GREAT BASIN NATURALIST

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The new species described herewith are from California, Idaho, and the Canadian North West territories, as discussed under the individual descriptions. The types are preserved in my personal collection of these flies.

Tipula (Pteroclachis) horningi, n.sp.

Size small (wing about 9 mm.); general coloration of thorax brownish yellow, conspicuously patterned with dark brown, including a narrow median vitta on scutum and scutellum; wings grayish white, the outer radial field slightly darker; abdomen obscure yellow, both the tergites and sternites with a continuous brownish-black central stripe, lateral tergal borders with interrupted similar darkenings; male hypopygium with apex of each tergal lobe produced into a slender blackened spine; ninth sternite with an arcuated blackened lobe; inner dististyle with beak slender, outer basal lobe an arcuated horn that narrows into an acute spine.

MALE.—Length about 10 mm.; wing 9 mm.; antenna about 3 mm.

FEMALE.—Length about 10-11 mm.; wing 8.5-9 mm.

Described from alcoholic materials. Frontal prolongation of head light brown, nasus elongate; palpi light brown, long, from about two-thirds to three-fourths the antennae. Antennae with three proximal segments light brown, remainder black; flagellar segments only feebly incised, longer than the verticils; terminal segment very small, short-oval. Head above dark-brownish gray, paler brown beneath.

Pronotum yellowish brown, scutum narrowly dark brown medially. Mesonotal praescutum brownish yellow with three blackened stripes, the median one broad in front, narrowed behind, vaguely divided on posterior part, not reaching the suture; lateral stripes virtually continuous across suture with a major blackening on scutal lobe; a narrow continuous black central stripe on scutum and scutellum, mediotergite dark brown. Pleura chiefly pale, with major
darkened areas on anepisternum and sternopleurite. Halteres pale, knob infuscated. Legs with coxae yellow, their bases narrowly and vaguely darkened; trochanters yellow; femora and tibiae yellow, tips narrowly dark brown; tarsi brownish black, claws simple. Wings grayish white, clearer in the obliteratorive areas at cord; centers of cells of outer radial field slightly more darkened; stigma light brown; veins dark brown. Macrotrichia of veins relatively sparse, the extreme condition including outer end of $R_{1+3}$, all outer medial veins, and tips of $Cu$, and 2nd $A$, in some specimens the outer veins virtually glabrous.

Abdominal tergites in male obscure yellow with a narrow continuous brownish black central stripe, the lateral lines interrupted at base and apex of each segment to produce elongate dashes; sternites yellow, with a broad entire black central stripe; in the females the darkened pattern narrower and paler. Male hypopygium with posterior border of tergite having a deep V-shaped notch, the sides of the emargination darkened and thickened, apex of each lobe produced into a slender blackened spine. Ninth sternite with a small arcuated blackened lobe, the free outer half with numerous short yellow setae. Apex of basistyle produced into a slender arm. tip obtuse, sides with long black setae. Outer dististyle long-oval, with conspicuous setae; inner style with beak slender, lower beak lacking; region of outer basal lobe produced into a hornlike structure, curved and narrowed to an acute spine, outer surface with long yellow setae; sensory area extended into a linear series comprised of six elements placed at base of outer basal lobe. Phallosome with central plate depressed, on either side at near midlength with a small slender recurved spine, with a smaller median spine more distally.

Habitat.—Idaho (Butte County).

Holotype, $\delta$, Craters of the Moon National Monument, June 30, 1965 (D. S. Horning). Allotopotype, $\varphi$, with the holotype. Paratopotypes + $\varphi$ $\varphi$, with the types, July 3-17, 1965.

I am pleased to dedicate this species to Mr. Donald S. Horning, Jr., who has conducted a study of the fauna and flora of the Craters of the Moon National Monument. The most similar species include Tipula (Pterelachisus) imbellis Alexander and T. (P.) mandan Alexander, which differ conspicuously in all details of hypopygial structure. All three species have the basistyle produced and with the outer basal lobe of the inner dististyle variously modified.

**Tipula (Lunatipula) mecotrichia**, n.sp.

Belongs to the albofascia group, allied to cladacantha: general coloration of mesonotum yellowish gray, præscutum with four reddish-brown stripes; male hypopygium with each tergal lobe produced caudad into a slender blackened point; inner dististyle with beak very short, base of dorsal crest with very long setae, outer basal lobe bilobed, each lobe again divided, the posterior one into spines; eighth sternite with each lobe densely provided with long delicate setae and with three enlarged spinoid bristles.
Male.—Length about 13-13.5 mm.; wing 15.5-16.5 mm.; antenna about 5-5.3 mm.

Female.—Length about 14 mm.; wing 16 mm.

Frontal prolongation of head about equal in length to the remainder, obscure yellow, narrowly darker above, without a nasus; palpi black. Antennae with scape and pedicel yellow, flagellum black; flagellar segments slightly exceeding their verticils, basal enlargements small. Head light gray, more yellowed at occiput, vertex with a capillary dark brown median stripe; setae of vertex short.

Pronotum brownish yellow, narrowly darkened medially. Mesonotal praescutum with the ground yellowish gray, clearer gray laterally, disk with four reddish-brown stripes, the intermediate pair with the broad interspace more yellowed; scutum gray, each lobe with two reddish-brown areas; scutellum and postnotum brownish-yellow, heavily gray pruinose, especially the latter. Pleura brownish gray. dorsopleural region yellowed. Halteres with stem yellowed, orange at base, knob blackened, apex pale. Legs with coxae obscure yellow; trochanters yellow; femora and tibiae obscure yellow, tips narrowly darkened; tarsi light brown basally, passing into brownish black; claws with a stout triangular tooth. Wings brownish-yellow. prearcular and costal regions clearer yellow; stigma small, medium brown; obliterator band at cord extending into base of cell $M_3$; veins brown, yellowed in the brightened fields. Venation: pediole of cell $M_1$ variable, from subequal to about twice $m$; $m-cu$ on $M_1$ just beyond base.

Abdomen brownish yellow, tergites with three narrow brown stripes, the lateral and posterior borders of segments narrowly gray; sternites reddish brown; hypopygium large, subglobular, castaneous. Ovipositor with cerci relatively short, tips slightly decurved, hypovalvae broad. Male hypopygium with each tergal lobe extended caudad into a slender blackened point, the margin microscopically roughened. Lobe of ninth sternite simple, with relatively short setae. Inner dististyle with beak very short, lower beak oval; setae at base of the long compressed dorsal crest very long and conspicuous; outer basal lobe bilobed, each lobe again divided, the anterior one with the points triangular, the posterior lobe extended into two divaricate slender spines. Eighth sternite with conspicuous semidetached lateral lobes, each with three major fasciculate setae, the outer margin fringed with abundant smaller yellow setae.

Habitat.—California (Fresno County).


Tipula (Lunatipula) mecotrichia is most closely related to $T$. (L.) cladacantha Alexander and $T$. (L.) cladacanthodes Alexander, differing conspicuously in the male hypopygium, particularly the ninth tergite, ninth sternite, inner dististyle, with its outer basal lobe, and the eighth sternite.
Dicranota (Dicranota) bernardinensis, n.sp.

General coloration gray, the praescutum with three stripes, the broad central one blackened; knobs of halteres infuscated; wings whitened, the long-oval stigma brown, Sc long, S$_c$ ending about opposite the supernumerary crossvein in cell $R_1$; male hypopygium with lateral tergal arms distinctive, appearing as a flattened blade that splits into two long narrow appressed spines; interbase broadly dilated at near midlength, thence extended into a long spine; apical lobes of basistyle unequal, both with spinoid setae.

**Male.**—Length about 6 mm.; wing 6.2 mm.; antenna about 0.85 mm.

Rostrum dark gray, palpi black. Antennae short, black throughout; proximal flagellar segments oval, the outer ones more slender and elongate, terminal segment subequal to the penultimate. Head dark gray.

Pronotum dark gray. Mesonotal praescutum gray, with three stripes, the broad central one conspicuously blackened, not attaining the suture, lateral stripes dull pruinose; remainder of notum and pleura gray pruinose. Halteres whitened, the outer half of knob infuscated. Legs with coxae brownish gray; trochanters obscure yellow; femora and tibiae light brown, tarsi darker brown. Wings whitened, the long-oval stigma brown, distinct; veins brown. Vena-
tion: Sc long, S$_c$ ending nearly opposite the supernumerary cross-
vein in cell $R_1$; $R_{2+3+4}$ longer than basal section of $R_2$; m-cu beyond midlength of $M_{5+4}$.

Abdomen, including the hypopygium, brownish black. Male hypopygium with the tergite large, transverse, the lateral arms distinctive, each extended into a large flattened blade that splits into two long slender appressed points, median tergal margin broadly and very gently convex with strong setae from conspicuous tubercles. Basistyle with interbase very large, generally as in *Dicranota* (Rphidolabis) subsessilis and some others, broadly dilated at near midlength, thence extended into a long spine; apex of basistyle bilobed, one lobe subglobular, with very sparse spinoid setae. the second lobe longer and more slender, elongate-oval, with more numerous spinoid setae. Dististyle gently arcuated, at apex with several long setae. Aedeagus not blackened.

**Habitat.**—California (San Bernardino County).


This is the first record of occurrence of a member of the typical subgenus from California, the only other regional species being *Dicranota* (Dicranota) parvella Alexander, of Oregon, which is quite distinct from the present fly in hypopygial characters. The structure of the lobes of the ninth tergite is different from that of any member of the genus so far made known.
Limnophila (Idioptera) nearctica, n.sp.

Size large, wing of male to 10 mm.; antennae of male long, nearly two-thirds the wing; wings pale yellow with a solidly darkened brown pattern, the areas before cord broken, not forming a continuous band as in some other species.

**Male.**—Length about 10-11 mm.; wing 9.5-10 mm.; antenna about 6-6.3 mm.

Rostrum brownish yellow, mouthparts and palpi black. Antennae of male very long, nearly two-thirds the wing; scape and pedicel brown, flagellum black; segments elongate, with dense white erect setae that are about half as long as the sparse black verticils. Head brownish gray, sparsely dusted with yellow pollen; anterior vertex carinate.

Pronotum brownish gray, pretergites obscure yellow. Mesonotal praeascutum dark gray with four obscure more blackened stripes, centers of scutal lobes similarly darkened; posterior scutal callosities, scutellum and mediowtergite light gray, pleurotergite more yellowed. Pleura with mesepisternum clear gray, the remainder paler, grayish yellow. Halteres with stem yellow; knob infuscated. Legs with coxae and trochanters yellowed; femora yellow. Tips broadly black; tibiae yellow, bases narrowly. Tips slightly more blackened; basitarsi yellowed, outer segments more infuscated. Wings pale yellow, preacicular and costal fields more saturated yellow, conspicuously patterned with brown, the areas solid, not pale brown with darker margins as in mcclureana; disconnected dark areas at arculus, on R before mid-distance to origin of Rs, cord. outer end of cell 1st M, and broad seams over origin of Rs, supernumerary crossvein in cell M and tip of vein 2nd A, all disconnected; further brown marginal darkenings at ends of longitudinal veins, including the narrow wing tip; veins brownish yellow, darker in the pattern areas. Venation: petiole of cell M longer than the cell; in holotype, the posterior end of the crossvein in cell M is atrophied.

Abdomen brownish yellow, the two subterminal segments blackened to form a narrow ring, hypopygium yellowed. Male hypopygium with outer dististyle glabrous, gently curved to the acute tip, inner style with erect pale setae. Gonapophysis terminating in an acute spine, the outer margin beyond midlength with one or more weak spinules.

**Habitat.**—Canadian North West territories.


There are six species in the subgenus Idioptera Macquart, including besides the present fly, Limnophila (Idioptera) fasciata (Linnaeus, L. (L.) macropteryx Tjeder, and L. (L.) pulchella (Meigen), of northern Europe, and L. (L.) fasciolata Osten Sacken and L. (L.) mcclureana Alexander, of northern North America. The present fly is the largest of the known species, being readily told from the others by the wing pattern and by the length of the antennae. In pulchella the females are brachypterous, the wings being less than
one-fifth the size of those of the male. The female sex is unknown in *mcclureana* and in the present fly.

*Rhabdomastix* (*Sacandaga*) *hynesi*, n.sp.

Allied to *trichophora*; general coloration of praescutum and scutum yellow, conspicuously patterned with light brown, the ventral pleura more heavily darkened; antennae with scape yellow, the enlarged pedicel black; head brownish yellow with a conspicuous dark brown central stripe; wings grayish yellow, the prearcular and costal fields pale yellow; macrotrichia of outer radial veins excepting $R_5$ sparse or lacking; $m$-cu at or near midlength of $M_{3+4}$; male hypopygium with outer dististyle long and narrow, parallel-sided for most of the length, terminating in a strong appressed spine; apices of gonapophyses dilated into long narrow blades.

**Male.**—Length about 6.5-7 mm.; wing 6-6.5 mm.; antenna about 1.3-1.4 mm.

Described from alcoholic materials. Rostrum yellow, palpi darker. Antennae with scape yellow, the large pedicel black, flagellum brownish black; proximal flagellar segments short and crowded, the remainder long-cylindrical, shorter than their longest verticils. Head brownish yellow to brown, posterior vertex with a broad conspicuous dark brown central stripe, extending from the low tubercle to the occiput, narrowed behind.

Prothorax yellow. Mesonotal praescutum yellow with three conspicuous light brown stripes, the median one darker at anterior end; scutum yellow, each lobe with a single light brown area that is confluent with the lateral praescutal stripe; remainder of notum light yellow, weakly darkened posteriorly. Pleura yellow with a small V-shaped brown area between the propleura and mesepisternum and along the suture between the anepisternum and sternopleurite; ventral sternopleurite and meron conspicuously dark brown. Halteres pale yellow. Legs with coxae yellow, anterior face of fore pair weakly darkened; trochanters yellow; remainder of legs yellowish brown. Wings tinged with grayish yellow, the prearcular and costal fields pale yellow; stigma very pale brown, scarcely evident; veins light brown, more brownish yellow in the brightened fields. Macrotrichia of veins relatively sparse, lacking on $Sc$, $Rs$, $R_{2+3+4}$, $R_3$ and $R_1$; a scattered series over the entire length of distal section of $R_5$; sparse trichia at ends of outer medial veins, more extensive on $M_{1+2}$. Venation: $Sc$ relatively long, $Sc_1$ ending about opposite three-fourths $Rs$, $Sc_2$ faint but present, $Sc_1$ alone longer than $m$-cu; $R_{2+3+4}$ subequal to $R_1$; distal section of $M_{1+2}$ arched; $m$-cu at near midlength of $M_{3+4}$; vein 2nd $A$ sinuous at near midlength.

Abdomen yellow, the median area of first and second tergites brown, succeeding segments with bases pale brown; hypopygium yellow. Male hypopygium with outer dististyle long and narrow, parallel-sided for most of the length, terminating in a strong appressed spine, outer margin with much smaller denticles; inner style
stout, its outer end narrowed. Apex of each gonapophysis dilated into a long narrow blade that is about twice as wide as the stem.

**Habitat.**—California (Amador and Sierra Counties).

**Holotype,** alcoholic $\sigma$, Sierra County, without more exact data, June 26, 1965 (C. D. Hynes). **Paratype,** alcoholic $\sigma$, Foster Meadow, Amador County, July 2. 1965.

The species is named for Dr. C. Dennis Hynes who discovered it and many other new and rare species of crane flies. It is closely related to *Rhabdomastix* (*Sacandaga*) *megacantha* Alexander and *R. (S.) trichophora* Alexander which are similar in general appearance being most readily distinguished by details of coloration, venation and ovipositor, and in slight details of the male hypopygium.

**Cheilotrichia (Empeda) aklavikensis,** n.sp.

General coloration of head and abdomen yellow; thoracic praescutum, scutum and pleura chiefly dark brown; femora and tibiae yellow, the tips dark brown; wings relatively long and narrow, yellow, cell $M_2$ open by atrophy of basal section of $M_3$, cell 2nd $A$ narrow; male hypopygium with outer dististyle unequally forked, the inner arms again more shalllowly emarginate, with several blackened spines; apex of phallosome with margin nearly truncate or very slightly emarginate.

**Male.**—Length about 4 mm.; wing of holotype 4.4 x 0.8 mm.

**Female.**—Length about 4.5-5 mm.; wing 4.5-5 mm.

Rostrum yellowish brown, palpi dark brown, antennae with scape yellow, remainder dark brown; flagellar segments short-oval. Head with front and anterior vertex very pale yellow, posterior vertex darker yellow, the central area slightly infuscated; anterior vertex broad, eyes small.

Pronotum brownish yellow, pretergites clearer yellow. Mesonotal praescutum chiefly dark brown with a vague obscure yellow central vitta; scutal lobes similarly dark brown; scutellum and postnotum obscure yellow. Prepleura reddish brown; mesepisternum brown, the posterior pleurites more brownish yellow. Halteres with stem yellowed, knob brown. Legs with coxae and trochanters yellowish brown; femora and tibiae yellow, tips narrowly dark brown; femora chiefly dark brown, the proximal half or more of basitarsi obscure yellow. Wings relatively long and narrow, as shown by the measurements of the type; ground color yellow, the prearacular and costal fields clearer yellow; veins pale brown, clear yellow in the brightened fields. Venation: $Sc$ ending some distance beyond origin of $Rs$; the latter subequal in length to petiole of cell $R_3$; vein $R_1$ oblique; $R_4$ subequal to and in direct alignment with $R_{3+4}$; cell $M_2$ open by atrophy of basal section of $M_3$; $m-cu$ at fork of $M$, cell 2nd $A$ narrow.

Abdomen of male orange yellow, including hypopygium; in some females the abdomen much darker, ovipositor very large. Male hypopygium with outer dististyle unequally forked, the longer outer
arm a narrow blade, inner arm shallowly bifurcate, its outer branch including a cluster of several blackened spines from a common base. Phallosome with apex nearly truncate to very slightly emarginate, the broad lateral arms with two or three protuberances.

HABITAT.—Canadian North West territories.


There are several species of the subgenus in the Pacific Northwest (Alexander, C. P., 1955, University of Michigan, Mus. Zool., Miscell. Publ. 90:13-16, figs. 1-5, 7-10), all being dark-colored flies with the hypopygia quite distinct. The venation of the present fly, with cell $M_2$ open by atrophy of basal section of vein $M_3$ provides a character unique in the subgenus.
TINGIDAE. NEIDIDAE (BERYTIDAE) AND PENTATOMIDAE OF THE NEVADA TEST SITE

D Elden Beck\(^2\) and Dorald M. Allred\(^2\)

**Introduction**

This report is another in the continuing series of publications concerned with the results of ecological observations of fauna at the United States Atomic Energy Commission Nevada Test Site. These reports are concerned with investigations being conducted by the Department of Zoology and Entomology of Brigham Young University in cooperation with the United States Atomic Energy Commission (Allred, et al., 1963). Most of the earlier reports refer to studies of vertebrate organisms and ground-inhabiting invertebrates. Some studies have been directed to parasitic arthropods. For a recent listing of these publications refer to Allred, et al. (1966).

During the last several years emphasis has been given to collecting arthropods from known species of plants. The principal objective is to show the association between species of animals and plants. Although main attention has been given to collections during the flowering season, follow-up visits have also been made at other times. We are aware of the collection of a specimen in what may be termed an accidental visit by an animal organism to a species of plant. Such an accidental type of relationship we have tried to differentiate by making collections from several specimens of the plant species at separate localities.

Collections were made mostly by insect net sweeping, vigorously shaking the plant into the open net, picking organisms by hand from the plant, or severely beating larger bushes or trees while a net was held beneath the plant. Some collections were made by use of ultraviolet and incandescent light sources in specially-designed traps. They were so designed that individual specimens of species could be taken separately. Such collections were made in plant communities greatly predominated by one or two plant species.

For convenience of reference, a map to our areas of study is included (Figure 1). These subdivisions of the test site are not to be interpreted as biotic units, but they are divisions of convenience so a more accurate identification of a locality may be made. (See Allred et al., 1963, for a detailed description of biotic community subdivisions.) The designation of the title "Host Plant Species" in Table I is an arbitrary term of identity on our part. Actually the insect-plant association at the time of our collection may have been a single visit. Nevertheless, this was the association we found when a collection was made at a given date.

