowing towards front; hind angles acute; hind margin strongly lobed at middle, with lobe shallowly, arcuately emarginate in front of scutellum; surface with numerous, large, irregular callosities, callosities more strongly elevated laterally and larger, flatter, and coalesced at middle especially on posterior half, intervening areas finely, rather sparsely and irregularly punctured, area behind front margin with a rather narrow, transverse, irregular depression, pubescence inconspicuous, consisting of very short, subdepressed, white hairs tending to be concentrated in areas between callosities.

Elytra convex, approximately twice as long at suture than width across humeri; sides very gradually narrowing from humerus about to middle, then more abruptly, arcuately narrowing to apices; lateral margins entire except for a few coarse serrations on apical fourth; apices distinctly bidentate, sutural and lateral spines acuminate; surface finely broken and confused, with numerous, very small, non-punctured, feebly raised areas, raised areas frequently coalescing, slightly transverse basally, somewhat linear near suture, and forming an obsolete median costa on apical third, punctures very small and irregularly placed, faintly substriate near suture, confused and dense toward sides, pubescence indistinct, consisting of very short, subdepressed white hairs.

Ventral surface densely clothed with short, recumbent, white hairs except for median areas where pubescence becomes sparse; prosternum subflattened, with a shallow, transverse median depression behind front margin, sparsely punctured medially, slightly roughened laterally, front margin truncate at middle, broadly, indistinctly lobed near sides, prosternal process strongly shining, brassy, smooth except for a row of small punctures at middle; metasternum and metacoxa highly polished, with a few tiny punctures at middle, and with more densely placed punctures and irregular smooth spaces laterally, metepisternum with several irregular smooth spaces on anterior half, finely, densely punctured on apical half; abdomen sparsely, shallowly punctured, finely densely roughened along front margins and at sides of sternites 2 through 5, sublateral tooth of sternites 2 through 4 well developed, blunt, last sternite with lateral margins toothed at about middle, hind angles bearing a small acute tooth, hind margin broadly, shallowly arcuate, subapical ridge entire, irregularly notched.

Legs finely, rather densely punctured; protrochanter with apical tooth well developed, acute; protibia arcuate and feebly, sinuately expanded apically, inner margin with 12 indistinct teeth on apical half; metatarsus with first segment one and two-thirds times longer than second segment and approximately one and three-fourths times longer than fifth segment.

Length 21.3 mm, width 8.2 mm.

FEMALE. Differs from male in that antennae do not quite attain hind angles of pronotum and segment 3 is slightly longer than segment 4; broadly rounded hind margin of last abdominal sternite feebly scalloped; protibial teeth faintly indicated; segment 1 of metatarsus approximately twice as long as segment 2 and approximately one and one-fourth times longer than segment 5.

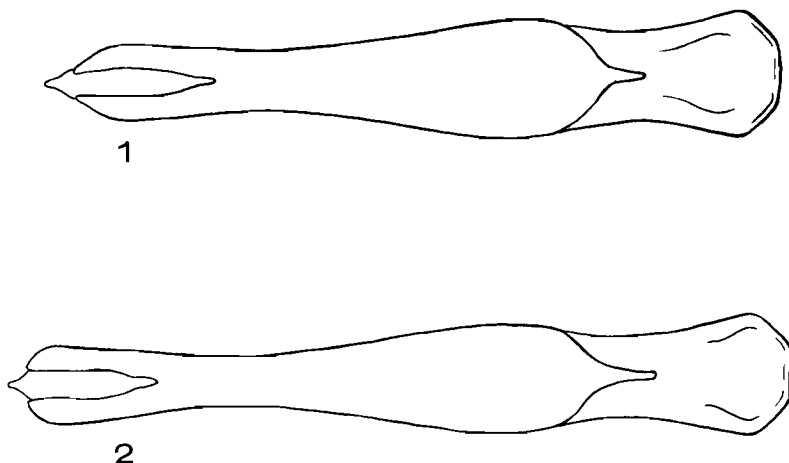
Length 26.5 mm, width 10.8 mm.

Holotype male and allotype female, 2 mi SW of Bruneau, Owyhee Co., Idaho, May 6, 1956 (R. A. Mackie) (California Academy of Sciences, on indefinite loan from the University of Idaho). Paratypes. IDAHO: 7♂, 3♀, same data as holotype; 5♂, 2♀, Hot Springs, Owyhee Co., July 17, 1949 (W. F. Barr), on foliage of *Salix* sp. and *Melilotus alba*; 1♀, Grandview, Owyhee Co., August 29, 1955 (D. A. Burgh); 1♀, Sinker Creek, SE of Murphy, Owyhee Co., September 5, 1962 (A. J. Walz); 4♂, 3♀, 16 mi E of Murphy, Owyhee Co., July 14, 1966 (L. S. Hawkins, Jr.), on foliage of *Salsola kali*; 1♂, Mt. Home Air Force Base, Elmore Co., June-July 1959, in a Japanese beetle trap. Paratypes in the collections of the California Academy of Sciences, University of Idaho, W. F. Barr, G. H. Nelson, and R. L. Westcott.

This species runs to *H. obliterata* (LeConte) in Casey's key (1909). It is distinguished from that species by the absence of obsolescent smooth costae on the elytra, the usually bluish green elytra, the shining, usually brassy-green pronotum, by the flattened and usually expanded discal callosities of the pronotum, and by the shape of the male genitalia. Other features appear to be of value in recognizing *H. fulgida*: the body is not pulverulent, the prosternum usually is transversely depressed at the middle immediately behind the front margin, and the metepisternum usually, is finely, densely punctured on the apical half and has obsolete smooth callosities on the anterior half.

The males range in length from 16.5 to 25.0 mm and the females from 17.5 to 26.5 mm. Although the upper surface usually is bicolored, some specimens show a single color ranging from a shining bluish green to a brassy green. The ventral surface is also variable, ranging from brassy to brassy green with or without coppery or purplish reflections. The prosternum may have the transverse median depression behind the front margin reduced or absent and, in addition, a shallow circular median depression may be present in front of the prosternal lobe.

The plant associations of *H. fulgida* are interesting. Specimens have been found on the foliage of willow (*Salix* sp.), sweet clover (*Melilotus alba*), and Russian thistle (*Salsola kali*). It was assumed that willow was the plant in which larval development takes place until the summer of 1966, when R. L. Westcott and I found *Hippomelas* larvae and a dead broken adult of *H. fulgida* in the roots of shadscale (*Atriplex confertifolia*) approximately 20 miles southwest of Mt. Home, Elmore County, Idaho. Subsequent examination showed shadscale



FIGS. 1-2. Dorsal view of male genitalia. 1, *Hippomelas* (*Gyascutus*) *fulgida* n. sp. 2, *H.* (*G.*) *lariversi*.

present at all collection sites of this beetle. It now must be assumed that the other plant associations constitute visitation rather than true host records for *H. fulgida*. The attraction of *H. fulgida* to Japanese beetle traps also is of interest. Many specimens have been taken from these traps at the Mt. Home Air Force Base, but they were so badly damaged that they had to be discarded. To my knowledge, this is the first record of a buprestid beetle responding to the chemical attractants of this type of trap.

***Hippomelas* (*Gyascutus*) *lariversi* Barr, new species**

(Fig. 2)

MALE. Robust, moderately convex; shining, uniformly metallic blue-green with a brassy luster evident on ventral surface.

Head sparsely clothed with short, suberect, white hairs except densely pubescent along inner margin of eyes; front rather finely, very densely and irregularly punctured, with small, irregular callosities at sides on upper half, broadly depressed at middle above clypeus; supra-antennal ridges well developed, subangulate near sides and merging into clypeus at middle; clypeus finely, sparsely punctured laterally, indistinctly punctured at middle, front margin broadly, shallowly, triangularly emarginate at middle, broadly rounded laterally; vertex finely, densely punctured; antenna somewhat shortened, attaining front margin of elytra, segments 2 and 3 subcylindrical with 3 about twice as long as 2 and slightly shorter than 4, segments 4 through 10 subflattened, feebly serrate, outer lateral margin very broadly rounded, segment 4 with sensory band of punctures narrow and not reaching

base, segment 5 subequal to 4 in length but with band of sensory punctures longer and slightly wider, segments 6 through 11 progressively shorter, but each with a better developed band of sensory punctures, segment 11 subflattened, deeply, rectangularly notched at outer angle.

Pronotum slightly more than one and one-half times wider across base than median length; front margin very broadly, shallowly arcuate; sides broadest at base, broadly and feebly, sinuately narrowing towards front; hind angles acute; hind margin strongly lobed at middle, with lobe faintly emarginate in front of scutellum; surface with a few, small callosities, callosities more numerous laterally and larger and elongate at middle, intervening areas finely, densely punctured, area behind front margin narrowly and feebly depressed, pubescence more or less evenly distributed, rather dense, consisting of very short, suberect, inconspicuous white hairs.

Elytra convex, approximately twice as long at suture than width across humeri; sides very slightly narrowing from behind humeri to behind middle, then more abruptly, arcuately narrowing to apices; lateral margins feebly serrate on apical sixth; apices narrowly bidentate, sutural and lateral spines acuminate; surface very finely broken and confused, with numerous, very small, non-punctured, feebly raised areas, raised areas transverse basally, forming several very faintly indicated, narrow, raised lines on apical half, punctures small, rather densely placed, more densely placed in a broad, irregular, sublateral longitudinal band, not striate, pubescence abundant but very inconspicuous, consisting of very short, subdepressed, white hairs.

Ventral surface densely clothed with short, subrecumbent, white hairs, median areas of thoracic sternites sparsely pubescent; prosternum rather densely punctured, subflattened medially, with a small, shallow, irregular, median depression about in line with front margin of procoxae, front margin truncate, broadly, indistinctly lobed near sides, prosternal process shining, smooth except for 2 indistinct rows of small punctures at middle; metasternum and metacoxa finely, moderately punctured, more densely punctured laterally, metepisternum finely, densely, shallowly punctured except for a small irregular smooth space near front; abdomen finely, densely punctured and roughened, sublateral tooth of sternites 2 through 4 poorly developed, subrectangular, last sternite with lateral margins serrate at about middle, hind angles bearing a small, acute tooth, hind margin broadly, shallowly, and irregularly arcuate, subapical ridge indistinct, entire, irregularly truncate.