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1 BYU AEC publication No. COO-13293. This work was supported in part by grants AT (11-1)1329 and AT (11-1)1355 from the United States Atomic Energy Commission.

2 Department of Zoology and Entomology, Brigham Young University, Provo, Utah.
The classification of the Tingidae and the Neididae (Berytidae) was done by Dr. Richard C. Froeschner, Curator, Department of Entomology, at the U. S. National Museum. The Pentatomidae were identified by the late Dr. Herbert Ruckes, Department of Entomology, at the American Museum of Natural History. This latter courtesy was most likely the last service he performed. For the following week after we received his taxonomic analysis of our specimens, we learned of his untimely death. We are indeed grateful to these men for their help in the identifications. Instrumental in making some of the collections were Clyde M. Pritchett and Jose M. Merino, graduate students at Brigham Young University. We were assisted in plant classification by Dr. Janice C. Beatley, Curator of the Nevada Test Site Herbarium, and a member of the test site ecology staff from the University of California at Los Angeles.

**Results**

The data are arranged in tabular form. Table I comprises the Tingidae; Table II. the Neididae (Berytidae); and Table III. the Pentatomidae.

**Discussion**

**Tingidae**

*Corythucha mollicula* was found on a variety of plant species. Nevertheless, the greatest numbers were collected from *Gutierrezia sarothrae* and *G. microcephala*. There seemed to be no general preference for the tingid *Corythucha sphaeralceae*. This seemed rather unusual in that during the summer of 1965 there was a rank growth of *Sphaeralcea* sp. over thousands of acres of desert land. Only one specimen of *Dictyla coloradensis* was collected, yet many *Astragalus lentiginosus* were sampled. *Gargaphia opesca* was the most generally distributed tingid with reference to geography and plant species association. If there were any plant preference, it may have been *Eurotia lanata*. It also had an extended seasonal occurrence, being taken in January, April, May, June, July, and August from *Eurotia lanata*. The only tingid which appeared to be host specific was *Teleonemia nigrina*, collected from *Verbena bracteata*. Drake and Ruhoff (1965) listed six host-plant species, not including sugar beets and snapdragon flowers. *Eriogonum* sp. and *Verbena* sp. are also host plants. Checked with data from the Drake-Ruhoff catalogue, all tingids listed in this report are new records for Nevada. The host-plant associations have significantly added to these already known.

**Neididae (Berytidae)**

As a group, the fragile hemipteran “Stilt Bugs” were widely distributed over the test site. The most abundant species was *Jalysus wickhami*. Although found on other species of plants, there was a preference for *Eriogonum inflatum*, *E. deflexum*, and *E. nodosum*. The 1965 collections were taken when these species were in flower.
Pronatocantha annulata showed no host-plant preference. It is interesting to note, however, that specimens of this species were not taken from any species of Eriogonum. Only three specimens of Neides muticus were collected. One was from Gilia sp., and two others from the pinyon-pine, Pinus monophylla.

Pentatomidae

For the most part those "Stink Bugs" taken before 1964 as listed in Table III were collected in pit-fall can traps. This type of collecting was done to obtain a sample of organisms whose habit in part or entirely confined them to ground surface travel and living in selected biotic communities. Such collecting would not reveal the specific plant association by an organism. This in part explains the blank space beneath the heading "Plant Host(s)." Subsequent to 1963 the collections of pentatomids were directed to taking specimens from the plants themselves. The most commonly encountered species, Chlorochroa sayi, has a wide geographic and seasonal distribution. When data from pit-fall can traps are used plus records from plants in flower, the seasonal distribution was February through September, except May and July. There are not sufficient data to indicate plant preference. One may generalize from the data at hand that this species of stink bug is more or less a lowland-basin inhabitant at the test site. On the other hand, Thyanta rugulosa appears to be relegated to slightly higher elevations. Atriplex canescens was the plant on which most specimens of this species were found. Although Thyanta palldiovirens spinosa was generally distributed about the test site, it did not evidence any specific plant species as a preferred host. Five additional species of pentatomids were collected, including a possible new species of Dendrocoris. Most collections such as Brochymena sulcata and Banasa euchlora were taken only as single specimens. Five specimens of Dendrocoris contaminatus and three of Priornosoma podopioides were collected.

References


Beatley, J. C. 1965. Ecology of the Nevada Test Site. I. Geographic and ecologic distributions of the vascular flora (Annotated check-list). Univ. of Calif. at Los Angeles, School of Medicine, Dept. of Biophysics and Nuclear Medicine.


<table>
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Figure I. Numbered collecting areas at the Nevada Test Site. These were delineated in 1965 for use of by the Brigham Young University ecology study group.
NEW SYNONYMY IN THE PLATYPODIDAE AND SCOLYTIDAE (COLEOPTERA)\(^1\)

Stephen L. Wood\(^2\)

During the past several years I have had the opportunity to examine numerous types of species in the families Platypodidae and Scolytidae. A number of synonyms not previously published have been discovered and several species have been found that were assigned to the wrong genus. On the following pages new synonymies and new combinations are presented for American species or those that affect the nomenclature of American species.

**Platypodidae**

*Platypus coronatus* Schedl

*Platypus coronatus* Schedl, 1933, Revista Ent. 3: 170 (Vara Blanca, Costa Rica; Schedl Collection).

*Platypus platyurius* Schedl, 1933, Revista Ent. 3: 176 (Santiago, Costa Rica; Schedl Collection). New synonymy.

The female holotype of *coronatus* Schedl was compared directly to females and the male holotype of *platyurius* Schedl to males that were collected in series from their tunnels at Cerro de la Muerte, San José Prov.; Volcan Poas, Heredia Prov.; and Volcan Irazu, Cartago Prov., Costa Rica. The first series came from *Brunnelia costaricensis*, the second from an unknown log, possibly *Cedrus*, and the third from *Alnus acuminata* and *Quercus* sp. Because the sexes were definitely associated it is clear that the two names designate the same species.

*Platypus equadorensis* Schedl


When the two male holotypes of *equadorensis* Schedl and *manipularis* Schedl were compared directly, differences were not apparent. The name *manipularis* Schedl should, therefore, be placed in synonymy under the older name *equadorensis* Schedl.

*Platypus pini* Hopkins


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1 In part, the travel that made this study possible was supported by research grants GB-532 and GB-3678 from the National Science Foundation.
2 Department of Zoology and Entomology, Brigham Young University, Provo, Utah, Scolytoida contribution No. 28.
Platypus quadridens Schedl, 1937, Ent. Blätt. 33:38 (Sierra de Durango, Mexico; Schedl Collection). New synonymy.

The male holotype of pini Hopkins was compared to my series from Mexico and the western United States (Wood, 1958, Gt. Basin Nat. 18:37) and found to represent a relatively common species that attacks the stumps and lower bole of certain species of Pinus. The male type of quadridens Schedl was recently examined and compared directly to representatives of my series and found to be identical. Schedl’s name, therefore, should be placed in synonymy under pini Hopkins.

New locality records for this species include 60 miles west of Durango, Durango, Mexico, and Cerro Peña Blanca, Honduras (from Pinus pseudostrobus).

Scolytidae

Ancyloderes Blackman


Blackman’s genus Ancyloderes was placed in synonymy under the genus Conophthocranulus Schedl by Schedl in 1950 (Dusenia 1:46). Recently the type species blackmani Schedl and all species presently included in Conophthocranulus were examined. While Ancyloderes and Conophthocranulus are both properly placed in the Ptyophthorini they are not at all closely related. Ancyloderes is rather closely allied to Gnathotrichius Eichhoff and Conophthocranulus to Conophthorus Hopkins.

Brachyspartus Ferrari

Brachyspartus Ferrari, 1867, Die Forst- und Baumzuchtschädlichen Borkenkäfer, p. 65 (Brachyspartus moritzi Ferrari, monobasic).

Thylurcos Schedl, 1939, Mitt. Münchner Ent. Ges. 29:567 (Corthylus moritzi Ferrari, original designation?). New synonymy.

When Schedl established the genus Thylurcos he evidently overlooked the fact that one of the two species he included in it, Brachyspartus moritzi which he had previously referred to Corthylus, was the type-species of the monobasic genus Brachyspartus. It is implied, but not clearly stated, that moritzi is also the type-species of Thylurcos. If this is correct, then the two genera are objective homonyms of one another. If not, then I here designate Brachyspartus (or Corthylus) moritzi Ferrari as the type-species of Thylurcos in order to remove all doubt from the identity of the genus.

The above action leaves the genus that has been known as Brachyspartus in the literature, without a name. The following is presented to fill this need.

Corthylocurus, n.g.


As indicated above the generic name Brachyspartus is fixed by its type-species designation to moritzi Ferrari which is generically
different from most of the species that have been assigned to *Brachyspartus*. Since this genus is without a name, I propose the name *Corthylocurus* for it. The new genus is characterized as follows.

*Corthylocurus* is allied to *Corthylus* Erichson and *Brachyspartus* Ferrari, but is distinguished from the former by the more simple, uniformly pubescent antennal club with a special cirrus poorly developed and with two simple sutures; fore tibiae subinflated and with minute tubercles on the posterior face. It is distinguished from *Brachyspartus* by the two sutures of the antennal club and by the entire elytral apex. The type-species of *Corthylocurus* is *Brachyspartus barbatis* Blandford (op. cit., p. 265).

A revision of the genus is in preparation.

*Ips* DeGeer


In preparing for a revision of the Scolytidae for Genera Insectorum, Schedl (1964. Reichenbachia 2:218) grouped most of the genera of the tribe *Ipini* into the one genus *Ips* DeGeer. Schedl's action is consistent with a somewhat similar grouping by Hagedorn (1910, Gen. Ins. 111:101) and certainly was not taken without considerable study and thought. However, it is felt that a more extensive and detailed study of all possible anatomical parts exhibiting variation should be completed before such drastic grouping of widely recognized genera is accepted. Following such a study some of the genera, such as *Orthotomicus* Ferrari, almost certainly will fall into synonymy. It is also felt that the genus *Mimips*, not mentioned by Schedl, will occupy an important place in determining the generic limits within this group. Until such a study is completed I prefer to recognize *Ips* DeGeer, *Orthotomicus* Ferrari, *Acanthotomicus* Blandford, *Pityokteines* Fuchs, and *Orthotomides* Wood as distinct genera.

*Monarthrum* Kirsch


Recently I collected a common species of ambrosia beetle in Mexico, from *Quercus* sp., that was identified as *Pterocyclon laterale* from the works of Eichhoff and Blandford. Upon comparing my males with Blandford's Biologia Centrali-Americana material of this species, two males from Mexico, they were found to belong to the same species. In the Schedl collection Eichhoff's species was not named as such, but the female was represented by the unique type of *Cosmocorynus trifasciatus* Schedl. After encountering this pre-
suned synonymy involving the type-species of Monarthrum in the male of laterale and its female Cosmocorynus trifasciatus, the type species of Cosmocorynus, cristatus Ferrari, was examined. The species laterale and cristatus obviously are congeneric, but cristatus appears more closely allied to the type species of Monarthrum, chapuisi Kirsch, and to other species assigned to Monarthrum by Eggers (1935, Revista Ent. 5:78), than to laterale.

From the above examination of all three type-species and other species belonging to this species group, it is clear that Monarthrum Kirsch (1866), Cosmocorynus Ferrari (1867) and Pterocyclon Eichhoff (1868) are synonymous. Since Monarthrum Kirsch is the senior name it should be used to designate the genus. Eichhoff’s (1869, Berliner Ent. Zeitschr 8:299) contention that Monarthrum Kirsch has no status because of an error in recording the number of funicular segments in the original description is invalid under the International Code of Zoological Nomenclature.

Pteleobius Bedel


In a previous reference to this genus (Wood, 1962, Gt. Basin Nat. 22:77) the possibility of synonymy between Pteleobius Bedel and Dendrotrupes Broun was made. Since that time I have examined the types of all four of Broun’s species that were referred to his genera Acrantus and Dendrotrupes. It is now clear that my series of Acrantus opacus were actually of Dendrotrupes costiceps; therefore, the genus Dendrotrupes is distinct from Pteleobius. The type-species of Acrantus, Homarus mundulus Brown, and the type-species of Pteleobius, Bostrichus vittatus Fabricius, however, are congeneric. As I indicated earlier (Wood, loc. cit.), the name Acrantus is preoccupied and must be replaced by Pteleobius.

For new synonymy of species involved in these genera see the alphabetical listing of species below.

Trypodendron Stephens

Trypodendron Stephens, 1830, Illustrations of British Entomology, Mandibulata 3:353 (Original description included (1) Dermestes domesticus Linnaeus and (2) Bostrichus dispar Fabricius); Westwood, 1838, Synopsis of the Genera of British Insects, p. 39 (Typical species: domesticum L.); Thompson, 1859, Skandinaviers Coleoptera Synoptiskt Bearbetade 1:146 (“Typus: T. domesticum Lin.”)

Xyloterus Erichson, 1836, Archiv Naturgesch, 2(1):60 (Original description included (1) Dermestes domesticus Linnaeus, (2) Bostrichus lineatus Olivier, and (3) Bostrichus 5-lineatus Adams); Thompson, 1859, Skandinaviers Coleoptera Synoptiskt Bearbetade 1:46 (Typus: Xyloterus lineatus Gyllenhall, which, by Gyllenhall’s citation, was Bostrichus lineatus Oliver).
In attempting to clarify the status of Trypodendron Stephens and Xyloletus Erichson, Schedl (1964, Reichenbachia 2:211-212) correctly points out that Stephens' description of Trypodendron refers to Bostrichus dispar Fabricius, the first species listed, and not to Dermestes domesticus Linnaeus, the other species included in the original description of the genus. Because the two species are now placed in different genera Schedl concluded that Stephens' name Trypodendron should remain with dispar and that domesticus should be placed in Xyloletus which, under this interpretation, would become a valid genus.

Because Schedl's interpretation, based entirely on the original description of Trypodendron, is not consistent with the International Code of Zoological Nomenclature, as adopted by the XV International Congress of Zoology, the status of Trypodendron must be re-examined.

Under the Code the generic name Trypodendron was properly validated, both a description and two valid species were included in the original diagnosis. Since, under Article 42b of the Code, the basis of a genus is objectively defined only by reference to its type-species, the presently accepted concept of Trypodendron was fixed, not by its author, but the subsequent author who designated a type-species. Westwood (1838:39) designated Dermestes domesticus Linnaeus as the "typical species." Since there may be some question of the validity of Westwood's designation because of his usage of the word "typical," it is pointed out that Thompson (1859, 1:146) also designated domesticus Linnaeus as the type of the genus. Therefore, the wording of the original description, which actually does not fit dispar either, has no bearing on this problem under the present International Code of Zoological Nomenclature. Trypodendron Stephens remains valid and Xyloletus Erichson must be treated as a junior synonym.

Ancyloderes pilosus (Leconte)

Cryptalus pilosus Leconte, 1868, Trans. Amer. Ent. Soc. 2:154, 156 (Middle California; Mus. Comp. Zool.).

While the types and other specimens from the two type localities show minor differences between pilosus (Leconte) and saltoni Blackman, specimens from other localities exhibit intermediate characters that make it impossible to separate the two forms. Blackman's saltoni, therefore, must be placed in synonymy under the older name pilosus (Leconte).

In addition to the types and other specimens mentioned by Blackman (op. cit., p. 206), specimens from the following localities have been examined: Arizona: Baboquivari Mts., Oak Creek Canyon, and Patagonia. California: Pasadena. Durango, Mexico: 30 miles west of El Salto. All known specimens were taken at light in oak-pine growth; the host is unknown.
Brachyspartus emarginatus (Eggers), n. comb.

Corthylus emarginatus Eggers, 1943, Mitt. Münchner Ent. Ges. 33:380 (Bolivia; Schedl Collection).

The female type of *emarginatus* Eggers exhibits antennal and declivital characters on the elytra that indicate its relationship to *moritzi* Ferrari, type-species of the genus Brachyspartus. This species should, therefore, be transferred from *Corthylus* to Brachyspartus.

**Corthylus flagellifer** Blandford


*Corthylus nudiusculus* Schedl, 1950, Dusenia 1:156 (Comitan, Mexico; Schedl Collection). *New synonymy.*

Of Blandford's type series of ten specimens mentioned in the original description, only seven are present at this time in the British Museum (Natural History). Because a type has not previously been designated from his syntypic series of *flagellifer*, and because more than one species may be represented, I hereby designate the second male, from Toxpan, Mexico, as the Lectotype. Blandford's specimens are arranged in the order they were mentioned in the original publication. Because it has been customary to regard the first specimen in Blandford's series as the type, it is proper to select Toxpan, Mexico, as the type locality; however, of the two male specimens from this locality, the first is in comparatively poor condition, and for this reason the second was designated as the type.

A male from my series collected at Tepic, Nayarit, was compared directly to the lectotype of *flagellifer* and found to be identical in all respects except size (2.9 mm. as compared to 2.7 mm. for the lectotype). My female, taken from the same tunnel as the male, was compared directly to the types of *cirrus* Schedl and *nudiusculus* Schedl and found to be identical in all essential characters. Because there is no question concerning the association of the sexes, *cirrus* and *nudiusculus* must be considered synonyms of *flagellifer*.

**Cryphalomorphus expers** Blandford, n. comb.


The type specimen of Blandford's *Hypothenemus expers* was examined and found to be a representative of the genus *Cryphalomorphus*.

**Cryphalomorphus knabi** Hopkins


*Cryptalomorphus carabicus* Schedl, 1951, Dusenia 2:96 (Guadeloupe; Schedl Collection). *New synonymy.*

*Cryptalomorphus subriatus* Schedl, 1952, Dusenia 3:360 (Mexico; Schedl Collection). *New synonymy.*

This abundant and widely distributed species has been recognized with difficulty because of the variability in size and depth of the elytral punctures. The examination of several hundred specimens from Florida, Guatemala and Honduras, and individual specimens from Mexico, Jamaica, Dominican Republic, and Guadeloupe, however, leaves little doubt that only one species occurs throughout the Caribbean area. The types of *floridensis* Hopkins, *ritchiei* Sampson, *carabicus* Schedl and *subriatus* Schedl were examined and compared directly to my material, as were specimens from Hopkins’ series of *knabi.*

The host plants of this species include a wide variety of herbaceous and woody vines. Additions to the known list of hosts include *Ipomoea* sp. (Guatemala) and *Caloncytions tamnifolium* (Honduras). Other host plants await identification.

*Dendrocranulus schedli* n.n.


With the transfer of *Xylocleptes cucurbitae* Leconte (1879, U. S. Dept, Interior, Geol. Geograph. Surv. Bull. 5:519) to the genus *Dendrocranulus* (Wood, 1961. Coleopt. Bull. 15:41), Schedl’s name *cucurbitae* became a junior homonym of the name used for Leconte’s species. Because no synonyms are known for this species, the new name *Schedli* is proposed to replace *cucurbitae* Schedl.

*Dendrotrupes costiceps* Broun


The female holotype of *costiceps* Broun was compared directly to the male holotype and cotype of *vestitus* Broun. Except for the sexual differences on the frons they are identical. After examining several dozen specimens of both sexes, it was concluded that only one species was represented. Because Hopkins (1914) designated *costiceps* as the type-species of *Dendroterus*, it is here given priority over *vestitus*.

*Gnathotrupes fimbriatus* Schedl, n. comb.

*Gnathotrichus fimbriatus* Schedl, 1955, Rev. Chilena Ent. 4:259 (P. Arenas, Chile; Schedl Collection).

Following a study of the type-species of the genus *Gnathotrupes* Schedl and of part of the type series of *fimbriatus* Schedl, it was ap-
parent that *fimbriatus* should be transferred from the genus *Gnathotrichus* to *Gnathotrupes*.

_Hylastes flohri* (Eggers), n. comb.

_Hylurgops flohri* Eggers, 1930, Ent. Blätt. 26:166 (Mexico; Berlin Zool. Mus.)

The cotype of _Hylurgops flohri_ Eggers, presently in the Schedl Collection, was examined and found to represent the genus _Hylastes_.

_Hylocurus hirtellus* (Leconte), n. comb.

_Micracis hirtellus* Leconte, 1876, Proc. Amer. Philos. Soc. 15:369 (Southern California; Mus. Comp. Zool.).

Presumably because the sexual dimorphism on the elytral declivity is poorly developed, _hirtellus_ LeConte has been treated in the similar genus _Micracis_. Characters of the antennal club, of details of the elytra, and of the tibiae leave little doubt concerning the true affinities of this species. In order to make recent identification labels of specimens consistent with published synonymy, this species must be transferred to the genus _Hylocurus_.

_Ips latidens* LeConte

_Tomicus latidens_ LeConte, 1874, Trans. Amer. Ent. Soc. 5:72 (California; Mus. Comp. Zool.).

In his placement of _latidens_ LeConte and _sabinianae_ Hopping in the genus _Orthotomicus_, Hopping (1963, Canadian Ent. 95:6) stressed the relationship of these species to _erosus_ (Wolloston). However, he overlooked the fact that some relationship should have been established between _erosus_ and _laricis_ Fabricius. type-species of the genus _Orthotomicus_. The species group to which _erosus_ and _latidens_ belong, along with a few other species groups, is intermediate between _Ips_ and _Orthotomicus_ with a majority of the generic characters favoring _Ips_. The character of the second funicular segment in Ipini, on which Hopping really based his transfer of _latidens_ from _Ips_, is too unreliable for use in separating genera as measurements of his own drawings clearly show.

_Mimips chiriquensis* (Blandford), n. comb.


Blandford’s type series consists of three syntypic specimens, all apparently males. Although the first specimen has generally been regarded as the type it has never been designated. In order to fix the identity of the species, I hereby designate the first specimen in Blandford’s series as the Lectotype of _chiriquensis_.

_Monarthrum bisetosum* Schedl, n. comb.

_Brachyspartus bisetosus_ Schedl, 1954, Dusenia 5:38 (Rio Caraguata, Matto Grosso, Brazil; Schedl Collection).
The females in the type series of *Brachyspartus bisetosus* Schedl in the Schedl collection exhibit modifications of the frons somewhat similar to representatives of the *chapuisii* species group of the genus *Monarthrum*. The antennal funicle is two-segmented and the elytral declivity is also similar to that of some *Monarthrum* species. The species *bisetosus* should, therefore be transferred from *Brachyspartus* to the genus *Monarthrum* and have the gender of the specific name changed from masculine to neuter.

*Monarthrum exornatum* (Schedl), n. comb.

*Pterocyclon exornatum* Schedl, 1939, Münchner Ent. Ges. 29:575 (Colonia, Mexico; Schedl Collection).

*Pterocyclon gracilicornum* Schedl, 1939, Münchner Ent. Ges. 29:576 (Jalapa, Mexico; Schedl Collection). New synonymy.

The male holotypes of *exornatum* Schedl and *gracilicornum* Schedl were compared directly to one another and to my male specimens from Totalapan, Oaxaca, Mexico. Part of my material is intermediate between Schedl’s very similar types and makes it necessary to place *gracilicornum* in synonymy under *exornatum* because of page priority.

*Monarthrum laterale* (Eichhoff), n. comb.


*Cosmocorynus trifasciatum* Schedl, 1950, Dusenia 1:173 (Mexico; Schedl Collection). New synonymy.

This distinctive species is relatively common in *Quercus* in Mexico.

Representatives were independently identified as *laterale* Eichhoff by Blandford (1905, Biol. Centr.-Amer., Coleopt. vol. 4, pt. 6:281) and by myself from the two descriptions of the male by Eichhoff. The type presumably was a unique male that was lost in the destruction of the Hamburg Museum during World War II. Under normal circumstances the name would be set aside as unidentifiable until a comprehensive revisional study could fix its position. However, *laterale* is the type of the genus *Pterocyclon* Eichhoff which has had a dubious status from its beginning.

There is no mention of the number of specimens in the type series in either of Eichhoff’s descriptions. The species was not present in the collection of Chapuis, a contemporary of Eichhoff who had duplicates of many of Eichhoff’s species, nor was it available to Blandford for his study of Central American fauna. Because the species is not represented in the Schedl collection, where a few Eichhoff types now reside, and because no authentic representatives of the species have been reported by any of the current major authorities on Scolytidae, it is presumed the type was a unique specimen that was lost with other Eichhoff material in the destruc-
tion of the Hamburg Museum during World War II. Eggers (1929, Wiener Ent. Zgt. 46:51) studied the type, presumably at the Hamburg Museum, and correctly pointed out that Blandford’s figure 18 on plate VIII does not closely resemble this species and compared the figure to the characters of the type. Blandford’s specimens conform to Eggers’ description, but not to the figure.

In the interest of nomenclatorial stability, I propose that the first specimen in Blandford’s series of two males from Toxpanam, Mexico, presently in the British Museum (Natural History), be designated as the Neotype of *Pterocyclon laterale* Eichoff, the type-species of *Pterocyclon* Eichhoff. The size, color pattern, posteriorly tapered elytra and armature of the declivity, mentioned in the description, are sufficient to distinguish it from any other known Mexican species. The neotype is slightly darker in color than the original description implies, but this could be expected in a young adult specimen attracted to light. The neotropical genus to which this species properly belongs, *Monarthrum* Kirsch, is large and very poorly known in South America. Since an adequate study of this genus is impractical in the forseeable future, it is in the interests of nomenclatorial stability that this designation of a neotype be recognized, although there may be some question as to whether this presentation qualifies as a “revisory work.”

The males of my series of this species agree in all details with Blandford’s specimens. Some of the females agree with the unique female type of *Cosmocorynus trifasciatus* Schedl. Because there is no question of the association of the sexes, it is apparent that the two names represent only the different sexes of the same species and, therefore, *trifasciatus* should be placed in synonymy under the older name *laterale*.

*Monarthrum melanura* Blandford, n. comb.


*Pterocyclon opacifrons* Schedl, 1935, Revista Ent. 5:350 (Coronado, Costa Rica; Schedl Collection). New synonymy.

Blandford’s unique male holotype of *melanura* was compared to my male from Tapanti, Cartago Prov., Costa Rica, and found to be identical in all essential characters. The female, taken from the same tunnel as my male, agrees with the unique female holotype of *Pterocyclon opacifrons* Schedl. Since the sexes have now been definitely associated, *opacifrons* must be placed in synonymy under *melanura* Blandford.

*Monarthrum scutellare* (LeConte)


*Pterocyclon obliquecaudatum* Schedl, 1935, Revista Ent. 5:351 (California; Schedl Collection). New synonymy.
It has long been suspected that obliquecaudatum Schedl was a synonym of Leconte’s Monarthrum scutellare, but it wasn’t until recently that my specimens were compared to Schedl’s type. The error in identification evidently occurred because an authentic male of scutellare was not in Schedl’s collection; all of his males were under the name of obliquecaudatum without an associated female. The name obliquecaudatum, therefore, must be placed in synonymy under scutellare.

**Neodryocoetes limbatus** (Eggers), n. comb.

_Pseudopityophthorus limbatus_ Eggers, 1930, Ent. Blätt. 26:169 (Mexico; Schedl Collection).

The type of _limbatus_ Eggers was examined and found to be a representative of the genus _Neodryocoetes_, not the genus _Pseudopityophthorus_ in which it was originally described.

**Pityokteines ornatus** (Swaine), n. comb.

_Orthotomicus ornatus_ Swaine, 1916, Canadian Ent. 48:185 (Williams, Arizona; Canadian Nat. Coll.).

Various American species have been referred to the genus _Orthotomicus_ without reference to the type-species of that genus or its allies. This occurred with _ornatus_ Swaine, although it appears to be more closely allied to _curvidens_ Germar, type-species of _Pityokteines_ Fuchs, than does any other American species. It is, therefore, proposed that _ornatus_ be transferred to _Pityokteines_.

**Phloeosinus punctatus** Leconte

_Phloeosinus punctatus_ Leconte, 1876, Proc. Amer. Philos. Soc. 15:381 (Oregon; Mus. Comp. Zool.).


This is a common and somewhat variable species from California to British Columbia. Blackman described _buckhorni_ and _kaniksu_ on the basis of characters of the vestiture and of elytral sculpture, and depth of the male frontal excavation, that distinguished them from _punctatus_ Leconte. The examination of several hundred specimens revealed that, while many specimens of this species have glabrous elytra, other specimens possess a moderate amount of elytral pubescence some of which is subsquamos in the female. When series were compared to Blackman’s paratypes of both _buckhorni_ and _kaniksu_, it is apparent that his names refer only to variants of the older name _punctatus_. Male and female paratypes of _rusti_ Blackman also fall within the normal range of variation of _punctatus_. The minute characters on which _rusti_ was based are not consistent,
even within the type series; therefore, rusti must be placed in synonymy under punctatus.

**Pityophthorus schwerdtfegeri** (Schedl), n. comb.

*Conophthorus schwerdtfegeri* Schedl, 1955, Zeitschr. Angew. Ent. 38:28 (Rancho near Quezaltenango, Guatemala; Schedl Collection).


The types of *schwerdtfegeri* Schedl, *islas* Wood and *islas* Schedl were all examined; Schedl's types were compared directly to one another and to paratypes of *islas* Wood. All represent the same species; *islas* Wood and *islas* Schedl bear identical locality labels and undoubtedly came from the same original series. The species, although rather large, belongs to Blackman's group V in the genus *Pityophthorus* as is clearly indicated by the male frons, the antennae and other structures.

**Poecilips advena** Blandford


*Poecilips sannio* Schaufuss, 1897, Berliner Ent. Zeitschr. 42:110 (Gabun; location of type uncertain).


Schedl (1963, Ent. Abh. Ber. Mus. Tierk. Dresden 28:266; 1964, Reichenbachia 2:217) treated several synonyms of this species under the name *sannio* Schaufuss. Recently the types of *Coccorthropes advena* Blandford and of *Dendrurgus philippinensis* Eggers were examined and compared to my specimens from the Philippine Islands, Japan, various Pacific islands, Africa and other areas. The type of *advena* and other Japanese specimens have the declivital interstitial bristles less strongly flattened than those of specimens from other areas; however, they are much more similar to specimens from various Pacific islands, the Philippine Islands, and Indonesia than they are to the cotytypes of *sannio* and most other African specimens. Most of the African material has the elytral bristles strongly flattened from the elytral base to the declivity and, in addition, those on the elytral declivity are short, scarcely more than half as long as comparable bristles on specimens from other areas. While it is quite evident that geographical races or subspecies may be recognizable, it appears best to treat *sannio* and *philippinensis* as synonyms of *advena* until adequate material is available from more areas in Africa.

**Polygraphus rufipennis** (Kirby)

*Apate (Lepisomus) rufipennis* Kirby, 1837, Fauna Boreali-Americana 4:193 (Lat. 65° in North America; British Mus. Nat. Hist.).

After examining numerous specimens of rufipennis Kirby from North America and polygraphus Linnaeus from Europe and Asia, Schedl concluded that the two were synonymous. In my examination of numerous specimens from Europe, eastern Russia, and numerous localities in Alaska, Canada and the United States, consistent differences in these forms were apparent that were not mentioned by Schedl. It is readily apparent that the two forms are very similar. However, when series from any European or Asiatic locality are compared to series from any North American locality, the latter have frontal, pronotal and elytral punctures that are consistently larger than punctures from comparable areas on the European or Asiatic material. Occasional specimens are difficult to separate, but most are not.

In the genus Polygraphus, specific differences often are minute, at times much more subtle than those referred to above. In view of this and the large distributional areas of both forms where variation within each form is minimal, it appears best to recognize both polygraphus and rufipennis as valid species.

Pseudothysanoes tresmariae (Schedl), n. comb.

Hylocurus tresmariae Schedl, 1956, Pan-Pacific Ent. 32:32 (Maria Madre, Tres Maria Isl., Mexico; California Acad. Sci.).

Specimens of tresmariae Schedl from the type series in the Schedl collection were examined recently and found to represent the genus Pseudothysanoes, and not Hylocurus as originally assigned.

Pteleobius mundulus (Broun)


The holotypes of mundulus Broun and opacus Broun were compared directly to one another. The only apparent difference between the two is size. Since most of the specimens of this species I examined were intermediate in size between the two, although both large and small examples were also present, the two names are considered synonymous with mundulus having priority.

Hypothenemus (Stephanoderes) rufescens Hopkins


Hypothenemus emarginatus Schedl, 1942, Tijdschr. Ent. 85:11 (Buitenzorg, Java; Schedl Collection). New synonymy.

Hopkins described rufescens from specimens collected from imported Brazil nuts, Bertholletia excelsa, although the host plant was not recorded in the original description. My specimens that were part
of the original series from which Hopkins' type was selected, were compared to specimens from the original series of emarginatus Schedl. Since then both types have been examined and the synonymy has been confirmed. The name rufescens has priority and should, therefore, be used to designate this species.

**Scolytus tsugae** (Swaine)


The types of _tsugae_ Swaine and _monticolae_ Swaine differ slightly in the appearance of the surface of the abdominal sterna. This surface is dull in the former and shiny in the latter type. Because of the difficulty in obtaining adequate material from the type localities, and because of variability in the supposedly diagnostic character, the validity of the two forms has not been questioned. However, both types as well as series from both type localities have now been studied along with several other series from British Columbia. It now appears reasonably certain that only one species in this species complex exists in British Columbia and that _monticolae_ should be placed in synonymy under _tsugae_ because of page priority.

**Scolytus unispinosus** Leconte

_Scolytus unispinosus_ Leconte, 1876, Proc. Amer. Philos. Soc. 15:372 (Oregon; Mus. Comp. Zool.)


Several hundred specimens of this species, including Blackman's type series of _sobrinus_, have been examined. The characters on which _sobrinus_ was based are far less conspicuous than Blackman's key and description might suggest. It appears that the variation he described represents only a local population that intergrades with several other equally indistinct local populations from Oregon and Washington. In the absence of any biological or consistent anatomical characters to distinguish _sobrinus_, it should be placed in synonymy under the older name _unispinosus_.

**Tricolus nodifer** Blandford


_Tricolus triarmatus_ Schedl, 1939, Mitt. Münchner Ent. Ges. 29:578 (Colonia, Mexico; Schedl Collection). New synonymy.

The types of both _nodifer_ Blandford and _triarmatus_ Schedl were examined and were compared directly to my specimens from Teziutlan, Puebla, Mexico, with which they agree in all characters. The name _triarmatus_ should, therefore, be placed in synonymy under the older name _nodifer_.

Xyleborus capucinus Eichhoff

*Xyleborus capucinus* Eichhoff, 1868, Berliner Ent. Zeitschr. 12:281 (Guadeloupe; evidently in Chapuis Collection, Paris Mus.).


My female of *guatemalensis* Hopkins from Teziutlan, Puebla, Mexico, that was compared to the female holotype was also compared to Blandford’s (1898 Biol. Centr.-Amer., Coleopt. 4[6]:203) four females he had compared to the type of *capucinus* Eichhoff. Since they are obviously identical, the type of *Xyleborus villosulus* Blandford (op. cit., p. 204) was examined to determine its status because Schedl (1952, Ent. Blätt. 47-48:161) had treated *guatemalensis* and *villosulus* as synonyms. The inflated and posteriorly tuberculate front tibiae and the characters of the elytral striae and vestiture of *capucinus* are entirely different from those of *villosulus*. Based on these studies, *guatemalensis* must be placed in synonymy under the older name *capucinus*, and *villosulus* is a distinctly different species.

Apparently all specimens of *capucinus* in the Schedl collection were included under the name *capicinoides* Eggers. Based on the comparison of my material with a cotype of *capicinoides*, Eggers species must also be treated as a synonym of *capucinus*.

Xyleborus coartatus Sampson


The female holotypes of *coartatus* Sampson and *artecuneolus* Schedl were compared directly to one another. Not only are the types identical, but they were both collected in Trinidad by F. W. Urich from cacao (*Theobroma*) in 1914. The name *artecuneolus* must be placed in synonymy under the older name *coartatus*.

Xyleborus intersetosus Blandford


*Xyleborus analogus* Schedl, 1949, Rev. Brasileira Biol. 9:277 (Mexico; Schedl Collection). New synonymy.

The female holotypes of *intersetosus* Blandford and *analogus* Schedl were both compared directly to my female specimen from El Hato del Volcan, Chiriqui Prov., Panama, and were found to be identical. The older name *intersetosus* has priority over *analogus* and should be used to designate the species. It appears to be a relatively common species from Mexico to Panama.
STEPHEN L. WOOD

Xyleborus obliquus Sharp


Sharp’s type of *obliquus* and several specimens collected with the type series of *tantalus* Schedl, including types and cotypes, were compared directly to one another. Although some variation is apparent it is clear that only one species is represented; consequently, *tantalus* must be placed in synonymy under the older name *obliquus.*

Xyleborus spinulosus Blandford


*Xyleborus spinulosus* Schedl, 1934, Stylops 3:178 (Hawaii; F. C. Hadden Collection?).

The cotypes of *spinulosus* in the Schedl collection and my series from Hawaii agree in size and all structural details with many of my specimens of this common species from Costa Rica. The larger type of *spinulosus* Schedl differs slightly from that of *spinulosus*, but is identical with many other specimens from Costa Rica. The principal differences between the two forms, as represented by the types, are body size and the relative sizes of three pair of spines on the elytral declivity. The length of the *spinulosus* form is about 2.4 mm. and the principal lateral spine near the middle of the declivity is larger, the two lateral sabapical spines are both relatively small. The length of the *spinulosus* form is about 2.0 mm. and the lateral pair of the two subapical spines is conspicuously larger than the other two. Within some series there is little deviation from these forms; however, in other series taken from the same tree branch both forms occur in any intermediate size and, in addition, other equally distinct forms exhibiting other size arrangements of the spines may be present. At times these new forms also occur in uniform series. Because of the variability of the forms, these long series clearly indicate that only one species is represented; therefore, *spinulosus* must be treated as a synonym of the older name *spinulosus.*

Xyleborus vulcanus Perkins


*Xyleborus adspersus* Schedl, 1958, Tijdschr. Ent. 101:152 (new name for *truncatus* Sharp).

*Xyleborus pacificus* Nunberg, 1959, Beitr. Ent. 9:432 (new name for *truncatus* Sharp).

Several series of this species have been collected in which males and females were definitely associated together. Females of one of
these series were compared directly to Sharp’s female type of *truncatus* and found to agree in all essential characters. The very different male is not represented in Sharp’s material; however, it does agree in all details with the unique male holotype of *vulcanus* Perkins when compared directly. Because Sharp’s name is pre-occupied by *truncatus* Erichson (1836) the name *vulcanus* must be used. The more recent replacement names *adspersus* Schedl and *pacificus* Nunberg are junior synonyms.

*Xylosandrus zimmermanni* (Hopkins), n. comb.


Representatives of my series from Sebring, Florida, were compared directly to the holotype of *zimmermanni* Hopkins and were found to be identical in all respects. One of these female specimens was also compared directly to Schedl’s type of *biseriatus* and was found to represent the same species. The name *biseriatus* must, therefore, be treated as a synonym of the older name *zimmermanni*. Allied species, including *biseriatus*, have correctly been placed in the genus *Xylosandrus*.

In addition to published records I have collected this species at the following localities: Tecolutla, Vera Cruz, Mexico; Rodeo and Volcan de Agua, Esquintla Prov., Guatemala; Zamorano, Honduras; and Pandora, Limon Prov., and Santa Ana, San José Prov., Costa Rica.
UNUSUAL RECORDS OF UTAH MITES

Dorald M. Allred

During an ecological study of the reptiles of the Great Salt Lake Desert in 1953, thirty-five Desert Whipsnakes, six Great Basin Gopher Snakes, nine Great Basin Rattlesnakes, several Western Collard Lizards, and several Northern Brown-Shouldered Lizards were examined for parasites. The lizards were collected in Dugway Valley, and the whipsnakes, five gopher snakes, and four rattlesnakes from a den at the south end of Cedar Mountains. One gopher snake and five rattlesnakes were taken from the lower slopes of the desert mountains of Dugway Valley. All collections were in Tooele County.

The mites were mounted by Ernest J. Roscoe and determined and/or verified by Dr. James M. Brennan, Rocky Mountain Laboratory, Hamilton, Montana; Dr. Charles D. Radford, Nuffield Laboratory, Manchester, England; and Dr. Russell W. Strandtmann, Texas Technological College, Lubbock, Texas. Lack of keys and descriptions, and damaged or immature specimens prevented identification of some mites beyond family or genus.