Legs finely, densely punctured; protochanter with apical tooth small, acute; protibia arcuate, inner margin very feebly, sinuately expanded apically, with 4 small teeth near apex; metatarsus with first segment approximately one and two-thirds times longer than second segment and approximately one and three-fourths times longer than fifth segment.

Length 18.7 mm, width 7.1 mm.

FEMALE. Differs from male by having antenna reaching to about basal third of pronotum, segment 3 slightly longer than segment 4, segments 5 through 11 progressively shorter and narrower; hind margin of last abdominal sternite more strongly arcuate; protibial teeth very faintly indicated; segment 1 of metatarsus approximately two and one-half times as long as segment 2.

Length 18.7 mm, width 7.0 mm.

Holotype male and allotype female, W side Nightingale Mts., Pershing Co., Nevada, July 22, 1946 (I. LaRivers) (California Academy of Sciences). Paratypes: 2 ♂, same data as holotype. Paratypes in the W. F. Barr collection.

H. lariversi, a member of the *obliterata* complex, is closely related to *H. fulgida*. It lacks the conspicuously shining, bicolored upper surface usually evident in that species, the pronotal callosities are smaller and more numerous near the sides, the elytral punctures are not faintly striate, and the thoracic sternites are more conspicuously punctured medially. In addition, the male genitalia are distinctive. With *H. lariversi* the lateral lobes are more conspicuously constricted behind the middle and their apices broader and not attenuate.

Hippomelas (Prasinalia) imperialis Barr, new species

MALE. Slender, moderately convex; shining, coppery, pronotum and elytral apices with brassy reflections, ventral surface purplish, prosternum with dark blue reflections.

Head densely clothed with short, suberect white hairs except on elevated areas, densely intermixed with white pulverescence; front oblique, slightly depressed at middle, with an irregular longitudinal callosity near inner margin of eyes and several small elongate callosities at middle; supra-antennal ridges well developed, rounded at sides and merging into clypeus at middle; clypeus obscured by dense pubescence and pulverescence, front margin broadly, very shallowly emarginate at middle, very broadly rounded laterally; vertex finely, densely punctured; antenna heavy, extending to about basal fourth of elytra, segments 2 and 3 subcylindrical, 3 about twice as long as 2, segments 4 through 10 subflattened, subserrate, outer lateral margin of segment 4 broadly rounded, lateral margins of segments 5 through 10 subparallel, segment 4 one and one-fourth times longer than 3 and with a small band of densely placed sensory punctures on apical half along outer lateral margin, segment 5 subequal in length to segment 4 but with band of sensory punctures longer and wider, segments 6 through 10 progressively shorter, with bands of sensory punctures as on segment 5, segment 10 approximately one-half as long as segment 4, segment 11 subflattened, narrower but slightly longer than segment 10, inner lateral margin feebly swollen near apex, outer lateral margin subrectangularly notched at apex, apex narrowly rounded.

Pronotum approximately one and one-third times wider across base than length at middle; front margin subtruncate; sides broadest at base, gradually, very feebly, sinuately narrowing towards front; hind angles narrowly rounded; hind margin broadly lobed at middle with lobe feebly emarginate in front of scutellum; surface with moderate-sized, rather densely placed punctures, punctures somewhat confused on front half and laterally because of numerous small, irregular, slightly elevated callosities, apical half of disk with a narrow, irregular smooth area, pubescence inconspicuous but dense, consisting of very short, subrecumbent, fine white hairs, pulverescence most conspicuous near front and hind angles.

Elytra slightly less than two and one-half times longer at suture than width across humeri; sides very slightly expanded behind base, then gradually, very feebly, sinuately narrowing to apices; lateral margins very feebly serrate before apices; apices bidentate, sutural and lateral spines subequal, acuminate; surface feebly, transversely strigose at about basal fourth and somewhat roughened near apices, punctures fine, densely but somewhat irregularly placed near sides, pubescence inconspicuous but dense, consisting of very short, subrecumbent, fine white hairs, pulverescence dense and obscuring surface at base.

Ventral surface rather densely clothed with short, subrecumbent white hairs except more sparsely pubescent at middle, densely pulverulent along sides; prosternum subflattened, finely, rather densely punctured, except impunctate along sides of prosternal process, front margin subtruncate; metasternum rather sparsely punctured at middle, more densely punctured on sides; abdomen finely, rather densely and shallowly punctured, deeply and sparsely punctured at middle of sternite 1, hind margins of sternites 2 through 4 narrowly impunctate and greenish in color, sublateral tooth of sternites 2 through 4 triangular, last sternite finely, sparsely roughened, lateral margins serrate on apical half, hind margin irregularly broken by 7 blunt-to-acute teeth.

Legs finely, rather sparsely punctured except for an impunctate, obsolete longitudinal carina on inner margin of femora; metacoxa rather sparsely, shallowly punctured, hind margin slightly arcuate, with a small shallow emargination in front of trochanter, inner margin with tooth well developed, acute; protibia straight, feebly constricted at apical third, gradually expanded at apex, inner margin with 7 indistinct teeth on apical half, apical spurs short, indistinct, apical spine elongate, acute, slightly curved; mesotibia with 7 indistinct teeth on inner margin beyond middle, apical spurs well developed, apical spine half as long as spurs, blunt; metatibia with apical spurs slightly shorter than those on mesotibia, apical spine slightly longer than spurs, strongly recurved; metatarsus with first segment one and three-fourths times longer than second segment and slightly more than twice as long as fifth segment.