In the following list the numbers of hosts infested and mites collected are indicated after their names.

Western Collared Lizard (Crotaphytus collaris baileyi) 1
   Acomatacarus sp., 4 larvae
Northern Brown-Shouldered Lizard
   (Uta stanburiana stanburiana) 1
   Acomatacarus arizonensis, 4 larvae
Desert Whipsnake (Coluber taeniatus taeniatus) 9
   Acomatacarus linsdalei, 3 larvae
   Ellsworthia sp., 2 nymphs, 1 male
   Ornithonyssus bacoti, 1 female
   Trombicula arenicola, 25 larvae
   Trombicula sp. (probably arenicola), 8 larvae
   Acaridae, 2 hypopus nymphs
   Analgesidae, 1 specimen
   Dermoglyphidae, 51 females, 24 males
Great Basin Gopher Snake (Pituophis catenifer deserticola) 2
   Acomatacarus linsdalei, 6 larvae
   Trombicula arenicola, 1 larva
   Trombicula sp. (probably arenicola), 4 larvae

All the mites were attached except the single Ornithonyssus bacoti taken from the hand of the collector after he handled a snake. The Analgesidae and Dermoglyphidae are typically feather mites, and their occurrence on snakes is most unusual. Each of eighteen female dermoglyphids contained one egg.

1. Department of Zoology and Entomology, Brigham Young University, Provo, Utah.
NESTS AND PREY OF TWO SPECIES OF PHILANTHUS
IN JACKSON HOLE, WYOMING (HYMENOPTERA,
SPHECIDAE)

Howard E. Evans

During the summer of 1964, I made a preliminary study of
the ecology and nesting behavior of digger wasps occurring in
restricted areas of sandy soil along the Snake River, in Jackson Hole,
Wyoming. In some of these areas, many species nested in close
proximity, for the most part exhibiting little or no interspecific
aggression or competition for prey. A notable exception was pro-
vided by several species of Philanthus, which preysed upon various
bees and wasps, many of which nested in these same sandy areas.
The present report is concerned with two of these species, P. pulcher
Dalla Torre and P. zebratus nitens Banks. Both of these forms are
widely distributed in the western states, but neither has been studied
previously. P. pulcher has often been regarded as a subspecies of
the eastern politus Say, but I regard it as specifically distinct. On
the other hand, nitens has generally been ranked as a full species.
but G. R. Ferguson, who is currently revising Philanthus, informs
me that he regards it as a subspecies of zebratus Cresson.

Philanthus pulcher Dalla Torre

This is a very common wasp in sandy places along the Snake
River, appearing in late June or early July and remaining active
into early August. The females nest in fine-grained sand or powdery
sandy loam; in suitable spots, nests may be separated by only 5-10
cm, and as many as 15-40 nests may occur per square meter. Males
may often be observed in the nesting areas, either flying about
irregularly or resting on low herbs and grass near active nests.

The digging of the nest is very similar to that of the closely
related species politus, as described by Evans and Lin (1959).
During and more especially following digging of the burrow, the
mound of earth at the entrance is dispersed by a pattern of scraping
movements similar to that of politus. One mound measured 4 X 6 X 1
cm prior to dispersal, approximately 8 X 12 X 0.1 cm following
dispersal. The burrow enters the soil at an angle of 20-40° with the
surface, but after a few cm dips down sharply, the major part of the
burrow forming an angle of 50-70° with the surface. As is common in
Philanthus, the terminus of the burrow is expanded slightly to form
a storage place for prey; only after several prey have accumulated

1. Museum of Comparative Zoology, Cambridge, Mass. I wish to express my thanks to the director
and staff of the Jackson Hole Biological Research Station, Moran, Wyoming, for providing a pleasant
and effective base of operations for these studies, also to the authorities of Grand Teton National Park
for permitting me to collect specimens for identification. I am indebted to P. H. Timberlake for identify-
ing the bees and to R. M. Bohart and K. V. Krombein for assistance with some of the wasps.
here is a cell prepared to hold them permanently. The storage chamber is at a vertical depth of 4-8 cm (burrow length 8-10 cm). The cells are constructed from the ends of short burrows which are closed off as soon as the cell is provisioned. The 8 cells found in the three nests studied in detail varied in depth from 5 to 10 cm; the maximum number of cells found in one nest was five (Fig. 1).

Females often bring in prey very rapidly for short periods, then remain within the nest for a considerable time, presumably preparing a new cell, moving the prey to the cell, and laying the egg. The prey is carried in flight and held by the middle legs, as usual in this genus. The nest entrance is closed from the outside while the female is hunting and from the inside while she is inside the nest. From 8 to 14 prey are used per cell. The egg is laid longitudinally on the venter of one of the top prey, in the common Philanthus manner. I observed females hunting on the flowers of Eriogonum on several occasions. They appeared to approach the flowers from downwind and to strike at the prey in much the manner described by Tinbergen (1935) for P. triangulum Fabricius.

Figure 1. Nest of Philanthus pulcher Dalla Torre, note no. 1982, Moran, Wyo., July 11, 1964.

Figure 2. Nest of P. zebratus nitens Banks, note no. 2032, 5 mi. south of Elk, Wyo., Aug. 4, 1964.
In many cases *P. pulcher* females utilized as prey various wasps and bees which nested in close proximity to them, for example, small aphid predators of the genus *Xylocelia*, grasshopper predators of the genus *Tachysphex*, and female *Stenodynerus papagorum*, a vespid predator on caterpillars which is approximately as large as *Philanthus pulcher*. Probably these were captured on flowers, although it is possible that they were sometimes captured at the entrances of their nests. In all, I took 87 prey from *pulcher* nests; 50 were bees and 37 were wasps; 17 species of wasps were represented as compared to 20 species of bees. The complete list is as follows:

**CHRYSIDIDAE** (Cuckoo wasps)
- *Hedychridium fletcheri* Bod. - 3 ♂ ♀
- *Holozyga ventralis* Say - 1 ♀
- *Omalus aeneus* Fabr. - 1 ♀

**VESPIDAE** (Mason wasps)
- *Ancistrocerus catskill albophaleratus* Sauss. - 1 ♂
- *Stenodynerus papagorum* Viereck - 1 ♀

**SPHECIDAE** (Digger wasps)
- *Belomicrus forbesi* Robt. - 2 ♀ ♀, 2 ♂ ♀
- *Crabro florissantensis* Rohwer - 1 ♂
- *Dienoporus pictifrons* Fox - 1 ♀, 7 ♂ ♀
- *Ecteninius dives* Lep. and Br. - 1 ♂
- *Mimunosa mixta* Fox - 1 ♂
- *Passaloecus mandibularis* Cress. - 1 ♀
- *Passaloecus* sp. - 1 ♂
- *Tachysphex aethiops* Cress. - 1 ♂
- *Tachysphex tarsatus* Say - 7 ♂ ♀
- *Trypoxylon aldrichi* Sand. - 1 ♂
- *Xylocelia gillettei* Fox - 1 ♂
- *Xylocelia* sp. - 1 ♀, 2♂ ♀

**COLLETIDAE** (Colletid bees)
- *Colletes nigritrons* Titus - 3 ♂ ♀
- *Hylaeus ellipticus* Kirby - 1 ♀, 4 ♂ ♀

**ANDRENIDAE** (Andrenid bees)
- *Andrena melanochroa* Ckll. - 1 ♀
- *Panurginus atriceps* Cresson - 7 ♀ ♀, 3 ♂ ♀
- *Panurginus cressoniellus* Ckll. - 3 ♂ ♀

**HALICTIDAE** (Sweat bees)
- *Dialictus* (7 spp.) - 18 ♀ ♀
- *Halictus tripartitus* Cresson - 3 ♀ ♀
- *Sphecodes* sp. - 2 ♀ ♀

**MEGACHILIDAE** (Leaf-cutter bees)
- *Hoplitis clypeata* Sladen - 1 ♀
Howard returned and observed Ammophila prey-laden and larva; typically from farthest 2-4 cm spaced. The cells are constructed from side-burrows from the lower part of the main burrow; they measure about 1 X 1.5 cm and are spaced 2-4 cm apart. There were five cells in the one nest excavated, these cells varying in depth from 15 to 20 cm (Fig. 2). The two cells farthest from the burrow (the deepest cell and the cell farthest right in figure 2) contained moldy prey and a wasp larva, respectively, and appear to have been the first two cells to have been constructed. One cell close to the burrow contained an egg laid longitudinally on the venter of a bee; another contained a small wasp larva; and a third contained two fly maggots which had destroyed the cell contents. These maggots soon formed their puparia, and on May 15, 1965, two Senotainia trilineata (Wulp) emerged from these puparia. This same species of fly was observed following prey-laden females in the field. Phrosinella pilosifrons Allen was also observed digging at closed nest entrances.

A total of 26 prey were recovered from this nest or from provisioning females. Of these, 12 were wasps and 14 were bees. Some of these were relatively large; for example, the Spilichneumon and Ammophila exceed the Philanthus in length, and the Megachile and Epeolus are quite bulky. Ammophila azteca and probably

Hoplistis producta Cresson - 1 ♂
Osmia sp. - 1 ♂
Stelis lateralis Cresson - 1 ♂

Anthophoridae (Anthophorid bees)
Nomada spp. - 2 ♂ ♀

On several occasions I observed miltogrammine flies following females carrying prey. Several specimens were collected and found to be Senotainia trilineata (Wulp), a species known to parasitize other species of Philanthus, as well as many other digger wasps. I did not find fly maggots in any of the cells excavated.

Philanthus zebratus nitens (Banks)

This is a much larger species than pulcher and is quite unrelated to it, often being placed in a separate subgenus. I found only one nesting aggregation of this species, on a sandy road near the Snake River about 5 miles south of the Elk post office. About 20-30 females nested in coarse sandy loam in the center strip of an otherwise hard-packed road. No males were observed. I discovered this colony on August 4, and dug out only one nest. I returned on August 13 hoping to study the species further, but I could find none at all.

The entrances to the nests are conspicuous, since the burrow opening is large, 7-8 cm in diameter, and the soil at the entrance is not dispersed; the mound tends to be spread out fan-like in front of the hole, with one or more grooves leading from the entrance. The entrance is closed at all times when the female is away from the nest. The burrow is much deeper and more sinuous than in pulcher, but as in that species it terminates in a storage chamber. The cells are constructed from side-burrows from the lower part of the main burrow; they measure about 1 X 1.5 cm and are spaced 2-4 cm apart. There were five cells in the one nest excavated, these cells varying in depth from 15 to 20 cm (Fig. 2). The two cells farthest from the burrow (the deepest cell and the cell farthest right in figure 2) contained moldy prey and a wasp larva, respectively, and appear to have been the first two cells to have been constructed. One cell close to the burrow contained an egg laid longitudinally on the venter of a bee; another contained a small wasp larva; and a third contained two fly maggots which had destroyed the cell contents. These maggots soon formed their puparia, and on May 15, 1965, two Senotainia trilineata (Wulp) emerged from these puparia. This same species of fly was observed following prey-laden females in the field. Phrosinella pilosifrons Allen was also observed digging at closed nest entrances.

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Sept. 15, 1966

Nests of Philanthus

several of the other wasps and bees nested in the soil in the same area. The complete list is as follows:

ICHNEUMONIDAE (Ichneumon wasps)

* Dusona sp. - 1 ♀
  * Spilichneumon spp. - 1 ♀, 3♂♂

VESPIDAE (Mason wasps)

* Euodynerus castigatus Sauss. - 1 ♂
  * Stenodynerus taos Cresson - 1 ♀

SPHECIDAE (Digger wasps)

* Ammophila azteca Cameron - 2 ♀ ♀
  * Astata rubecula Cresson - 1 ♀
  * Palmodes carbo Boh. and Men. - 1 ♂

ANDRENIDAE (Andrenid bees)

* Andrena cyanophila Ckll. - 2 ♀ ♀
  * Andrena eriogoni Ckll. - 1 ♀

HALICTIDAE (Sweat bees)

* Lasioglossum trizonatum Cresson - 1 ♀
  * Nomia sp. - 1 ♂

MEGACHILIDAE (Leaf-cutter bees)

* Hoplitis fulgida Cresson - 1 ♀
  * Megachile brevis Say - 1 ♂
  * Osmia tersula Ckll. - 5 ♀ ♀
  * Stelis monticola Cresson - 1 ♀

ANTHOPHORIDAE (Anthophorid bees)

* Epeolus gabrielis Ckll. - 1 ♀

Discussion

The use of wasps as prey by species of *Philanthus* is not unusual, but the use of wasps in large numbers, including females of relatively large species nesting nearby, is of considerable interest. It is also worthy of note that both *P. pulcher* and *P. zebratus nitiens* utilize parasitic bees, including genera such as *Sphecodes*, *Nomada*, *Epeolus*, and *Stelis*, which are rarely reported as prey of *Philanthus*.

It is also of interest to note that at least five species of *Philanthus* are able to nest together in Jackson Hole, thus paralleling the situation in the eastern states (Evans, 1964), although all five species are different. One of the five species in Jackson Hole, *bicinctus* (Mickel), has been studied in Yellowstone (Armitage, 1965), while another, *pacificus* Cresson, has been studied in California (Powell and Chemsak, 1959). I have studied the remaining species, *crabroniformis* Smith, only very briefly, and I shall hold on to my data in the hope of making a more complete study in the future. *Philanthus*
is one of the most rewarding genera of digger wasps for comparative studies, and it is to be hoped that studies from other areas will be forthcoming.

References


ADDITIONAL RECORDS FOR UNCOMMON BIRDS IN SOUTHERN NEVADA

George T. Austin and W. Glen Bradley

The following sight records by Austin extend our knowledge of birds which are of uncommon occurrence in Clark County, Nevada. Specimens, where noted, are deposited in the Biology Museum, Nevada Southern University at Las Vegas.

*Florida caerulea.* Little Blue Heron.

Baldwin (1944:35) lists one record for Clark County, from Lake Mead on 13 November 1943. Austin, who is familiar with this species from field work in the southeast, has observed immature birds at Tule Springs on 9 May (with two Snowy Egrets) and 2 September 1964 and at Henderson Slough on 20 August 1964. All three birds showed dark primaries and the black-tipped, bluish bill.

*Aythya marila.* Greater Scaup.

One examined from a hunter’s bag from the Virgin River near Riverside by Gullion (1952:204) on 4 November 1951 constitutes the only published record for Clark County. A drake was seen at close range along with several ring-necked ducks at Tule Springs on 20 March 1964.

*Gallinula chloropus.* Common Gallinule.

A sight record from the southern tip of the county on 27 January 1934 is the only published record for Clark County (Linsdale, 1936:51). A specimen (B - 106) was collected at the Las Vegas Sewage Plant by Bradley on 13 May 1962. Sight records throughout the year by Austin from Henderson Slough, Twin Lakes (Las Vegas), and Tule Springs indicate that this species is an uncommon but regular resident in the Las Vegas Valley.

*Mniotilta varia.* Black-and white Warbler.

We have two additional records of this accidental visitant to southern Nevada; individual birds seen and heard at Corn Creek on 8 May 1965 and 23 May 1966. Four previous records from Clark County are from Boulder City (Monson 1950:256, Pulich and Gullion 1953:215).

*Setophaga picta.* Painted Redstart.

A sight record by Austin at the mouth of Eldorado Canyon on the Colorado River on 26 April 1963 is verified by a specimen from

1. Department of Biological Sciences, Nevada Southern University, Las Vegas, Nevada.
Hidden Forest, Sheep Mountains on 8 June 1963 and a sight record from the Clover Mountains in Lincoln County on 27 June 1963 (Johnson, 1965:114). These are the only records for Nevada.

Spiza americana. Dickcissel.

This species has been reported twice in Clark County by Pulich and Gullion (1953:215). Austin observed an adult male in his backyard in Las Vegas on 24 May 1964.

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MAMMALS OF THE PAUNSAGUNT PLATEAU REGION, UTAH

Collecting and observation in the Paunsagunt Plateau, upper Sevier River valley of southern Utah, has disclosed some interesting and noteworthy mammal records. The data herein reported were obtained from October 1960 to July 1961 while the writer was park naturalist at Bryce Canyon National Park, Utah.

The Paunsagunt Plateau, located in south-central Utah in Garfield and Kane Counties, is oriented generally in a north-south direction and forms part of the divide between the Great Basin and Colorado River watersheds. Elevations range from approximately 7,500 to 9,200 feet. The upper Sevier River valley borders the Paunsagunt Plateau on the west and is bordered on the west by the Markagunt Plateau-Tushar Mountains uplands. The Sevier River flows northward for approximately 180 miles, thence west into the Great Basin.

In the vicinity of the Paunsagunt Plateau, the lower elevations support a mixed grass and sagebrush association which grades into piñon-juniper and/or ponderosa pine woodland in broken topography and at higher elevations. Ponderosa pine woodland is the dominant type over much of the Paunsagunt Plateau below elevations of 8,500 feet, above which it is replaced by white and douglas firs and spruce.

In the following species accounts, nomenclature follows that of Hall and Kelson (Mammals of North America, 2 vol. Ronald Press, New York, 1959). All measurements are given in millimeters.

Perognathus parvus. One specimen was collected April, 1961, 0.5 mile south of Highway 12, 4 miles west of Bryce Canyon National Park. Although it is within the range of the species, this is the first record of its occurrence on the Paunsagunt Plateau.

The specimen was taken in a snap trap in open, rolling rangeland supporting a low growth of black-sagebrush (Artemesia nova) and herbs. Elevation is ca. 7,800 feet. Pertinent data are: adult male; total length, 190; tail, 99; hind foot, 25. Specimen is in the Idaho State University collection. Microtus montanus. Durrant (Mammals of Utah, University of Kansas Publ. Mus. Nat. Hist., 6:1-54; 1952) includes this region within the range of M. m. amosus (Hall and Hayward). Specimens are recorded from the Boulder Mt., Aquarius Plateau area, Garfield County. Records for Kane County from “Steep Creek, Aquarius Plateau” are questionable, as the Aquarius Plateau does not extend into Kane County.

Two specimens of M. montanus were taken in a sedge swale, 0.25 mile south of Highway 12 near the Wilson Peak road. This is the first record for the species on the Paunsagunt Plateau. Vegetation of the collection site consists of a heavy growth of sedges and grass surrounded by open rangeland. Elevation is ca. 7,800 feet.

Our specimens are considerably smaller than measurements given by Durrant (Ibid.) for M. m. amosus and are near the minima for M. m. nexus, the latter subspecies occurring to the west of the Paunsagunt Plateau on the Markagunt Plateau. Pertinent data are as follows: male, with caudus epididimus distended, 155-34-20; female, non-gravid, 150-33-20 (no ear measurements). Specimens are in the Idaho State University collection.

Sylvilagus idahoensis (Merriam). Previous records for this species in southern Utah have all been from west of the highlands formed by the Markagunt Plateau-Tushar Mountains complex. Two specimens were taken and a number of individuals observed near Panguitch, Utah, in the upper Sevier River valley, June 1961. The collection site is situated on the alluvial fan between the western margin of the Sevier Plateau and the Sevier River valley, 3 miles northeast of Panguitch. Elevation is ca. 6,800 feet.

The animals were first observed along Limekiln Creek, an ephemeral stream which drains from the Sevier Plateau. The banks of this stream and many small tributary gullies are lined with big-sagebrush (Artemesia tridentata) with the

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intervening areas being covered with a low growth of black-sagebrush. Burrowing seemed to be restricted to the former sites, although well-worn trails were conspicuous through the short black-sagebrush.

Investigation of several other localities south and west of Panguitch with similar vegetation failed to disclose additional colonies. Occurrence of the species in this area extends the range 30-40 air-line miles east across a highland area previously thought to be a barrier to them. However, this population may be disjunct as the species has not been reported elsewhere in the Sevier River valley, nor is there any indication that it occurs in the aforementioned highlands.

The specimens cited are in the Idaho State University museum. Pertinent data are as follows: adult male, total length, 265; ear, 52; foot, 65; adult female, 276-50-72; gravid with 5 10-mm. embryos (Stephen N. Stephenson, Department of Botany and Plant Pathology, Michigan State University, East Lansing, Michigan).
The Great Basin Naturalist

Founded in 1939 by Vasco M. Tanner

A journal published from one to four times a year by Brigham Young University, Provo, Utah.