Length 19.0 mm, width 6.1 mm.

FEMALE. Differs from male by the following: antenna extending to about basal fourth of pronotum, segments 4 through 10 weakly serrate, segment 5 slightly shorter than 4, segment 10 less than one-half as long as 4, a band or concentration of tiny sensory punctures evident on segments 5 through 11, segment 11 indistinctly notched at outer apical angle and apex more broadly rounded; hind margin of last abdominal sternite more irregularly scalloped than toothed; tooth on inner margin of metacoxa absent, teeth on inner margin of protibia absent, tibial spurs subequal, tibial spines absent, first segment of metatarsus approximately twice as long as second segment and subequal in length to fifth segment.

Length 23.2 mm, width 7.9 mm.

Holotype male and allotype female, 4 mi W of Gordon's Well, Imperial Co., California, June 22, 1963 (R. L. Westcott), on *Eriogonum deserticola* (California Academy of Sciences). Paratypes: 14 ♂, 16 ♀, same data as holotype; 1 ♂, 1 ♀, sand dunes E of Brawley, Imperial Co., California, June 13, 1960 (R. E. Dickson), on *Eriogonum deserticola*; 1 ♂, Ogilby, Imperial Co., California (D. Giuliani). Paratypes in the collections of the California Academy of Sciences, the Los Angeles County Museum, University of California, Riverside, U. S. National Museum, W. F. Barr, J. M. Davidson, R. L. Westcott, and F. M. Beer.

This species, the second representative of the subgenus *Prasinalia*, can be recognized most readily by its coppery coloration. Other features which distinguish it from the closely related *H. cuneata* (Horn) are the more shallowly emarginate front margin of the clypeus, the more densely pubescent upper surface, the more coarsely sculptured pronotum, and the less shining and more densely punctured prosternal process. Differences in the distributional ranges and apparent host plants also appear to be of taxonomic importance. *H. imperialis* is known only from the eastern slope of the Imperial Valley, California, where it is associated with *Eriogonum deserticola*. *H. cuneata*, on the other hand, occurs discontinuously in the Sonoran and Mojave deserts of south-eastern California and western Arizona, where it is associated with *Prosopis chilensis* and *Acacia greggii*.

***Acmaeodera knowltoni* Barr, new species**

MALE. Large, rather slender; black with a faint bronzy cast, elytra with small, lateral and discal yellowish spots, ventral surface bronzy black.

Head finely, densely clothed with long, erect, dark brown hairs; vertex with a faint indication of a median longitudinal carina; front convex except for a small subdepressed median area; clypeus densely punctured, front margin shallowly and broadly, triangularly emarginate; antenna extending to behind middle of pronotum, serrate from fifth segment, width of outer segments equal to their length.

Pronotum slightly more than twice as wide as long, not wider than elytra, widest in front of base, narrowing to front angles, convex except for a broad, shallow depression in front of scutellum and a distinct but shallow depression extending obliquely from basal pits, transverse groove behind front margin distinct on each side of middle, surface densely clothed with long, erect, dark brown hairs; sides broadly, arcuately rounded from base to front angles; lateral margins narrowly reflexed, visible from above throughout; front angles slightly produced, acute; front margin broadly lobed at middle; disk rather coarsely and sparsely punctured, punctures becoming coarser and denser toward sides.

Elytra subdepressed; sides more or less vertical, when viewed from above very slightly but broadly constricted at basal third, broadly, arcuately converging from middle to the conjoint, rather narrowly rounded apices; front angles in side view subrectangular; lateral margins when viewed from the side feebly, irregularly sinuate to basal fourth, slightly emarginate at basal fourth and then very broadly and shallowly arcuate to apices, apical half coarsely, sparsely serrate; surface moderately clothed with rather long, erect, dark brown hairs; striae punctures round and deep, rather small near suture, becoming coarser and denser toward sides, striae slightly impressed behind middle and near sides; interstitial spaces subflattened, sparsely, inconspicuously punctured, third and seventh interstitial spaces elevated, ninth interstitial space elevated to about basal fourth, suture strongly elevated behind middle; markings arranged as follows: a row of 8 small, irregular, yellowish spots on or near lateral margin from immediately behind front angles to apex, and a row of 3 small, irregular, yellowish spots on disk from basal fourth to about apical third, lateral spots behind middle tending to be somewhat transverse, basal spots tending to be somewhat elongate.

Ventral surface finely, rather densely punctured, sparsely punctured at middle of first abdominal sternite, densely but inconspicuously clothed with short, suberect, fine, silvery hairs; front margin of prosternum slightly retracted, subtruncate, very feebly lobed on either side of middle; last visible abdominal sternite with sides very feebly, arcuately narrowing to the broadly subtruncate hind margin, disk convex, depressed along lateral margins, subapical plate small, rather broad, smooth, distinctly undercut.

Length 10.1 mm, width 3.6 mm.

Holotype male, Bear Creek Camp, Mt. Nebo, Juab Co., Utah, July 6, 1961, on bull thistle (G. F. Knowlton) (California Academy of Sciences). Paratypes. IDAHO: 1, Willow Creek Forest Camp, Cub River Canyon, Wasatch Mts., July 3, 1952 (B. Malkin); 1, 6 mi E of Mink Creek, Franklin Co., 6,800 ft, July 3, 1953, on *Penstemon cyanathus* (W. F. Barr); 1, 20 mi NE of Preston, Franklin Co., July 4, 1966, on *Senecio* sp. (W. F. Barr); 1, 21 mi NE of Preston, June 15,

1968 (R. G. Jones); 2, 22 mi NE of Preston, June 21, 1966, on *Calochortus* sp. and *Senecio* sp. (R. L. Westcott); 5, July 12, 1965, on *Senecio intergerrimus* (R. L. Westcott); 3, Weston Canyon, Franklin Co., July 17, 1964 (O. O. Fillmore); 1, July 4, 1966, on *Calochortus* sp. (W. F. Barr). UTAH: 3, same data as holotype; 14, Bear Canyon, Mt. Nebo, Juab Co., August 2, 1962, on *Helianthus nuttallii* and wild aster (G. F. Knowlton); 2, Green Canyon, Logan, Cache Co., June 30, 1962, on yellow composite (G. F. Knowlton); 1, 12 mi SE Ogden, Davis Co., August 13, 1959 (F. M. Beer); 1, Skull Valley, Tooele Co., June 22, 1954, on *Rosa* sp. (J. L. Eastin); 3, Provo, 1, (H. P. Chandler), 6, June 4, 7, 9, 1910 (T. Spalding), 4, July 2, 7, 1916 (T. Spalding), 4, August 1, 1962 (G. F. Knowlton); 8, Provo Canyon, June 13-19, 1913; 1, North Fork of Provo Canyon; 1, Deer Creek, Provo Canyon, July 15, 1918 (T. Spalding); 2, Rock, Provo Canyon, June 14, 1958 (D. C. Heninger); 2, Oak Creek Canyon, May 18, 1937, June 11, 1957 (L. R. Jeppson); 2, July 18, 1962 (G. F. Knowlton); 2, Logan Canyon, May 28, 1960, June 10, 1955 (D. C. Heninger); 1, Logan Canyon, 5 mi E of Logan, Cache Co., June 11, 1955 (G. E. Bohart and W. F. Barr); 1, Logan, June 27, 1955 (D. C. Heninger); 1, South Willow Canyon, Stansbury Mts., Tooele Co., July 8, 1954 (H. E. Cott); 2, July 22, 1954, on *Chrysothamnus nauseosus* (J. L. Eastin); 1, July 27, 1953 (H. E. Cott); 1, West Hickman Canyon, Stansbury Mts., Tooele Co., June 23, 1954, on *Cirsium undulatum* (H. J. Egoscue); 1, July 1, 1954, on *Mimulus guttatus* (R. B. Holliman); 1, August 18, 1953 (H. E. Cott); 1, Hickman Canyon, Stansbury Mts., Tooele Co., August 18, 1953 (H. E. Cott); 1, Johnson's Pass, Tooele Co., June 23, 1954, on *Rhus trilobata* (H. E. Cott); 3, Blacksmith Fork Canyon; 3, Beaver Canyon; 3, Aspen Grove, Timpanogos (V. M. Tanner, D. E. Johnson); 1, Glacier Lake, Timpanogos (D. E. Hardy); 1, Silver Lake, July 12 (H. Skinner); 1, Mill Creek Canyon (Chamberlin); 1, City Creek Canyon, Salt Lake Co., June 29, 1940, 1, July 19, 1896; 3, Salt Lake City, May 25, 1929 (W. J. Gertsch), 5, June 10, 1926 (E. C. VanDyke); 1, Heughes Canyon, Salt Lake City, June 28, 1940; 1, Brighton, Salt Lake Co., June 12, 1954, on *Cirsium undulatum* (J. L. Eastin); 1, Alta, Salt Lake Co., June 18, 1947 (Schrammel); 5, Big Cottonwood Canyon, Salt Lake Co., June 13, 1954, on *Cirsium undulatum* (J. L. Eastin); 1, Little Cottonwood Canyon, Wasatch Mts., June 28, 29, 1913; 2, Vivian Park, July 5, 1937 (H. P. Chandler); 1, Parowan Canyon, July 21 (T. Spalding); 1, Snow Basin, 20 mi E of Ogden, Weber Co., July 23, 1948 (M. A. Cazier).

Paratypes in the collections of the American Museum of Natural History, Brigham Young University, California Academy of Sciences, the Canada National Collection, Museum of Comparative Zoology, Philadelphia Academy of Sciences, University of California, Riverside, University of Idaho, University of Kansas, U. S. National Museum,

Utah State University, W. F. Barr, F. M. Beer, M. H. Hatch, D. C. Heninger, G. H. Nelson, and R. L. Westcott.

Specimens from southern Utah, Arizona, and Nevada have not been designated as paratypes. The localities include: Zion National Park and Escalante, Utah; Grand Canyon, Arizona; and Baker and Kalamazoo Creek, Spring Valley, White Pine County, Nevada.