Manuscripts: Only original unpublished manuscripts, pertaining to the Great Basin and the Western United States in the main, will be accepted. Manuscripts are subject to the approval of the editor.

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Reprints: No reprints are furnished free of charge. A price list for reprints and an order form is sent with the proof.

Subscriptions: The annual subscription is $2.50, (outside the United States $3.25). Single number, 80 cents.

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<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undescribed species of Nearctic Tipulidae (Diptera) VII. Charles P. Alexander</td>
<td>1</td>
</tr>
<tr>
<td>Tingidae, Neididae, (Berytidae) and Pentatomidae of the Nevada Test Site. D Elden Beck and Dorald M. Allred</td>
<td>9</td>
</tr>
<tr>
<td>New Synonymy in the Platypodidae and Scolytidae (Coleoptera). Stephen L. Wood</td>
<td>17</td>
</tr>
<tr>
<td>Unusual Records of Utah Mites. Dorald M. Allred</td>
<td>34</td>
</tr>
<tr>
<td>Additional Records for Uncommon Birds in Southern Nevada. George T. Austin and Glen Bradley</td>
<td>41</td>
</tr>
<tr>
<td>Note: Mammals of the Paunsagunt Plateau Regions, Utah. Stephen N. Stephenson</td>
<td>43</td>
</tr>
</tbody>
</table>
The Great Basin Naturalist
GREAT BASIN NATURALIST

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NEW RECORDS AND SPECIES OF NEOTROPICAL
PLATYPODIDAE (COLEOPTERA)¹

Stephen L. Wood²

In order to make the names available for other work, 23 species of Platypodidae from Central America and British Guiana are described as new to science on the following pages. These species represent the genera *Tesserocerus* (1), *Cenocephalus* (1), *Neotrichyrostus* (1), and *Platypus* (20). In addition to these new species, *Mecopelmus zeteki* Blackman is added to the family and a new tribe is designated for it; notes on its biology are also included. The known distribution of *Platypus longulus* Chapuis is extended, and the male of *Platypus otiosus* Schedl is described for the first time.

*Mecopelmus zeteki* Blackman


When Blackman described the genus *Mecopelmus*, he discussed its affinities without assigning it definitely to a family group category. Additional material of this curious species is now available, as well as fragmental biological data on this and related genera, suggesting that *Mecopelmus* should be included in the Platypodidae and assigned to a new monobasic tribe, here designated as Mecopelmimini, in the subfamily Coptonotinae.

On December 22, 1963, a long series of this species was collected from a cut woody vine (liana), *Serjania* sp., along a trail in secondary forest growth at Fort Clayton in the Panama Canal Zone. The beetles were strictly monogamous. Both adults and larvae mined the cambium region; there was no indication of fungal growth in more than 100 tunnels examined.

The host material was from about one-half to two centimeters in diameter. Entrance holes generally were in exposed areas; there was no consistent attempt by the beetles to conceal the entrance in a crevice, under a piece of bark, etc. When beetles were present in the tunnel, the entrance hole was blocked either by the brown frass

1. Part of the field work that led to the preparation of this article was made possible by a grant from the National Science Foundation, Number GB-532.
2. Department of Zoology and Entomology, Brigham Young University, Provo, Utah. Scolytoidae Contribution No. 29.

45
or by the posterior end of a beetle. The entrance tunnel extended through the thin bark to a simple, nuptial cavity that engraved the wood slightly. This irregular cavity varied from about 1-3 mm. (rarely as much as 5 mm.) in width and about 10 mm. (rarely as much as 23 mm.) in length. Its long axis was almost always parallel to the grain of the wood. As many as 40 eggs were scattered indiscriminately in the cavity. In a few tunnels one end of the cavity was filled by frass, but in these areas eggs were never present. Larvae were not present in the tunnels, except for a few in the first instar. Some old abandoned tunnels were available, however, that contained fully completed larval excavations in the cambium region. The larvae fed communally in the one or two irregular cavities extending with the grain of the wood from the parental chamber. These increased gradually in width to a maximum of about 5 mm. and rarely exceeded 20 mm. in length. Only one to three exit holes were observed from each larval tunnel.

*Tesserocerus forceps*, n. sp.

Figs. 1-2

Allied to *chapuisii* Schedl, but readily distinguished in the male by the gradually tapered process at the base of declivital interspace 1, not angled at apex, by having only two denticles between the process on declivital interspace 1 and the lateral terminal process, these at base of declivity on interspaces 3 and 5, by the longer, more slender lateral terminal processes, and by the divaricate sutural apex of the elytra, with the apical sutural angles extended (not divaricate and with these angles almost 90 degrees in *chapuisii*).

**Male.**—Length 7.3 mm., 2.6 times as long as wide; thorax and ventral areas yellowish-brown. head and posterior third of elytra moderately dark brown, the color gradually becoming lighter toward base of elytra.

Frons weakly convex above, irregularly flattened below, with a weak, median impression at lower level of eyes; surface rather dull, longitudinally strigose, with rather fine, sparse, shallow punctures; vestiture sparse, inconspicuous.

Pronotum almost rectangular, very slightly wider posteriorly, 1.3 times as long as wide; surface almost smooth except where the scattered setae insert and in porous area on basal fifth.

Elytra 1.5 times as long as wide; striae distinctly impressed, the punctures small, sharply outlined, shallow; interspaces without regular punctures, but with irregularly placed, minute points, 2 widened basally, the minute points subasperate near base. Declivity oblique, moderately steep; base of declivity armed on interspace 1 by a large, tapered process diverging slightly from suture, its length from tip to its lateral base 70 percent of length of lateral terminal process; interspaces 2, 4, and 6 unarmed, 3 and 5 each with a small denticle, apex of 7 transversely cariniform and extending to base of lateral process; lateral terminal process long, rather slender, moderately converging, dorsal edge with one very small
tubercle about midway between carina of 7 and apex; sutural apex divericate, the apical sutural angles moderately extended posteriorly; declivity face subshining, with four narrow longitudinal elevations evidently indicating positions of interstriae, the lateral impressed areas between them with large, obscure punctures indicated.

**FEMALE.**—Length 7.0 mm.; similar to male except frontal impression absent; punctured area of pronotum covering basal third; base of elytral interspace 2 more coarsely asperate; sculpturing of elytral declivity similar, but all processes not more than half as large.

**Type Locality.**—Pandora, Limon Prov., Costa Rica.

**Type Material.**—The male holotype and female allotype were taken at the type locality on August 23, 1963, by S. L. Wood. They were taken in flight as they hovered above a large, unidentifiable log.

The holotype and allotype are in my collection.

*Cenocephalus epistomalis*, n. sp.

Fig. 3

This species evidently is more closely related to *pulchellus* Schedl than to other described species, but the relationship does not appear to be close. The female differs from *pulchellus* by the greatly reduced, specialized frontal setae that arise near the bases of the antennae, by the very unusual punctation of the epistomal

Figs. 1-6. 1, male, and 2, female of *Tesserocerus forcep*; 3, head of female *Cenocephalus epistomalis*; 4, dorsal aspect of male declivity of *Neotrachyostus obliquus*; 5, dorsal aspect and 6, caudal aspect of male *Platypus abditulus*.
region, and by the finer sculpture of the elytral disc and declivity. A male of *pulchellus* was not at hand for study.

**Female.**— Length 2.6 mm., 3.4 times as long as wide; color light brown, the head and declivity darker.

Frons broadly concave from eye to eye from just above epistoma to vertex, more strongly impressed medially from vertex to center of concavity; margin between epistoma and concavity appearing abrupt from eye to eye; the concavity reticulate and bearing above and below a few rather small setiferous punctures; epistomal area about equal to width of scape and extending from one antennal base to the other, flattened, very closely, rather deeply and finely punctured, the punctures decreasing in size toward concavity, arranged in about three confused ranks; frontal margin adjacent to antennal base bearing about 4-6 long, in-curved, hairlike setae, the two upper ones rather coarse (but less so than in *pulchellus*); vestiture very fine in concavity, coarser toward vertex, long and rather conspicuous but not abundant.

Pronotum 1.2 times as long as wide; sides of basal third parallel then expanded slightly to widest point just in front of middle, then narrowed slightly to anterior angles; anterior margin almost straight; surface reticulate, regularly punctured, the punctures small, round, rather deep; area of glandular pores entirely absent.

Elytra twice as long as wide; striae and interstriae indicated below the transparent surface layer, but on surface punctures scarcely impressed, the punctures appearing moderately large or small depending upon angle at which light reflects; base of interspace 3 with about 6 small, short, transverse crenulations. Declivity rather abrupt, very steep, broadly, moderately convex; striae strongly impressed from just before base to a point on declivity not more than one-fourth the distance from top, the punctures at most very obscurely indicated; interstriae moderately convex above, very finely granulate, 3 longer than others, extending almost to middle of declivity, 7 a little more coarsely serrate and continuing as lateral margin to outer apical angle (serrations much finer than in *pulchellus*); apical margin between obtuse lateral angles straight, much wider than in *pulchellus*, equal to slightly more than half (55 percent) the greatest width of elytra.

**Male.**— Length 2.5 mm.; similar to female except frons flattened and coarsely, irregularly punctured, pronotum more coarsely, deeply punctured, the punctures larger anteriorly; elytra more deeply, closely punctured, the punctures confused, except striae 1 indicated; and declivital sculpture coarser and with an acutely elevated subapical ridge extending from lateral angles about half the distance to suture.

**Type Locality.**— Mile 10 on the Bartica-Potaro road, British Guiana.

**Host.**— *Licania* sp.

**Type Material.**— The female holotype, male allotype, and 13 paratypes were taken at the type locality from the above host between October, 1948, and March, 1949, collection number 73, by
D. J. Atkinson. One paratype bears the same data except the host was *Pouteria* sp. and the collection number was 70. One male paratype is from Rio Damitas, San José Prov., Costa Rica, taken on February 18, 1964, at an elevation of 700 feet, from an unidentified log, by S. L. Wood.

The holotype, allotype, and most of the paratypes are in the British Museum (Natural History); some paratypes are in my collection.

*Neotachyostus obliquus*, n. sp.

Fig. 4

Very similar to *putzeyi* Chapuis, but readily distinguished in the female by the broadly impressed frons, and by the absence of minute tubercles on the elytral declivity of the male.

**Male.**—Length 7.5 mm. (male paratype 7.2 mm.), 3.4 times as long as wide; color dark brown.

Frons transversely concave from eye to eye and from just above epistomal margin to vertex, with large, very shallow punctures from just above epistoma to level of middle of eyes; epistomal area slightly raised, reticulate and with about six setiferous punctures; lateral areas above antennal bases and also median area above middle of eyes with rather numerous, deep, setiferous punctures, the coarse, brown setae distinctly shorter than a distance equal to the width of the eye.

Pronotum 1.1 times as long as wide, widest at base, distinctly shallowly constricted about one-third its length from base; anteriorly minutely strigose-reticulate, posteriorly with a few minute points; vestiture restricted to anterolateral angles.

Elytra 2.0 times as long as wide; sides straight, diverging very slightly to base of declivity, from dorsal profile lateral margins appearing serrate because of about a dozen equally spaced, posteriorly directed tubercles on interspace 9; elytral base with a sharply raised margin from suture to interspace 5; striae weakly impressed, both striae and interstriae on disc impunctate, smooth, shining, except near declivity striae become somewhat punctate-granulate and increase in width so as to eliminate interspaces 2, 4, and, in part, 6 and 8, some striae punctures visible on lateral interspaces. Declivity obliquely truncate; upper margin armed by a blunt spine on interspace 1, projecting posteriorly a distance less than its width, a similar projection on interspace 3 begins a continuous carinate crest extending to apex except for a notch at interspace 4, the crest lower and wider after reaching interspace 8; sutural apex with a deep U-shaped emargination formed by terminal processes, the apical half of the inner margin of this emargination bearing three rather large tubercles; declivital surface dull, subgranulose, with shallow punctures.

**Female.**—Length 6.8-7.2 mm., 3.6 times as long as wide; similar to male except frontal area from middle level of eye to epistoma smooth, impunctate; base of elytral interspace 2 roughened (not
asperate); serrations on interspace 9 reduced; declivity convex, steep, with a narrow groove just below lateral margin marking off declivital face, this area bearing about 14 rounded tubercles in two very indefinite rows in the apparent location of interspaces 1 and 2.

**Type Locality.**—Volcan, Puntarenas Prov., Costa Rica.

**Host.**—A tree known locally as “Huarumo.”

**Type Material.**—The male holotype, female allotype, and one male and one female allotype, and one male and one female para-type were collected at the type locality on December 11, 1963, by S. L. Wood, from the bole, six inches in diameter, of the above host as named by local inhabitants.

All four specimens are in my collection.

*Platypus abditulus*, n. sp.

Figs. 5-6

This species is closely related to *abditus* Schedl (types compared directly), but is distinguished in the male by spine at base of interspace 1 being similar to spine on interspace 3 (not shorter and blunt as in *abditus*), by the presence of a smaller, but rounded spine, on interspace 7, and by the shallow, much wider apical emargination.

**Male.**—Length 3.4 mm. (paratypes 3.3-3.5 mm.), 3.4 times as long as wide; color light brown, the declivity darker.

Frons flattened, subrugosely, coarsely, shallowly punctate, more finely below bases of antennae. Antennal scape subtriangularly expanded and bearing a sparse fringe of hair on lower margin.

Pronotum 1.1 times as long as wide; sides constricted just behind middle, widest just behind constriction; surface dull, reticulate, with moderately abundant, small, shallow punctures; median line indicated on basal third.

Elytra 2.0 times as long as wide, sides straight, almost truncate behind; basal margin acutely raised to interspace 7, striae impressed on posterior two-thirds, the punctures very large, shallow, very obscure anteriorly, becoming more distinct posteriorly; interstriae becoming narrowly, continuously carinate on posterior two-thirds of disc: even numbered interspaces end just before declivital margin, odd numbered interspaces end in blunt processes, each process not longer than wide, all apparently of equal length as viewed from posterior aspect; elytral apex broadly, shallowly emarginate, the emargination more than four times as wide as deep (about twice as wide as deep in *abditus*); declivital face coarsely granulose, and with rather abundant, small, deep punctures.

**Female.**—Not represented.

**Type Locality.**—Near Moravia, Cartago Prov., Costa Rica.

**Type Material.**—The holotype and five paratypes were collected from the type locality on March 11, 1964, at an elevation of about 1,500 feet from an unidentifiable log.

All six specimens are in my collection.
Platypus exitiosus, n. sp.

This species is allied to exitiosus Schedl, but is distinguished by its larger size, by the more coarsely sculptured elytra and by the presence of three spines on the lateral terminal process (only two in exitiosus).

Male.—Length 4.5 mm. (paratype 4.7 mm.), 3.2 times as long as wide; color dark brown.

Frons broadly planoconcave from vertex to the slightly elevated epistomal margin; surface coarsely sculptured with very large, moderately deep punctures, those below level of antennal bases somewhat smaller; vestiture consisting of a few inconspicuous, scattered setae on upper marginal areas.

Pronotum 1.1 times as long as wide; sides constricted just behind middle, widest at a point just behind this constriction; surface smooth and shining with rather numerous, fine, deep punctures and more abundant, minute, shallow punctures intermixed, a basal band of irregular, large, very shallow punctures at base.

Elytra 2.0 times as long as wide; base acutely elevated from suture to interspace 5; striae moderately impressed, particularly toward declivity, the punctures distinctly impressed; interspaces reticulose-strigose with irregular punctures and fine, sharp tubercles; the tubercles increasing in size and number toward declivity, 3 armed by about 6 broad transverse crenulations; interspaces 1 and 3 carinate on posterior two-thirds of disc, becoming serrate on posterior portion, 5 carinate on posterior half and 7 carinate almost to base; 1, 3, 5, and 7 each produced into a projecting spine, 3 longest, 1 very slightly longer than 5, 7 shortest, 8 and 9 posteriorly serrate. Declivital face almost circular, limited above by spines of interstriae 1 and 3 and laterally and below by three large, blunt spines of terminal lateral process; the first of these lateral spines in line with interspace 7, the second in line with interspace 9, the third is the apex of lateral process.

Femoral shield of metasternum and metepisternum formed by five rather large, posteriorly directed spines.

Type Locality.—Bartica triangle, British Guiana.

Host.—Poweria engleri (type) and Licania sp. (paratype).

Type Material.—The male holotype was collected from its host at the type locality between October, 1948, and March, 1949, by D. J. Atkinson. One male paratype was taken 10 miles from Bartica on the Potaro road in British Guiana from its host, during the above period of time.

The holotype is in the British Museum; the paratype is in my collection.

Platypus schedli, n. sp.

Fig. 8

This species is closely allied to exitiosus Schedl but is distinguished by its smaller size, by the confluent punctures on striae 1
and 2, by the less strongly produced spines at base of declivity, and
by the smaller, shallow, less numerous punctures on declivital face.

**Male.**—Length 2.6 mm. (male paratypes 2.5-2.9 mm.), 3.0
times as long as wide; color light brown, the elytral declivity
darker.

Frons very shallowly, coarsely rugose-punctate above level of
antennal bases, rather coarsely, deeply, regularly punctured below;
vestiture sparse, inconspicuous, restricted to area of vertex.

Pronotum subquadrate, almost as wide as long, feebly constricted
just behind middle, very slightly wider near base; surface smooth
and shining, with sparse, fine punctures and minute points, except
base with a band of coarse shallow punctures from side to side and
extending with finer punctures anteriorly along median line to a
point about a third the length of the pronotum from base.

Elytra 1.7 times as long as wide, posteriorly tapered on apical
third to the rather broad, 4-pronged apex; basal margin acutely ele-
vated from suture to interspace 6; striae impressed, the punctures
rather large and posteriorly on 1 and 2 confluent; interspaces with
a few scattered punctures, 1-3 convex, 1 and to a lesser extent 3
carinate toward declivity, 2 and 4 eliminated before declivity; base
of 3 armed by two broad transverse crenulations; interspaces 1, 3,
and 5 armed by spines that project slightly behind (less than in

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Figs. 7-12. *Platypus* spp. males: 7, *exitialis* declivity; 8, *schedli* declivity;
9, *angustatulus* dorsal aspect; 10, *longior* dorsal aspect; 11, *simpliciformis* dorsal
aspect of declivity; 12, *longius* dorsal aspect of declivity.
exotiosus), almost equal in length. Declivity rather steep, shallowly sulcate near interspace 2, the surface granulose, the punctures rather small, shallow, moderately abundant; terminal process near suture, acute, and with an equally prominent lateral process that from above appears acute, from lateral view, quadrate; interspaces 6-9 unarmed.

Femoral shield on metasternum and metepisternum formed by three rather large, posteriorly directed teeth.

**FEMALE.**—Length 2.9 mm. (paratypes 2.8-3.0 mm.), 3.2 times as long as wide; similar to male except elytral striae not impressed, the punctures small, feebly indicated, interstriae smooth and impunctate. except roughened near declivity; declivity convex, moderately steep, armed only by about a dozen rounded granules, and femoral shield with one small spine on metepisternum.

**Type Locality.**—Manaka, British Guiana.

**Host.**—Eschweilera sagotianum.

**Type Material.**—The male holotype, female allotype, and 49 paratypes were collected at the type locality from the above host between October, 1948, and March, 1949, by D. J. Atkinson, collection No. 17. Additional paratypes, all from British Guiana, taken in the same period from the same host by the same collector included: 7 from Moraballi (No. 29); 1 (No. 43) at light from mile 12, and 1 (No. 74) from mile 10 on the Batrica-Potaró road; 18 from Batrica triangle (1 extracted from Catostemma sp., 1 from Eperua falcata, the host not indicated for the others); 64 from the Ikuribisi (No. 46). One other male paratype in the Schedl collection is labeled Guyana Franciae, Passoura 9.

The holotype, allotype, and most of the paratypes are in the British Museum (Natural History). Other paratypes are in my collection and in the Schedl collection.

**Platypus longulus** Chapuis

*Platypus longulus* Chapuis, 1865, Monographie des Platypides, p. 158.