A. knowltoni has been confused in many collections with *A. vandykei*, with which it is closely allied, and with *A. ornata* Fabricius. Several references to it can be found in the literature under these names. This species, however, possesses the following collective features which are of importance to recognition: the small, irregular, yellowish markings on the blackish elytra, a small spot at the front angles of the elytra, the elevated seventh and ninth interstitial spaces on at least the basal portion of the elytra, a small, subapical plate present on the last visible abdominal sternite, and a bronzy black abdomen. The distributional range of *A. knowltoni* is also distinctive. It extends from southeastern Idaho to southeastern Nevada and northcentral Arizona. Only in Idaho and northcentral Utah does the range of *A. knowltoni* overlap with that of *A. vandykei*, which occurs in other areas of Idaho as well as in the Pacific Coast states. *A. ornata*, on the other hand, is known from the southeastern and central United States.

As with so many other species of the genus, *A. knowltoni* exhibits considerable variation in coloration, structure, and form. The upper surface of some specimens may have a distinct bronzy cast, and a small yellowish spot may be present at the sides of the pronotum. The spot at the front angles of the elytra rarely is absent, and the abdomen occasionally is shining bronzy in coloration. Several specimens with reddish elytral markings have been noted, but this probably is a post-mortem discoloration. Approximately one-half of the specimens examined have the lateral margins of the pronotum broadly expanded in front of the base. These margins also may be notched or somewhat sinuate where they are expanded. In about 20 percent of the specimens, the pronotal margins are not entirely evident when viewed from above. A few specimens have been found that have the subapical plate of the last abdominal sternite reduced in size or apparently absent. In the western and southern portions of its distributional range, *A. knowltoni* populations show additional variation. The elytral markings tend to be larger and more transverse, the spot at the front angles of the elytra is absent more frequently, and specimens are larger in size and more robust in appearance than those from other areas.

***Acmaeodera idahoensis* Barr, new species**

MALE. Medium sized, robust, convex, black; each elytron with a faint bronzy cast and 4 irregular, straw-colored fasciate spots which, except for the first, extend from lateral margin onto the disk, first spot small, located behind humerus, second spot largest, located at about

middle and somewhat lunulate, third spot narrow, extending to near suture, located about apical third, fourth spot located in front of apices, small, broken and obliquely extending anteriorly, an additional tiny spot at apex of right elytra; upper surface rather densely clothed with long, erect, black hairs; ventral surface and legs with shorter, erect and suberect, dark brown hairs.

Head densely punctured, punctures small and deep; vertex without a median carina; front convex, except feebly, obliquely flattened at middle; clypeus with front margin broadly, rather deeply, arcuately emarginate; antenna feebly shining, extending nearly to hind margin of prosternum, serrate from fifth segment, outer segments distinctly wider than long.

Pronotum approximately twice as wide as long, slightly narrower than widest portion of elytra, irregularly convex with a shallow, transverse, median depression in front of base, a shallow, longitudinal, median depression on disk, a shallow oblique, sublateral depression extending anteriorly from the conspicuous subbasal pits, and a faint, transverse groove behind front margin; sides subparallel on basal third, arcuately narrowing anteriorly, lateral margins very slightly reflexed with only the anterior half visible from above; front angles feebly produced and narrowly rounded; front margin broadly, very slightly lobed at middle; surface more coarsely and densely punctured than on head, becoming subreticulate near sides.

Elytra convex except for a slight subflattening of disk, a broad, shallow, median depression at base, and a small depression at base near humerus, broadest at about middle; sides when viewed from above very feebly constricted at about basal fourth, then slightly expanded to middle and then broadly but gradually converging to the broadly rounded apices; front angles rectangular when viewed from the side; lateral margins when viewed from the side broadly bisinuate with the deepest emargination occurring at about basal third, coarsely serrate on about apical third; stria punctures about subequal to those on pronotum, somewhat confused near base, abruptly becoming small on apical half, interstitial spaces flattened with small but distinct punctures especially basally and near suture, becoming slightly roughened apically, third interstitial space not elevated, seventh interstitial space feebly elevated on basal half, ninth interstitial space feebly elevated at base.

Ventral surface rather coarsely, densely punctured on thoracic sternites, finely, sparsely punctured on abdomen except base of first sternite and disk of last sternite more coarsely punctured; front margin of prosternum slightly retracted, feebly bisinuate and very narrowly reflexed laterally; last abdominal sternite broadly convex without a subapical plate or elevation, lateral margins narrowly reflexed, straight, oblique, hind margin narrowly reflexed and broadly rounded.

Length 10.6 mm, width 4.1 mm.