This species, previously known from Mexico and Guatemala, was collected in Costa Rica from Rio Damitas, San José Prov., August 14, 1963, and Gromaco Plantation on the Rio Coto Brus, Puntarenas Prov., July 22, 1963, by S. L. Wood. Additional specimens were also collected in British Guiana between January and March, 1949, by D. B. Fanshawe, at the Bartica triangle, from Kairobali, and between October, 1948, and March, 1949, by D. J. Atkinson, at mile 10 on the Bartica-Potaró road, from *Tapirira marchandii*; at Ikuribisi from *Eschweilera sagotianum*; and at Manawa from *Ocotea rodiae*. 

**Platypus otiosus** Schedl


A long series of this species was collected three miles west of El Salto, Durango, Mexico, from large *Quercus* logs. Both sexes were
present in many of the newly formed tunnels. A female of this series was compared directly to the unique female type of *otiosus*, both by K. E. Schedl and by myself, and found to be identical in all respects. Because the male previously was unknown, a brief description is presented below.

**Male.**—A representative of Chapuis’ *Platypus* caudati; evidently more closely allied to *angustatus* Chapuis than to other known species, but declivity very different.

Length 5.2-5.7 mm. Frons very coarsely, closely, deeply punctured; lacking the transverse striation and the small excavations near antennal bases of female. Pronotum similar to that of female, except completely devoid of the very large, median pores. Elytra with striae and strial punctures more strongly impressed, the surface more nearly shining. Declivity with interspaces 1, 2, 4, 6, and 9 unarmed except by one or more fine tubercles; 3 with a large projecting process, its base extending almost half the distance down the declivity. 5 strongly elevated projecting only slightly, its base extending only slightly down declivity, 7 moderately elevated, sharply but not strongly produced, its base extending only slightly beyond declival base, 8 bearing a moderately large, sharpened tubercle, its base at base of declivity as seen from above; apices of spines on interspaces 3, 5, 7, and 8 almost in a straight line. Lateral apical process longer and more slender than other species of this group, its apex ending in three acute spines.

*Platypus occipitis*, n. sp.

Allied to *occipitalis* Chapuis, but distinguished in the male by the subconcave frons, by the more coarsely punctured prothorax, by the subcarinate elytral interspaces on the disc, and by the more strongly elevated, posteriorly serrate interspace 9.

**Male.**—Length 4.1 mm. (paratypes 4.0-4.2 mm.), 2.8 times as long as wide; color light brown.

Frons flattened to vertex, with median half from level of middle of eye to epistoma shallowly concave; concave area reticulate and with rather large, circular punctures, upper area with large, shallow, partly confluent, reticulate punctures indicated; vestiture inconspicuous, short.

Pronotum as wide as long, sides rather deeply constricted at middle, a deep cavity formed at its posterior extremity in uppermost pleural region; surface subreticulate, with shallow, moderately large and small punctures intermixed.

Elytra about 1.6 times as long as wide (estimate, elytra spread); elytral striae rather strongly impressed, the punctures large, confluent, scarcely indicated; interspaces convex except at base, carinate on posterior half to declival margin. Declivity convex; interspaces 1-9 equally subserrate, 9 very slightly more strongly elevated and continued to junction with 5, the low, acute ridge ascending slightly and continuing to 3 then descending abruptly to sutural apex (similar to *occipitalis* but all characters more strongly developed). Vesti-
ture largely restricted to declivity, consisting of short bristles almost equal in length to distance between rows of bristles.

Last visible abdominal sternum armed by a pair of large, blunt, cone-shaped processes.

**FEMALE.**—Similar to male except the elytral interspaces convex, but not carinate, the declivity simple, and the abdominal spines absent.

**Type Locality.**—Ikuribisi, British Guiana.

**Host.**—*Pouteria guianensis*.

**Type Material.**—The male holotype, female allotype and 6 paratypes were taken at the type locality from the above host between October, 1948, and March, 1949, by D. J. Atkinson, collection No. 53. An additional female paratype, probably from this same series, is labeled “British Guiana, 1948-1949, D. J. Atkinson.”

The holotype, allotype and some paratypes are in the British Museum (Natural History), other paratypes are in my collection.

*Platypus angustatulus*, n. sp.

**Fig. 9**

Allied to *mulsanti* Chapuis, but larger and more slender, the male is distinguished from that species by the less strongly elevated declivited interspaces, by the discontinuation of elevations on interspaces 3 and 5 on the declivital face, and by the more strongly elevated, more coarsely serrate, declivital interspace 9; the female frons more shallowly concave and more finely punctured.

**Male.**—Length 5.5 mm. (male paratype 5.7 mm.), almost four times as long as wide; color very dark brown, almost black.

Frons flattened from vertex to epistoma, the lower third weakly impressed in median area; surface with large, close, irregularly shaped, shallow punctures, appearing somewhat rugulose above, more finely sculptured below antennal bases, the epistoma almost smooth; vestiture short, inconspicuous.

Promontum 1.2 times as long as wide, rather strongly constricted well behind middle; surface densely punctured, the punctures minute, shallow, irregular in shape, largely suppressed near anterior margin.

Elytra 2.6 times as long as wide; striae weakly if at all impressed, the punctures small, mostly elongate, rather strongly impressed; interspaces more than twice as wide as striae, obscurely subreticulate, with fine, scattered punctures; elytral bases acutely elevated from suture to interspace 5. Declivity not steep, convex to bases of terminal processes; interspace 1 feebly elevated and armed by 2-4 fine, setiferous tubercles above, reduced on lower half, 2 reduced throughout but bearing a few fine granules, 3 rather strongly raised on upper third, with about two small, setiferous tubercles on its summit, reduced below, 5 and 7 convex on upper third, each armed by about 3 setiferous tubercles, 8 elevated, the strong elevation continuing to apex of lateral apical process, its summit serrate;
terminal process short, blunt, rather broad. Vestiture confined to declivity, consisting of short, stout bristles, each bristle shorter than distance between rows of bristles, and several longer setae on apex of lateral processes.

Type Locality.— Ten miles southeast of Cartago on the Pan-American Highway, Cartago Prov., Costa Rica.

Type Material.— The male holotype was collected at the type locality from an unknown log 14 inches in diameter on July 29, 1963, by S. L. Wood, at an elevation of 5,600 feet. One male paratype was taken from the same log on September 24, 1963. Both specimens are in my collection.

*Playtpus longior*, n. sp.

Fig. 10

This species is more closely allied to *angustatulus* Wood (above) than to other known species, but is readily distinguished by the almost complete suppression of pronotal punctures, by the rather strongly elevated alternate interspaces on the elytral declivity, and by the narrower terminal elytral processes that are serrate only at their bases.

Male.— Length 4.9 mm., 3.7 times as long as wide; color very dark brown.

Frons flattened, weakly impressed in median area below, rather coarsely punctured throughout, becoming rugose above level of antennal bases; vestiture sparse, inconspicuous.

Pronotum 1.2 times as long as wide; lateral constriction just behind middle, abrupt, rather short; surface subshining, minutely irregular, not clearly punctured although obscure, suppressed punctures evident; glandular pores not evident.

Elytra 1.3 times as long as wide; disc as in *angustatulus*. Declivity much as in *angustatulus* but with interspaces 1, 3, 5, and 7 rather strongly elevated, the elevations not descending abruptly behind except on 3, elevation on 3 also slightly more prominent than the others, 5 and 7 more distinctly serrate; 8 less strongly elevated than in *angustatulus*, finely serrate, the terminal lateral processes narrower. Vestiture confined to declivity, very slightly longer than in *angustatulus*.

Female.— Length 5.0 mm., 3.7 times as long as wide; similar to male except pronotum subreticulate, with minute, shallow punctures, and with a pair of minute glandular pores one-third the length of pronotum from base (at anterior end of impressed median line); elytral declivity simple.

Type Locality.— Ten miles southeast of Cartago on the Pan-American Highway, Cartago Prov., Costa Rica.

Type Material.— The male holotype and one female paratype were collected at the type locality on July 29, 1963, and the allotype at the same locality, on July 3, 1963, by S. L. Wood, from the same log that contained the type series of *angustatulus*.

All three specimens are in my collection.
Platypus simpliciformis, n. sp.

Fig. 11

This species is more closely allied to coronatus Schedl than to other known species, but it is not closely related. From coronatus it is readily distinguished by the much smaller size and, in the male, by the similar sculpturing of all declivital interspaces.

**Male.**—Length 5.0 mm., 3.3 times as long as wide; color dark brown.

Frons shallowly, broadly, transversely concave from epistoma to vertex; epistoma almost smooth and shining, becoming punctate-rugulose above level of antennal bases; vestiture fine, inconspicuous.

Pronotum 1.1 times as long as wide; the lateral constriction long, shallow; surface subreticulate, subshining, with fine, shallow, sparse punctures.

Elytra 2.1 times as long as wide; striae impressed, the punctures rather large, mostly confluent; interspaces twice as wide as striae, broadly convex toward base, narrowly rounded (almost costiform) at base of declivity, the punctures very minute, sparse, irregular. Declivity convex; striae deeply, abruptly impressed, the punctures largely suppressed except for transverse lines at bottoms of strial grooves; interstriae narrowly elevated, slightly narrower than striae, not higher than wide. 1-8 similarly sculptured, each with a sparse row of regularly spaced, posteriorly directed, fine, pointed tubercles, those on 8 and 9 larger, appearing serrate; all interspaces tend to converge toward, but end short of lateral terminal process; lateral process short, about as in coronatus, but with two very small dentications on lateral margin and one small tubercle near center of face; punctures of striae 1 distinct to near apex.

**Type Locality.**—Tapanti, Cartago Prov., Costa Rica.

**Type Material.**—The unique male holotype was collected at the type locality on October 24, 1963, by S. L. Wood, at an elevation of 4,000 feet, from a limb of Phoebe mexicana that was about 4 inches in diameter.

The type is in my collection.

Platypus longius, n. sp.

Fig. 12

This species is closely related to longulus Chapuis, but is distinguished in the male by the more strongly elevated interspace 3, by the suppression of the elevations on interspaces 1 and 3 on the lower declivity, by the more coarsely serrate interspaces 7 and 8, and by the longer terminal processes; the female differs from longulus by the presence of a pair of small glandular pores on the basal half of the pronotum, and frons bearing conspicuous tufts of hairlike setae.

**Male.**—Length 4.6 mm. (male paratypes 4.6-5.0 mm.), 3.5 times as long as wide; color very dark brown.
Frons flattened, median area slightly impressed below; surface finely, closely granulate; vestiture sparse, inconspicuous.

Pronotum 1.1 times as long as wide; lateral constriction abrupt, rather deep; surface dull, with numerous, close, fine punctures and minute pores; glandular pores absent.

Elytra 2.3 times as long as wide; disc as described above for angustatulus. Declivity convex; interspace 1 rather weakly, narrowly elevated on upper half and bearing several serrations, 2 reduced to a fine line on declivity, 3 more strongly elevated and serrate than 1, not at all elevated on lower half, 4-6 not elevated but sub serrate, 7 moderately elevated and with about three rather coarse serrations, 8 rather strongly elevated and coarsely serrate to base of terminal process; terminal process long and slender, distinctly longer than its basal width, with one small spine on its upper apical extremity, and one or more fine serrations laterally.

FEMALE.— Length 5.0 mm.; similar to male except frons with a pair of rather dense tufts of long hair, the area covered by each tuft extending ventromesad from inner angle of eye about two-thirds of distance to median line; pronotum with a pair of glandular pores two-fifths of pronotum length from base; and elytral striae not impressed, the declivity simple.

TYPE LOCALITY.— Volcan Pacaya, Esquintla Prov., Guatemala.

TYPE MATERIAL.— The male holotype, female allotype, and five paratypes were collected at the type locality on June 1, 1964, by S. L. Wood, at an elevation of about 4,000 feet, from an unknown log. Two additional paratypes and two other males without head and prothorax were taken at Cerro Peña Blanca, Honduras, on April 23, 1964, by S. L. Wood, at an elevation of 6,000 feet, from a limb of Quercus tomentocaulis.

The type series is in my collection.

**Platypus liraticus**, n. sp.

Fig. 13

This species is closely related to *liratus* Blandford, but the male is readily distinguished by the more deeply impressed discal striae, with the punctures larger and regular, by the narrower, more strongly elevated, discal interstriae, by the more strongly developed lateral terminal elytral processes, and by the absence of tubercles on the lower third of declival interspace 1.

MALE.— Length 6.9 mm. (male paratype 6.5 mm.), 3.1 times as long as wide; color reddish-brown becoming darker posteriorly, the declivity almost black.

Frons very weakly, broadly concave from eye to eye and from epistoma to vertex; closely, shallowly, very coarsely punctured; vestiture sparse, inconspicuous.

Pronotum as wide as long; surface mostly reticulate with rather numerous, small and minute punctures intermixed; median line indicated on basal third.
Elytra 1.8 times as long as wide; disc as in *liratus* except striae more deeply impressed, the punctures on 1 and 2 larger, in definite rows, very close (almost contiguous), the interstriae narrower and more nearly carinate. Declivity similar to but more gradual than in *liratus*; interspace 1 elevated and narrowly convex on upper third, serrate (5 tubercles) on middle third, flattened and with a few punctures on lower third; 2 narrowed, with two fine tubercles near base, impressed below; 3 similar to 1 except lower third continues to lateral process; 4-8 narrowly convex to declivital base, each ending in a tubercle and followed by a series of two to four tubercles of equal size, ending just before lateral process; lateral terminal process much more prominent than in *liratus*, with a low, acute ridge extending from this process two-thirds of the distance toward sutural apex, the median marginal pair of tubercles below this ridge.

**Type Locality.**—Rio Damitas, San José Prov., Costa Rica.

**Host.**—*Rheedia edulis*.

**Type Material.**—The male holotype and one male allotype were taken at the type locality from the above host on February 18, 1964, at an elevation of 700 feet, by S. L. Wood.

Both specimens are in my collection.

*Platypus chiriquensis*, n. sp.

**Fig. 14**

This species is closely allied to *lafertei* Chapuis, but is readily distinguished by the much larger size and, in the male, by the sub-concave frons, by the regular striae 1 and 2, by the sparsely punctured interspace 2, and by the much larger lateral spines on elytral apex.

**Male.**—Length 7.8 mm. (male paratypes 7.5-8.0 mm.), 3.1 times as long as wide; color black.

Frons moderately concave from eye to eye from epistoma to vertex; surface minutely rugose- reticulate and deeply, rather coarsely, closely punctured; vestiture inconspicuous.

Promontum 1.1 times as long as wide; constriction moderately deep, short; surface dull, minutely, rather sparsely punctured, the punctures slightly larger at base and near anterior margin.

Elytra 2.1 times as long as wide; striae weakly impressed, the punctures small, regular, impressed; interspaces 1, 3, and 5 much wider, 2, 4, and 6 much narrower than normal, all with sparse, minute, irregularly placed punctures, 2-5 with a few pointed granules at base. Declivity gradual, its surface rugose-reticulate, dull; interspace 1 with four widely spaced, moderately large, pointed tubercles, 3 with two or three, 5 with one or two and 7, 8, and 9 with one or more similar tubercles, those near top of declivity tending to be larger; posterolateral angles only slightly produced beyond sutural apex, bearing on the outer apical angle two pair of spines arranged as in *lafertei* but much larger, two minute teeth between
median spine and suture; posterior margin adjacent to suture almost straight, not angled as in *lafertel*.

**Female.**—Length 8.0 mm., 3.5 times as long as wide; similar to male except lateral area of frons between antennal bases and middle level of eye rather strongly impressed, the impression on each side subcircular, abruptly margined laterally and above; pronotum surface satin smooth, with longitudinally etched, minute points, the median line indicated on basal third and with a patch of glandular pores on each side of its anterior end, each patch consisting of 8 or 9 rather small pores; striae impressed, the punctures small, obscure; elytral interspaces not noticeably unequal in width; declivity simple.

**Type Locality.**—Near Cerro Punta, Chiriqui Prov., Panama. (Labeled Volcan Chiriquí.)

**Hosts.**—*Ochroma* sp. (type), and *Inga* sp. (allotype).

**Type Material.**—The male holotype and three paratypes were taken from a balsa log (*Ochroma* sp.); the female allotype and three paratypes, from the base of a small *Inga* tree; and seven other paratypes, from unidentified logs and stumps. All were collected at the type locality on January 11, 1964, at an elevation of about 5,500 feet, by S. L. Wood.

The type series is in my collection.
Platypus brevicornis. n. sp.

Fig. 15

Although the relationship is remote, this species is more closely allied to flavicornis (Fabricius) than to other known species. The male resembles the female of flavicornis much more closely than it does the male. It differs from all others in this species group by the very short, abrupt declivity on which the elevated interspace 3 (as seen from above) extends to the posterior margin.

**Male.**—Length 5.1 mm., 3.9 times as long as wide; color moderately dark brown.

Frons flattened, with feeble impressions near center and on lower half; surface closely granulate, more nearly punctured toward epistoma; vestiture sparse, inconspicuous.

Pronotum 1.1 mm.; lateral constriction deep, abrupt; surface very finely, closely punctured, the numerous punctures irregular in size and shape; glandular pores absent.

Elytra 2.3 times as long as wide; striae weakly impressed at base, stronger toward declivity, the punctures moderately large, deep; interstriae about one and one-half times as wide as striae, surface very minutely, densely punctate and with a few widely spaced, fine punctures. Declivity short, subvertical, the general contour about as in female flavicornis; interspace 1 not elevated, bearing about four small, pointed tubercles at upper margin, 2 similar to 1 but with only one or two fine granules, 3 rather broadly, strongly elevated, apex of elevation projecting slightly and interrupting posterior profile of elytra (as seen from above), 4-9 convex, ending at declivital base but 4 and 6 shorter than others. 4-9 each with a fine granule just behind its apex, 9 elevated to apical process, its summit armed by about seven moderately coarse teeth; lateral apical process short, more slender but similar in length and perhaps sculpture to female flavicornis.

Abdominal segment 3 armed by a pair of widely spaced, large, conical spines; segment 4 bearing a pair of very small, similar spines.

**Female.**—Length 5.3 mm.; similar to male except frons somewhat more coarsely sculptured; declivity unarmed, interspace 3 wider and more strongly convex above; lower face of declivity vertical, bearing more than a dozen very small, rounded granules; costal margins of elytra near declivity finely serrate; abdominal segments unarmed.

**Type Locality.**—Villa Mills near Cerro de la Muerte, Costa Rica.

**Host.**—Brunellia costaricensis.

**Type Material.**—The male holotype, female allotype, and 21 paratypes were collected at the type locality on August 1, 1966, at an elevation of 10,000 feet, by S. L. Wood, from a log presumed to be the above host. One male paratype was taken at elevation 7,800 feet on the Pan-American Highway about 15 miles northwest
of Cerro de la Muerte, San José Prov., Costa Rica, on August 6, 1963, from a 24 inch log of the above host.

The holotype, allotype, and paratypes are in my collection.

**Platypus annexus**, n. sp.

Fig. 20

This species belongs to Schedl's Platypi complanati. It is not similar to any described species, but it is allied to the manuscript species *adnexus* in the Schedl collection. The male of this species differs from Schedl's, however, by the more sharply, deeply punctured frons, by the shorter declivital elevation on interspace 1, the elevation on interspace 3 longer, higher, and descending gradually behind, and by the shorter lateral apical angles of the elytra (not curved ventrad as much as in *adnexus*).

**Male.**—Length 3.0 mm. (male paratypes 2.8-3.1 mm.), 4.3 times as long as wide; color light brown.

Frons flattened from epistoma to vertex; surface smooth below level of antennal bases and somewhat coarsely, closely, deeply punctured, strongly reticulate and finely, regularly, but sparsely punctured above; vestiture sparse, inconspicuous.

Pronotum 1.3 times as long as wide; lateral, constriction deep, abrupt; surface strigose- reticulate in anterior and posterior areas, shining in middle; median line indicated on basal third, with a pair of very large glandular pores near its anterinal end. Each pore one-fourth as wide as antennal club.