Holotype male, Spalding, Nez Perce Co., Idaho, May 22, 1951, on

Eriophyllum sp. (W. F. Barr) (California Academy of Sciences, on indefinite loan from the University of Idaho). Paratypes. BRITISH COLUMBIA: 18, Seton Lake, Lillooet, May 27, June 1, 2, 20, 28, 29, 1926 (J. McDunnough); 1, Lillooet, April 10, 1932 (W. B. Anderson), 3, June 2, 9, 1918 (A. W. A. Phair), 7, July 9, 1916; 1, Kamloops, June 14, 1923 (W. B. Anderson), 1, May 30, 1949 (G. B. Rich); 4, 8 mi N of Oliver, May 18, 1958 (H. and A. Howden); 2, Oliver, May 14, 15, 1959 (L. A. Kelton); Vaseaux Lake, Oliver, May 23, 1959 (R. E. Leech); 1, Lytton, May 21, 1919 (W. B. Anderson); 1, Keremeos, May 28, 1922 (W. B. Anderson); 1, Vernon, April 29, 1926 (E. P. Venables), 2, April 30, June 1, 1922 (R. Hopping), 3, May 8, 1932, June 9, 1937 (H. Leech), June 10, 1918 (R. C. Treherne). IDAHO: 1, same data as holotype; 4, Spalding, Nez Perce Co., May 17, 1952 (W. F. Barr), 1, (A. G. Lewis); 6, Myrtle, Nez Perce Co., June 12, 1962 (Phyllis Stecker); 1, 6.5 mi E of Lewiston, Nez Perce Co., June 13, 1964 (R. L. Westcott); 1, Arrow Junction, Nez Perce Co., June 14, 1951 (W. F. Barr); 1, Coyote Grade, Nez Perce Co., May 24, 1963 (F. Nonini); 1, Winchester, Lewis Co., May 24, 1936; 2, Riggins, Idaho Co., May 23, 1963 (G. P. Markin); 7, 6 and 7 mi W of Riggins, Idaho Co., June 16, 1966 (E. J. Allen); 2, Little Salmon River, Adams Co., February 22, 1942, May 13, June 28, 1948, reared from *Cercocarpus ledifolius* (F. M. Beer); 5, Mesa, Adams Co., June 27, 1965, on wild rose (R. L. Westcott and L. S. Hawkins, Jr.); 4, 1 mi S of Mesa, Adams Co., June 29, 1965, July 10, 1966 (R. L. Westcott); 1, Midvale, 2,544 ft, June 14, 1950 (R. W. Portman); 3, 17 mi NE of Weiser, Washington Co., 4,500 ft, June 20, 1962 (R. W. Portman); 23, Juniper Mt., Owyhee Co., June 8, 1965, on *Balsamorhiza sagittata* (M. M. Furniss); 1, Anderson Ranch Dam, Elmore Co., July 7, 1965 (R. L. Westcott); 1, Murphy Hot Springs, Twin Falls Co., June 20, 1965, on wild rose (W. F. Barr); 1, Rock Creek Ranger Station, Sawtooth National Forest, Twin Falls Co., June 22, 1953 (A. R. Gittins); 6, Elba-Basin Pass, Cassia Co., July 22, 1959 (W. F. Barr); 8, 6 mi E of Basin, Cassia Co., June 21, 1965 (R. L. Westcott); 1, Bear Creek Camp, 10 mi N of Leslie, Custer Co., July 21, 1964 (O. O. Fillmore); 1, Gibbons Pass, Gibbonsville, July 20, 1957 (H. C. Manis); 8, Gilmore, Lemhi Co., July 20, 1964 (O. O. Fillmore and R. L. Westcott); 6, Little Cottonwood Creek, Craters of the Moon National Monument, Butte Co., June 20–July 28, 1965 (D. S. Horning, Jr.); 2, Craters of the Moon National Monument, Butte Co., June 29, 1967 (D. S. Horning, Jr.); 1, Sand Dunes, St. Anthony, June 24, 1964 (O. O. Fillmore); 1, 6 mi NE of St. Anthony, July 16, 1965 (R. L. Westcott); 2, 9 mi NE of Swan Valley, Bonneville Co., June 23, 1964, on *Senecio* sp. and *Taraxicum officinale* (W. F. Barr); 1, Lava Hot Springs (D. E. Beck); 3, Weston Canyon, Franklin Co., June 22, 1964 (O. O. Fillmore), 5, July 4, 1966 (W. F. Barr); 14, 20 mi NE of Preston, Franklin Co., July 4, 1966, on *Senecio*

sp. (W. F. Barr); 39, 21 mi NE of Preston, Franklin Co., June 15, 1968, on *Senecio intergerrimus*, *Chaenactis douglassi*, *Balsamorhiza* sp., *Prunus virginianis*, *Taraxicum officinale*, and *Agoseris grandiflora* (W. F. Barr and R. G. Jones); 18, 22 mi NE of Preston, Franklin Co., June 21, 1966, July 12, 1965, on *Senecio* sp. (R. L. Westcott); 2, St. Charles Canyon, Bear Lake Co., June 13, 1965, on *Senecio* sp. (R. L. Westcott). MONTANA: 1, Missoula (J. J. Sullivan). NEVADA: 3, Thomas Canyon, Elko Co., June 20, 1960 (F. M. and V. S. Beer); 4, 11 mi E of Deeth, Elko Co., June 21, 1960 (F. M. and V. S. Beer). OREGON: 1, Hood River, Hood River Co., June 6, 1943 (F. M. Beer); 4, Stinking-water Mt., Harney Co., June 24, 1960 (J. H. Baker); 2, Mayer State Park, 5 mi E of Moser, Wasco Co., 700 ft, May 23, 1959; 2, Eight Mile Creek, 5 mi S of The Dalles, Wasco Co., 475 ft, May 22, 1959 (J. D. Lattin); 2, The Dalles, May 2, 1927 (H. A. Scullen); 1, May 5, 1963 (Linda Thompson); 3, 7 mi SE of Milton, July 4, 1948 (G. H. Nelson); 1, Durkee, July 4, 1948 (J. H. Baker). UTAH: 1, Raft River Mts., 10,000 ft, June, 1928 (V. M. Tanner); 2, Logan, July 5, 1955 (S. L. Wood); 1, Logan, Green Canyon, Cache Co., June 30, 1962 (G. F. Knowlton). WASHINGTON: 1, Asotin, April 15, 1922 (V. Argo); 2, Snake River, opposite Clarkston, May 3, 1925 (A. L. Melander); 1, Clarkston, April 20, 1934 (L. T. Turner); 1, Pullman, May 14, 1926 (A. Spuler); 1, June 2, 1965 (R. D. Akre); 2, 2 mi E of Wawawai, Whitman Co., May 12, 1965, June 30, 1965 (R. L. Westcott); 21, Wawawai, Whitman Co., April 7, May 19, 1966, May 12, 1965 (R. L. Westcott), 1, April 14, 1963 (R. Hutt), 4, April 15, 1934, May 8, 1932 (L. T. Turner), 1, May 1, 1953 (R. Schopp), 14, May 6, 8, 1932, May 14, 1933 (I. W. Bales), 5, May 19, 1966 (R. L. Penrose), 1, May 26, 1965 (J. Shepard), 2, June 10, 1961 (M. and H. James), 1, June 18, 1962 (B. Finnegan); 3, Almota, May 25, 1935 (J. F. Clarke); 4, Penewawa, Whitman Co., March 29, 1966 (D. S. Horning, Jr.); 1, Coppei Creek, Waitsburg, May 27, 1925 (R. W. Haegale); 1, Walla Walla (E. W. Jones), 1, June 4, 1945 (G. H. Nelson); 1, 10 mi E of College Place, May 31, 1947 (G. H. Nelson); 1, Prosser, May 11, 1947 (L. R. Winkler); 1, Tieton, May 31, 1935 (J. Wilcox); 1, Thorp, May 22, 1954 (M. H. Hatch); 1, Yakima, May 12, 1932 (A. R. Rolfs); 1, Grand Coulee, Columbia River, July 12, 1902; 2, Deep Lake, May 7, 1949 (G. H. Nelson). WYOMING: 2, Teton Canyon, west side of Teton Range, July 4, 1966 (R. L. Westcott). Paratypes deposited in the collections of Brigham Young University, the California Academy of Sciences, the Canada National Collection, Oregon State University, University of California at Davis and Riverside, University of Idaho, University of Kansas, U. S. National Museum, Washington State University, W. F. Barr, F. M. Beer, M. H. Hatch, G. H. Nelson, R. L. Penrose, and R. L. Westcott.

This species, as with the closely related and recently described *A. diffusa* Barr, has been known for many years but is erroneously

referred to in much of the literature and most collections as *A. variegata* LeConte. *A. variegata* is a representative of another species group that is recognized by the sides of the pronotum not being reflexed or visible from above and by the presence of a subapical plate on the last abdominal sternite.

In a comparison of *A. idahoensis* and *A. diffusa*, the former presents the more convex appearance; the ground color of the upper surface is black to blackish bronze; the pronotum is only occasionally immaculate at the sides and the disk is moderately convex and moderately to densely punctured; the elytral pubescence is black and the anterior spots are usually narrow and do not extend onto the disk; the ventral surface is black with dark brown to black pubescence which occasionally may be pale especially on specimens from the more southern parts of this species' range; and finally, the last abdominal sternite is broadly rounded apically. *A. diffusa*, on the other hand, is subflattened and unevenly contoured; the ground color of the upper surface is dark bronze; the pronotum usually bears a small yellow spot at the sides and the disk is more strongly convex and nearly always cribrately punctured; the elytral pubescence is dark brown, the markings are usually extensive and the anterior spots extend onto the disk; the ventral surface is black, usually with a bronzy cast and clothed with short silvery hairs; and the last abdominal sternite is more narrowly rounded apically.

A. idahoensis has a wide distributional range that extends from southeastern British Columbia through Idaho and eastern Washington into extreme western Montana and Wyoming, northcentral Utah and Nevada, eastern and southern Oregon, and south into northern and eastern California. It is apparently most common in Idaho. Specimens from southern Oregon and California have not been designated as paratypes because of the frequent appearance of pronotal spots and extensive elytral markings as well as a somewhat irregularly contoured pronotum with densely placed punctures. The status of the populations represented by such specimens has yet to be established.

The host plants of *A. idahoensis* are known to be *Cercocarpus ledifolius* and *Celtis occidentalis*. Since these plants do not occur throughout the distributional range of this species, assumption must be made that other plants also serve as hosts. Adults of *A. idahoensis* can be found on the flowers of a variety of plants which include, on the basis of collection data and personal observations: *Senecio intergerrimus*, *S. fremonti*, *Chaenactis douglassii*, *Balsamorhiza sagittata*, *Agoseris grandiflora*, *Taraxicum officinale*, *Rosa* sp., *Eriophyllum lanulosa*, *Achillea millefolium*, *Mimulus guttatus* and *Prunus virginianus*.

LITERATURE CITED

- Casey, Thomas L. 1909. Studies in the American Buprestidae. Proc. Washington Acad. Sci. 11:47-178.