Elytra 2.6 times as long as wide; striae 1 weakly, others not at all impressed, the punctures small; interstriae smooth with numerous minute points, no regular punctures. Declivity broad, rather short, moderately steep; striae impressed near declivity above, not indicated below; interstriae 1-6 carinate at declivital base, 1, 3, and 5 elevated, 5 weakly elevated, 1 more strongly raised than 5, 3 more strongly, broadly elevated than 1, all descend gradually behind, 2 and 4 end before 1 and 5, 3 longer than others and extending almost to middle of declivity; truncate posteriorly (as seen from above), the lateral terminal processes extending scarcely beyond suture; interspace 8 elevated to lateral apical process, its summit armed by about four pointed tubercles; declivital face granulose-reticulate, with obscure, scattered punctures.

**Female.**—Similar to male except upper area of frons more coarsely punctured; pronotal glandular pores slightly larger; elytral declivity without elevations or impressed striae. The face abruptly declivous, subvertical; subtruncate behind, the lateral angles less prominent.

**Type Locality.**—Tapanti, Cartago Prov., Costa Rica.

**Host.**—*Quercus* sp.

**Type Material.**—The male holotype, female allotype and one male paratype were collected at the type locality from the above host on July 2, 1963, at an elevation of 4,000 feet, by S. L. Wood.
Two additional paratypes bear similar data except they were taken on October 24, 1963, from an unidentifiable log.

The type series is in my collection.

Platypus vegestus, n. sp.

Fig. 16

This species belongs to Schedl's Platypi complanati, but it is not closely related to any known species except eugestus Wood described below. From eugestus it is readily distinguished by the smaller size and by the narrow V-shaped notch at sutural apex of the elytra.

Male. — Length 3.3 mm. (male paratypes 3.0-3.4 mm.), 4.6 times as long as wide; color brown.

Frons flattened from epistoma to vertex, slightly impressed just above epistoma; surface dull, rugose-reticulate, rather coarsely, deeply punctured below, punctures smaller and shallow above; vestiture sparse, inconspicuous.

Pronotum 1.3 times as long as wide; lateral constriction very deep, abrupt; surface reticulate except in limited lateral areas, the punctures varying from fine to rather coarse, rather deeply impressed median line indicated on basal two-thirds, with a pair of large glandular pores near its middle, each pore about one-fifth as great as width of antennal club.

Elytra 2.8 times as long as wide; striae feebly impressed, the punctures moderately large, moderately impressed, elongate, on striae 1 partly confluent; interstriae about one and one-half times as wide as striae, with rather numerous minute points and no punctures. Declivity almost nonexistent, descending only slightly before apex; striae slightly impressed in declivital area. all striae and interstriae end before apex, declivital area rugose-reticulate, with a few minute, scattered tubercles in declivital area as remnants of interstriae, interspace 2 narrow, 3 rather wide, 8 raised and continued to lateral apical angle, summit of this crest bearing about five rather coarse serrations; sutural apex with a rather deep V-shaped notch, the notch slightly wider than deep and occupying about 30 percent of elytral width at apex, margin of notch marked by a small tubercle; lateral apical angle curved ventrad, extending only slightly beyond the truncated elytral apex.

Type Locality. — Elevation 7.800 feet on the Pan-American Highway about 15 miles northwest of Cerro de la Muerte, San José Prov., Costa Rica.

Host. — Brunellia costaricensis.

Type Material. — The male holotype and one male paratype were taken at the type locality from the above host on August 6, 1963, by S. L. Wood. Four additional male paratypes were taken 10 miles southeast of Cartago on the Pan-American Highway, Cartago Prov., Costa Rica, on October 24, 1963, at an elevation of 5,600 feet, from an unidentified log, by S. L. Wood.

The type series is in my collection.
Playtpus eugestus, n. sp.

Fig. 17

This species is allied to veigestus Wood, described above, but it is readily distinguished by its larger size, and by the broad U-shaped notch at the sutural apex of the elytra.

**Male.**—Length 4.2 mm. (male paratypes 4.2-4.4 mm.), 4.2 times as long as wide; color dark brown.

Frons flattened from eye to eye from epistoma to vertex, feebly, transversely concave below; surface reticulate below, rugose-reticulate above level of antennal bases, the punctures rather coarse and deep below, rather fine and shallow above; vestiture sparse, inconspicuous.

Pronotum 1.2 times as long as wide; lateral constriction deep, abrupt; surface very finely strigose-reticulate, with minute points and moderately abundant, small punctures; median line indicated on basal half, with a pair of moderately large glandular pores in usual position about one-third length of pronotum from base, each pore about one-sixth as great as width of antennal club.

Elytra 2.6 times as long as wide; striae weakly impressed on disc, more strongly near declivity, the punctures rather small, mostly impressed on basal half, obliterated toward declivity; interstriae about one and one-half times as wide as striae, with numerous minute points, regular punctures absent, basal parts of interspaces 1 and 2 reticulate. Declivity as described above for veigestus except the tubercles at ends of interspaces, at apical margin of sutural notch, and laterally on interspace 8 from declivital base to lateral apical angle distinctly larger, and apical sutural notch broadly U-shaped.

**Female.**—Length 4.4 mm.; similar to male except frons a little more deeply, uniformly punctured; elytral disc more nearly reticulate; strial punctures less distinctly impressed; and declivity short, steep, subvertical, simple, the face bearing scattered tubercles.

**Type Locality.**—Volcan Irazú, Cartago Prov., Costa Rica.

**Hosts.**—Quercus sp. (type), and Brunellia costaricensis (paratype).

**Type Material.**—The male holotype, female allotype, and three paratypes were taken at the type locality on July 13, 1963, at an elevation of 7,000 feet, from the bole of a large cut oak, by S. L. Wood. One paratype was taken near Cerro de la Muerte, San José Prov., Costa Rica, on August 6, 1963, at 7,800 feet, from Brunellia costaricensis. One other paratype was taken at Volcan Poás, Heredia Prov., Costa Rica, on July 14, 1963, from an unidentified, large log.

The type series is in my collection.

Platypus prenexus, n. sp.

Fig. 21

This species belongs to Schedl’s Platypi complanati. It superficially resembles annexus Wood, described above, but probably represents a distinct subgroup. From annexus it differs by the absence of
glandular pores on the pronotum and, in the male, by the abruptly angled, vertical lower half of the elytral declivity, and by the lateral terminal processes of the elytra extending well beyond the apex of the elytral suture. The armature on abdominal sternum 3 suggests a relationship with *biporus* Blandford.

**Male.**— Length 3.4 mm. (male paratypes 3.4-3.7 mm.), 4.3 times as long as wide; color very dark brown.

Frons feebly convex above antennal bases, rather strongly, transversely impressed above epistoma; entire surface including punctures rugose-reticulate, with rather large, close, shallow punctures; vestiture sparse, inconspicuous.

Pronotum 1.2 times as long as wide; lateral constriction deep, abrupt; surface subshining, punctures small and minute intermixed, very abundant, close; glandular pores absent.

Elytra 2.3 times as long as wide; striae 1 moderately, others weakly impressed, the punctures, except near declivity, rather small, impressed; interstriae about one and one-half times as wide as striae, smooth, except for rather abundant very minute points; a moderately large, deep cavity at base of interspace 4 and median half of 5. Declivity rather gradually descending to middle then vertical on lower half; interspace 1 with a narrowly convex, elongate elevation on upper fourth, 2 reduced to a fine line, 3 broadly, strongly elevated to middle, projecting slightly so as to interrupt posterior profile, 4-7 moderately convex, ending before 3, 9 raised to lateral apical process and armed by a few very fine serrations; lateral processes as seen from above rather stout, extending slightly beyond suture; subvertical area of declivity rugose-reticulate, unadorned.

Abdominal sternum 2 armed by a pair of large, widely spaced, elongate, blunt spines; more closely spaced and more slender than in *biporus*.

**Female.**— Length 3.7 mm.; similar to male except epistomal impression not as strong; elytral disc more nearly reticulate; elytral declivity simple, unarmured; abdominal sternum 3 unarmed.

**Type Locality.**— Ten miles southeast of Cartago on the Pan-American Highway, Cartago Prov., Costa Rica.

**Type Material.**— The male holotype and 12 paratypes were collected at the type locality on October 24, 1963, at an elevation of 5,600 feet, from an unknown log, by S. L. Wood. The female allo-type and nine paratypes were taken from the same log on July 29, 1963. One female paratype was taken at Volcan Poas, Heredia Prov., Costa Rica, on July 14, 1963, at 7,700 feet, from an unknown log, by S. L. Wood.

The type series is in my collection.

**Platypus connexus,** n. sp.

*Fig. 18*

This species is allied to *prenexus* Wood, described above, but is readily distinguished in the male by the much more strongly developed processes on the elytral declivity.
Male.—Length 4.0 mm., 4.3 times as long as wide; color dark brown.

Frons weakly convex, with a weak, transverse impression between level of antennal bases and epistomal margin; surface rugose-reticulate, with rather sparse, small, shallow punctures; vestiture sparse, inconspicuous.

Pronotum 1.4 times as long as wide; lateral constriction moderately deep, abrupt; surface subshining, minutely, closely punctured; glandular pores absent.

Elytra 2.6 times as long as wide; striae 1 moderately, others feebly impressed, the punctures small, impressed, not close; inter-striae wider than striae; the surface with numerous, minute, scratched points, almost reticulate; interspace 4 with impressed cavity at base as in *prenexus*. Declivity abrupt, very steep; interspace 1 attaining margin, moderately, narrowly elevated then obliquely reduced behind, not projecting, 2, 4, 5, and 6 end short of margin, weakly if at all elevated, 3 projecting as a broad, blunt spine beyond sutural apex, almost equalling level of lateral terminal processes; interspaces 7 and 8 apically join one another and continue with 9 onto lateral process; outer margin of 9 with a few very fine serrations; lateral terminal process appearing subretangular from above, slightly longer than wide; the broad apical margin between bases of lateral processes almost straight, very slightly rounded behind as seen from above.

Third abdominal sternum armed by a pair of large, blunt spines as in *prenexus*.

Type Locality.—Elevation 7,000 feet, Volcan Irazu, Cartago Prov., Costa Rica.

Host.—*Quercus* sp.

Type Material.—The male holotype and one male paratype were collected at the type locality from the bole of a large cut oak tree on July 13, 1963, by S. L. Wood.

Both specimens are in my collection.

*Platypus senexus*, n. sp.

Fig. 19

This species is closely related to *connexus* but is readily distinguished by the larger size, by the presence of a small spine at the apex of interspace 5, and by the slightly larger, projecting spines on interspace 1.

Male.—Length 4.7 mm., 4.0 times as long as wide; color very dark brown.

Frons weakly convex, with a weak, transverse impression between level of antennal bases and epistomal margin; surface rugose-reticulate, with rather sparse, small, shallow punctures; vestiture sparse, inconspicuous.

Pronotum 1.4 times as long as wide; lateral constriction moderately deep, abrupt; surface subshining, minutely, closely punctured; glandular pores absent.
Elytra 2.2 times as long as wide; striae 1 slightly, others feebly if at all impressed, the punctures small, impressed, not close; interstriae much wider than striae, the surface with interstrial points regular, obscurely impressed; interspace 4 with impressed cavity at base as in *prenexus*. Declivity abrupt, very steep; interspace 1 moderately, narrowly elevated, forming a projecting spine having its apex directed slightly mesad, 2 ends before declivity, 3 forming a large broad, projecting spine almost attaining length of lateral processes, its lateral margin tapered mesad, 4 ending in spine of 3, 5 with a moderately small, projecting spine about equal in size and length to that of 1, 6-9 ending in lateral process, 9 with a few fine serrations; lateral process as long as wide, appearing square from above, its inner apical angle (as seen from above) formed by the inwardly curved costal margin of process.

Third abdominal sternum armed by a pair of large spines, their spacing as wide as in *biporus*.

**Type Locality.**— Ten miles southeast of Cartago on the Pan-American Highway, Cartago Prov., Costa Rica.

**Type Material.**— The unique male holotype was collected at the type locality on July 29, 1963, at an elevation of 5,600 feet, by S. L. Wood, from the same unidentified log that contained *prenexus*. The holotype is in my collection.

*Platypus clunalis*, n. sp.

Fig. 22

The group to which this and the following two species belong evidently was not represented in either the British Museum or in

the Schedl collection. As a group these three species are unique in
the relative simplicity of the dorsal structure and the remarkable
development of the last abdominal sternum. The large process on
this sternum at first appears to be the drooping apex of the ab-
domen, with its posterior face the last visible tergum.

**Male.**— Length 2.6 mm. (paratypes 2.6-2.8 mm.), 3.2 times as
long as wide; color brown.

Frons shallowly, broadly concave from epistoma to vertex; sur-
face reticulate, with moderately sparse, fine, shallow punctures;
vestiture sparse, inconspicuous.

Pronotum 1.1 times as long as wide; lateral constriction neither
deep nor abrupt; surface finely, uniformly reticulate, with fine,
shallow, moderately abundant, obscure punctures.

Elytra twice as long as wide; basal margins acutely elevated
from suture to interspace 6; entire surface reticulate; striae not at all
impressed at base, their impression beginning just behind base and
gradually increasing until strongly impressed at base of declivity,
the punctures obsolete; interstriae narrower than striae, narrowly
carinate at declivital margin, the carinae decreasing in height and
acuteness anteriorly, extending on 1 and 2 to basal fourth, and on
lateral interspaces to near middle of disc. Declivity short, abruptly
rounded, the carinae decreasing the height and acuteness until lost
near middle of declivity; lower declivital area subrugulose-reticu-
late, with a few fine, obscure granules and punctures indicated;
interspace 9 near declivital base beaded by about five rounded
granules; lateral angles rounded, not at all produced.

Last visible sternum with a very strong protrusion extending
ventrad, its median sagittal measurement from junction with elytra
to its apex a distance equal to 80 percent of the greatest width of
the segment; its profile as seen from behind with sides convex and
a pair of large, rounded tubercles at its peak; the process superficial-
ly resembling apex of abdomen.

**Type Locality.**— Near Moravia, Cartago Prov., Costa Rica.

**Type Material.**— The male holotype and six male paratypes
were collected at the type locality on March 11, 1964, at an eleva-
tion of about 1,500 feet, from an unidentified log, by S. L. Wood.
The type series is in my collection.

*Platypus clunis*, n. sp

Fig. 23

This species is allied to *clunalis*, but is readily distinguished by
its smaller size, by the acute posterolateral angles of the elytra, and
by the basal constriction of the process of the last visible abdominal
sternum.

**Male.**— Length 1.1 mm. (paratypes 1.1-1.2 mm.), about 3.5
times as long as wide; color brown.

Frons shallowly, broadly concave from epistoma to vertex; sur-
face reticulate, with sparse, moderately large, shallow punctures;
vestiture sparse, inconspicuous.
Pronotum 1.1 times as long as wide; lateral constriction neither deep nor abrupt; surface finely, uniformly reticulate, with fine, shallow, moderately abundant, obscure punctures.

Elytra almost twice as long as wide; basal margins acutely elevated from suture to interspace 6; entire surface reticulate; striae not at all impressed at base, their impression beginning just behind base and gradually increasing until strongly impressed at base of declivity. the punctures obsolete; interstriae narrower than striae, narrowly carinate at declival margin, the carinæ decreasing in height and acuteness anteriorly, extending on 1 and 2 to basal fourth, and on lateral interspaces to near middle of disc. Declivity short, abrupt, rounded, the interstrial carinæ ending equally, somewhat abruptly, at upper margin; declival face granulose; interspace 9 sub serrate, ending in a short, acutely produced lateral process, an acutely elevated ridge continuing from its summit dor-somesad to a point in line with striae 5; lateral processes extend to a plane about midway between declival base and apex of suture.

Last visible abdominal sternum basally constricted, proportionately as high but much narrower than clunalis; process armed at its summit by a pair of widely placed tubercles.

**Female.**— Similar to male except elytral striae not impressed, but with very minute punctures indicated, interspaces not carinate; declivity simple, pubescent, the setae short, abundant; last visible abdominal sternum neither protuberant nor armed.

**Type Locality.**— Playon, Puntarenas Prov., Costa Rica.

**Host.**— Cedrela mexicana.

**Type Material.**— The male holotype and one male paratype were collected at the type locality from the above host on August 9, 1963, at an elevation of about 150 feet, by S. L. Wood. The female allotype and one male paratype were taken at Rio Damitas, San José Prov., on August 22, 1963, at an elevation of 700 feet, from a limb of an unknown tree, by S. L. Wood.

The type series is in my collection.

*Platypus cluniculus*, n. sp.

**Fig. 24**

This species is rather closely related to *cluni*is Wood, described above, but is distinguished by its smaller size, by the abrupt, vertical declivity, by the acute lateral apical angles not being visible from above, and by the more strongly constricted base of the process on the last visible abdominal sternum.

**Male.**— Length 1.9 mm. (male paratypes 1.8-1.9 mm.), 3.5 times as long as wide; color brown.

Frons very shallowly, broadly concave from epistoma to vertex; surface reticulate, with moderately sparse, fine, shallow punctures; vestiture sparse, inconspicuous.

Pronotum 1.1 times as long as wide; lateral constriction not deep, moderately abrupt; surface finely, uniformly reticulate, with fine, shallow, moderately abundant, obscure punctures.
Elytra twice as long as wide; basal margins acutely elevated from suture to interspace 6; entire surface reticulate; striae not at all impressed at base, their impression beginning just behind base and gradually increasing until rather strongly impressed at base of declivity, the punctures obsolete; interstriae narrower than striae, narrowly carinate at declivital margin, the carinae decreasing in height and acuteness anteriorly, extending on 1 and 2 to basal fourth, and on lateral interspaces to near middle of disc. Declivity abrupt, almost vertical, the interstrial carinae ending gradually just before the abrupt descent; declivital face granulose; interspace 9 sub serrate, extending to the acutely pointed, posterovertrally directed, lateral apical angle, this angle not visible from above.

Armature of last visible abdominal sternum similar to that of *clunis* but more strongly constricted at its base on all sides, the process appearing more slender, the apical tubercles more closely placed.

**Female.**— Similar to male except elytral striae not impressed, but with very minute punctures indicated, interspaces not carinate; declivity simple, pubescent, the setae short, abundant; last visible abdominal sternum neither protuberant nor armed.

**Type Locality.**— Ikuribisi, British Guiana.

**Host.**— *Pouteria guianensis*.

**Type Material.**— The male holotype, female allotype and 26 paratypes were collected at the type locality from the above host between October, 1948, and March, 1949, collection No. 53, by D. J. Atkinson. Ten additional paratypes were taken at mile 10 on the Bartica-Potaro road, during the same period of time, by the same collector, from collection No. 70.

The holotype, allotype and most of the paratypes are in the British Museum (Natural History); other paratypes are in my collection.
NEW AND ADDITIONAL HOST-FLEA ASSOCIATIONS AND DISTRIBUTIONAL RECORDS OF FLEAS FROM UTAH

Harold J. Egoscue

Flea collections made subsequent to publications by Stark (1958) and Parker and Howell (1959) include several noteworthy new host records and extensions of known ranges of fleas, mostly from western Utah. *Amphipsylla sibirica* ssp. and *Corrodopsylla curvata obtusata* (Wagner) are reported from the state for the first time.

Assistance of J. G. Bittmenn and J. A. Petrovich is gratefully acknowledged. H. E. Stark identified several specimens and confirmed some of my determinations. Flea nomenclature follows that of Stark (*op. cit.*) except in the genus *Monopsyllus* as revised by Johnson (1961). Mammal names, with one or two exceptions, follow Hall and Kelson (1959). Fleas are listed alphabetically. Specimens referred to are in the Ecology and Epizoology Reference Collections. The work was accomplished, in part, through a U. S. Army Research and Development contract with the University of Utah, and reported as Ecology and Epizoology Contribution No. 130.

*Sorex vagrans obscurus* Merriam


Normally shrews are infested with fleas that are fairly host-specific, such as *Corrodopsylla curvata*. This is the only flea I have found on approximately 50 vagrant shrews collected in Utah.

*Sorex palustris navigator* (Baird)


Stark (1958) listed *C. c. curvata* from *Sorex* sp.; Bear Lake, Rich Co. All fleas recovered from water shrews, except *C. c. obtusata*, represent strays from *Peromyscus maniculatus* and *Microtus longicaudus*, both of which are commonly associated with water shrews.

1. Ecology and Epizoology Research, University of Utah, Dugway, Utah. 84022.

71
Perognathus longimembris gulosus Hall


Stark (*op. cit.*) and Parker and Howell (*op. cit.*) listed no records from little pocket mice. *Dipodomys ordii* and *D. microps* are the normal hosts of *M. parkeri* in western Utah.

Perognathus parvus olivaceus Merriam


In western Utah, the range of *M. hubbardi* appears to coincide very closely with the distribution of its principal host, the Great Basin pocket mouse. In my experience, it is found only as a stray on other small mammals associated with this pocket mouse.

Perognathus formosus incolatus Hall

*Meringis dipodomys* Kohls. TOOELE Co.: Little Granite Mt., 4,800 ft.; 6 Nov. 1963, 1♂.

This species of flea is normally found on kangaroo rats. Fleas are not common on long-tailed pocket mice in western Utah.

Microdipodops megacephalus leucotis Hall and Durrant


These were the only fleas recorded from more than 200 dark kangaroo mice collected over a period of several years in western Utah.

Reithrodontomys megalotis megalotis (Baird)


The western harvest mouse may not be one of the normal hosts of this flea. It was collected more frequently from deer mice than from other small mammals in Tooele County.

Peromyscus maniculatus sonoriensis (Le Conte)


So many different species of fleas are found commonly on deer mice, it sometimes becomes difficult to decide which are strays. With the exception of *R. sectilis*, none of the above species have been found on deer mice collected in desert situations. I have collected as many as 7 species of fleas from a single deer mouse.

*Clethrionomyys gapperi uintaensis* Doutt


*Microtus longicaudus latus* Hall


*P. selenis* in combination with *H. d. truncata* and *C. decipiens* were the principal fleas infesting long-tailed voles in the higher mountains of the Bonneville Basin. These were replaced on long-tailed voles in the drier areas by *M. telchinum* and *H. linsdalei*. To date.
these two species of *Hystrichopsylla* have not been found together at any western Utah locality.

**Microtus pennsylvanicus pullatus** Anderson


**Microtus richarsoni myllodontus** Rasmussen & Chamberlain.


**Lagurus curtatus intermedius** (Taylor)


These are the first published records of fleas from sagebrush voles from Utah, and the first time the genus *Amphipsylla* has been recorded in the state. The specimens very closely resemble the published description of *A. s. washingtona* Hubbard (1954) described from material collected on sagebrush voles in eastern Washington. At Indian Springs, *Lagurus* were collected in a canyon bottom along a small permanent stream where the principal plants were big sagebrush, *Artemesia tridentata*, and big rabbitbrush. *Chrysothomnus nauseosus*. Localities on Lookout Pass were more xeric in aspect, and the soil was shallower and boulder-strewn.

**Zapus princeps utahensis** Hall


These are the first fleas recorded from the western jumping mouse from western Utah. The occurrence of *M. c. kincaidi* in the Oquirrh Mountains is interesting in that it places this flea in a locality outside the range of one of its normal hosts, *Tamiasciurus* (Stark, 1958; Hubbard, 1947). However, at least 2 species of chipmunks occur in the Oquirrh Mountains, both of which are recorded as frequent hosts of *M. c. kincaidi* from places where chickarees and chipmunks occur together (Stark, op. cit.).

**Mustela erminea nuricas** (Bangs)

Ermines and other weasels are regularly infested with fleas from their prey, a large percentage of which consists of rodents.

**Literature Cited**


SIPHONAPTERA (FLEAS) OF MESA VERDE NATIONAL PARK, MONTEZUMA, COLORADO

D Elden Beck

Mr. Charles L. Douglas submitted a collection of parasitic arthropods to me for determination in 1963, when he held the position of biologist for the Wetherill Mesa Archeological Project. This report refers to the Siphonaptera collected from smaller mammals he trapped as part of a larger study he was conducting in cooperation with the National Park Service at Mesa Verde National Park. An examination of the flea fauna proved to be very interesting, and Mr. Douglas has granted me the privilege of publishing the list of fleas, including comments on occurrence and distribution.

Collections were made between elevations of approximately 6,800 and 8,000 feet above sea level at several geographic locations. The predominant plant cover at Mesa Verde National Park is pinyon-juniper woodland.

Fourteen species of fleas were collected. The host animals were the deer mouse, Peromyscus maniculatus, the pinyon mouse, Peromyscus truei, and the Colorado chipmunk, Eutamias quadrivittatus. Most of the fleas were from the mice with but a minor series from the chipmunk. One is impressed by the number of species of fleas taken from the three host species in the somewhat restricted geographical area.

A list of species of fleas identified are tabulated below. Beneath each host the species of flea parasites are listed.

<table>
<thead>
<tr>
<th>Peromyscus maniculatus</th>
<th>Peromyscus truei</th>
<th>Eutamias quadrivittatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Callistopsyllus deuterus</td>
<td></td>
<td>Epitedia stanfordi</td>
</tr>
<tr>
<td>Catallagia decipiens</td>
<td></td>
<td>Malaraeus sinomus</td>
</tr>
<tr>
<td>Epitedia stanfordi</td>
<td>Malaraeus sinomus</td>
<td>Malaraeus telchinum</td>
</tr>
<tr>
<td>Malaraeus telchinum</td>
<td>Malaraeus telchinum</td>
<td>Megarthroglossus procut</td>
</tr>
<tr>
<td>Megarthroglossus procut</td>
<td></td>
<td>Monopsyllus eumolpi</td>
</tr>
<tr>
<td>Monopsyllus wagneri</td>
<td>Monopsyllus wagneri</td>
<td>Monopsyllus wagneri</td>
</tr>
<tr>
<td>eumolpi</td>
<td></td>
<td>wagneri</td>
</tr>
<tr>
<td>Orchopeas leucopus</td>
<td>Orchopeas leucopus</td>
<td></td>
</tr>
</tbody>
</table>

1. Brigham Young University, Department of Zoology and Entomology, Provo, Utah.
2. Curator of Natural History, Texas Memorial Museum, Austin, Texas.
3. Project support from the Wetherill Mesa Project, National Park Service, Department of the Interior.
Of the fourteen species listed, six are found on the three hosts. Two species have been taken from both species of Peromyscus, with three only collected from P. maniculatus. Monopsyllus eumolpi eumolpi was the only species apparently restricted to the chipmunk, with Phalacropsylla allos and Rhadinopsylla sectilis goodi confined to the pinyon mouse.

Of total numbers of fleas collected there were 81 Monopsyllus wagneri wagneri and 75 Peromyscopsylla hesperomys adelpha. Next in abundance was Epitedia stanfordi with 53 specimens. These were followed by 15 Malaraeus sinomus, 14 Megarthroglossus procos, 10 Phalacropsylla allos, and 6 Orchopeas leucopus. Other species collected were either as single specimens or from two to five specimens of each species.

In a recent study of fleas of the Nevada Test Site (Beck & Allred, 1966), a number of species listed for that area have been found in this study. Although the Nevada study was mainly in desert lowland, the species listed from there and those also found at the Mesa Verde location are generally similar in geographical distribution. The Nevada specimens were collected either in foothills or at higher elevations on mesas and low desert mountains. A brief review of Hubbard’s study (1947) and that by Beck (1955), and more recently by Stark (1958), reveals for the most part, that the fleas taken at Mesa Verde National Park by Douglas are those characteristic of elevations of about 5,000 feet above sea level or higher. This would have special reference, of course, to such states as Arizona, New Mexico, Colorado, Utah, Nevada, Idaho, and perhaps parts of Wyoming.

Of significant interest to the writer was the encounter with specimens of the genus Stenoponia. At this writing it is difficult to make a firm, specific identification. The specimens show characteristics of both species as described in the literature; namely, S. ponera and S. americana.

In more than fifteen years of concentrated collecting by survey parties sent out from the Zoology and Entomology Department, Brigham Young University, Provo, Utah, no specimens of the interesting genus Stenoponia have been encountered in either Utah or Nevada. In Utah especially, collecting has been done at all elevations in varying ecological environments. It is strange that Stenoponia has not broken the desert plateau barrier to the west. It would
be interesting to find out if careful collecting toward the north of Mesa Verde National Park would provide duplicate collections in kind of species. The southwest corner of Colorado has vast pinyon-juniper woodlands extending along the border of Utah, and there is a continuous belt of growth out of Colorado to the foothills of the La Sal Mountains near Utah.

REFERENCES USED


REFERENCES ON NEVADA TEST SITE
ECOLOGICAL RESEARCH

Vincent Schultz

The following references came to my attention while I was associated with the U. S. Atomic Energy Commission. The list has been restricted to research conducted on the area since the establishment of the Nevada Test Site. It includes papers resulting in their entirety from such efforts as well as papers covering a much broader geographical area but including data from the site.

Many current reports of the U. S. Atomic Energy Commission and its associates will probably appear in the open literature at some future date.

The assistance of D. M. Allred, W. E. Martin, W. A. Rhoads, W. H. Rickard, L. M. Shields and their associates in checking an earlier version of the list is gratefully acknowledged.

References


VINCENT SCHULTZ


REFERENCES ON NEVADA TEST SITE


——. 1964. Description of a study of ecological effects on a desert area from chronic exposure to low level ionizing radiation. Univ. of Calif. at Los Angeles, U. S. AEC Report UCLA 12-532. 27 pp., 15 figures.


A SYSTEMATIC REVIEW OF THE
GREAT BASIN REPTILES IN THE COLLECTIONS OF
BRIGHAM YOUNG UNIVERSITY AND THE
UNIVERSITY OF UTAH

Wilmer W. Tanner and Benjamin H. Banta

INTRODUCTION

This report is one of a planned series of analyses of reptile specimens taken from the Great Basin and now deposited in the major institutional repositories of the western United States. We hope and anticipate that such reports will provide a more adequate systematic and distributional picture of the Great Basin reptile fauna.

At present we are concerned mainly with the species occurring in this region and specimen locality data. If such can be completed we would then perhaps have a nearly complete list of species and subspecies occurring in the basin as well as the distribution limits of each.

The general physical environment and historical aspects of the Great Basin have been treated in recent works by Banta (1963a) and Banta and Tanner (1964). The general physical delimitation of the Great Basin in this account is based largely upon the 1953 edition of the map "Water Resources Development of the United States," by the United States Geological Survey. We have made one correction in southern Nevada and perhaps other minor details should be adjusted. However, we find the map to be useful and generally accurate even in most details. Figure 1 illustrates the physical definition of the Great Basin in addition to the political subdivisions of and within the area as used herein.

The following is a check list of the counties of the states making up the Great Basin. An asterisk (*) preceding a county name indicates that this particular county is located on the border and is thus not located in its entirety within the Great Basin.

<table>
<thead>
<tr>
<th>California</th>
<th>*Harney</th>
<th>*Washington</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Modoc</td>
<td>*Malheur</td>
<td>*Kane</td>
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<tr>
<td>*Lassen</td>
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<tr>
<td>*Sierra</td>
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<tr>
<td>*Sierra Nevada</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Placer</td>
<td>*Box Elder</td>
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</tr>
<tr>
<td>*Eldorado</td>
<td>*Cache</td>
<td></td>
</tr>
<tr>
<td>*Alpine Mono</td>
<td>*Rich</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Morgan</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>*Douglass</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*Lyon</td>
</tr>
</tbody>
</table>

1. Portions of this study were supported by a grant-in-aid from the Society of the Sigma Xi and the Research Society of America (1962) and a faculty travel grant from Colorado College, Colorado Springs. Publication was made possible by a grant-in-aid from the Society of the Sigma Xi and the Research Society of America (1963).

Brigham Young University, Provo, Utah and Michigan State University, East Lansing, Michigan.
<table>
<thead>
<tr>
<th>Inyo</th>
<th>Davis</th>
<th>*Humboldt</th>
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<td>Tooele</td>
<td>Pershing</td>
</tr>
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<td>*Los Angeles</td>
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<td>*Lake</td>
<td>*Garfield</td>
<td>*Lincoln</td>
</tr>
<tr>
<td></td>
<td>*Iron</td>
<td>*Uinta</td>
</tr>
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**Material and Methods**

The Department of Zoology and Entomology collections at Brigham Young University, Provo, Utah, and the University of Utah, Salt Lake City, contain a large number of representative specimens of reptile species inhabiting the Great Basin, especially the eastern Bonneville portion. Recent collections have added measurably to the southern Nevada collections, primarily from the Nevada Atomic Test Site. These collections are at Brigham Young University. It is the purpose of this paper to present analyses of these collections with emphasis on the external morphological variation and geographical distribution of each reptile species.

Basic nomenclature of genera and species is that of Schmidt (1953) with appropriate changes which have since appeared. Species of genera represented by more than one species are organized alphabetically by species name. Distributional records, under the heading *Material Examined*, are listed by state, county, and specific locality. Following each locality, designated by parentheses, is the serial number or numbers of the specific specimen or specimens. Altitudes for some of the localities were determined and are listed in the Checklist of Localities.

Summarized data demonstrating variation of certain morphological characters of the reptiles examined are given under the heading *Variation*. An attempt is made to show the extent of variation in samples examined. All measurements are in millimeters. Discussions of nomenclatural problems are provided when they can be either modified or clarified by this study. Brief discussions of ideas concerning the historical movement of progenitors of existing populations are included under the heading *Remarks*.

We have on several occasions been faced with the perennial question: To which subspecies does this population belong? Because a complete understanding of the basic systematics of all of the species
Figure 1. Delimitation of the Great Basin (dark irregular line) showing the various political subdivisions by county. As shown here the Great Basin encompasses most of the state of Nevada, the western half of Utah, eastern California, southeastern Oregon, southeastern Idaho, and the southwestern corner of Wyoming.
of Great Basin reptile populations has not been completed, we have delayed this report several years while other studies were being completed. There is much remaining to be done on reptiles of the Great Basin; however, we believe that enough information and material is now available to justify the completion of this study. Unfortunately, the samples of many populations are limited and thus it is impossible to adequately demonstrate the range of variation. These, however, will be augmented as other studies are completed.

**ABBREVIATIONS:** The following is a list of abbreviations of words and terms standardized throughout this study:

**I. POLITICAL SUBDIVISIONS**

A. States

California - CALIF.; Oregon - ORE.; Idaho - IDA.; Utah - UTAH; Nevada - NEV.; Wyoming - WYO.

B. Counties

Bear Lake - B.L.; San Bernardino - S.B.; Los Angeles - L.A.; White Pine - W.P.; Salt Lake - S.L.

**II. DIRECTIONS**

E - east of; S - south of; ENE - east northeast of; SE - southeast of; ESE - east southeast of; SSE - south southeast of; N - north of; SW - southwest of; NE - northeast of; SSW - south southwest of; NNE - north northeast of; W - west of; NW - northwest of; WNW - west northwest of; NNW - north northwest of; WSW - west southwest of.

**III. GEOGRAPHIC AND MISCELLANEOUS TERMS**

adj. - adjacent; bdry. - boundary; cn. - canyon; co. - county; cr. - creek; des. - desert; exp. sta. - experiment station; fk. - fork; ft. - fort; gov't. - government; gr. - grove; hd. - head; hwy. - highway; L. - lake; mdw. - meadow; mn. - mine; mth. - mouth; mtn. - mountain, mountain range; N F - national forest; N M - national monument; N P - national park; NTS - Nevada Test Site; nr. near; P G - Proving Ground; pk. - peak; P O - post office; pt. - point; R. - river; rch. - ranch; rd. - road; RR - railroad; R S - ranger station (U.S. Forest Service); sta. - station; tr. - trail; V. - valley; vic. - vicinity of.

**HISTORICAL CHRONOLOGY OF COLLECTING ACTIVITY**

A preliminary account of the history of studies on Great Basin reptiles is that of Banta and Tanner (1964). No attempt will be made to repeat the comments of that work relating to herpetological activities at Brigham Young University (B.Y.U.) and the University of Utah (U. of U.). Certain individuals such as Vasco M. Tanner, D Elden Beck, and Wilmer W. Tanner (B.Y.U.) and A. M. Woodbury, John W. Twente, Jr., and John M. Legler (U. of U.) have been most helpful and have permitted us at various times to use the facilities at these institutions. For these courtesies we are most grateful.

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2Many of these abbreviations are used in the Checklist of Localities and in the Materials Examined section of each species discussion.
A listing of people active in collecting reptile specimens within the Great Basin for deposition in the collections of Brigham Young University and the University of Utah according to the year or years of their activities, including a listing of the Great Basin country or counties in which samples were made follows:

**Chronology of Collecting Activity**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PERSON</th>
<th>STATE</th>
<th>COUNTY</th>
<th>INSTITUTION</th>
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<tbody>
<tr>
<td>1884</td>
<td>O. Howard</td>
<td>Utah</td>
<td>Tooele</td>
<td>U. of U.</td>
</tr>
<tr>
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<td>D. Franklin</td>
<td>Utah</td>
<td>Sanpete</td>
<td>U. of U.</td>
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<tr>
<td>1902</td>
<td>F. Coombs &amp;</td>
<td>Nev.</td>
<td>Washoe</td>
<td>U. of U.</td>
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<tr>
<td></td>
<td>F. Maquoi</td>
<td></td>
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<tr>
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<td>Cache</td>
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<tr>
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<td>C. J. Jensen</td>
<td>Utah</td>
<td>Weber</td>
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<td>Beaver</td>
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<td>H. J. Pack</td>
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<td>Cache/Tooele</td>
<td>B.Y.U.</td>
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<tr>
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<td>Iron</td>
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3. H. J. Pack's collection was originally deposited at the Utah State Agricultural College (Utah State University), Logan, Utah. Part of the collection was destroyed or lost owing to lack of curatorial attention. Dr. G. F. Knowlton gave the remainder of the collection to B.Y.U. in 1956.
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<td>Juab</td>
<td>B.Y.U.</td>
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<td>A. H. Kopp</td>
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<td>Iron</td>
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<td>Millard</td>
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<td>Iron</td>
<td>Juab</td>
<td>B.Y.U.</td>
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1953  J. F. Howell  Utah  Utah  B.Y.U.
       M. Killpack  Utah  Rich  B.Y.U.
       G. F. Knowlton  Utah  Tooele  B.Y.U.
1954  D. Brinthurst  Utah  Utah  B.Y.U.
       G. Tregaskis  Utah  Juab  B.Y.U.
       J. F. Howell  Utah  Sevier  B.Y.U.
       R. D. Sperry  Utah  Utah  B.Y.U.
       L. A. Swanson  Utah  Sevier  B.Y.U.
       W. W. Tanner  Utah  Miller  B.Y.U.
1955  K. Bacon  Utah  Sevier  B.Y.U.
       D. C. Chester  Utah  Sevier  B.Y.U.
       D. H. Curtis  Utah  Sevier  B.Y.U.
       D. Mumford  Utah  Sevier  B.Y.U.
       R. Pursley  Utah  Sevier  B.Y.U.
       L. Stevens  Utah  Sevier  B.Y.U.
       C. Taylor  Utah  Sevier  B.Y.U.
       V. J. Cox  Utah  Sevier  B.Y.U.
       D. Hansen  Utah  Beaver  B.Y.U.
       W. W. Tanner  Utah  Beaver  B.Y.U.
       W. W. Tanner  Utah  Utah  B.Y.U.
       R. Taylor  Utah  Utah  B.Y.U.
       W. G. Robison  Utah  Utah  B.Y.U.
       D. D. Parker  Utah  Utah  B.Y.U.
1957  J. Smith  Utah  Summit  U. of U.
       W. W. Tanner  Utah  Utah  B.Y.U.
       J. W. Twente  Utah  Box Elder  U. of U.
1958  J. C. Bowman  Utah  Utah  B.Y.U.
       W. G. Robison  Utah  Utah  B.Y.U.
       W. W. Tanner  Utah  Utah  B.Y.U.
       D. D. LaMare  Utah  Utah  B.Y.U.
       D. E. Beck  Utah  Millard  B.Y.U.
       A. Hansen  Utah  Sanpete  B.Y.U.
1960  D. E. Beck  Utah  Juab  B.Y.U.
       J. Harmon  Utah  S.L.  B.Y.U.
       J. E. Kuda  Utah  Sanpete  B.Y.U.
Great Basin localities represented by reptile specimens in the collections of Brigham Young University and the University of Utah are listed below. Altitudes were determined when possible. An asterisk (*) before the elevation on the accompanying list indicates that the elevation is of the nearest town and not the exact locality represented by the specimen sample. The following were used in the determination of geographic data for this list: Davis (1939), Durrant (1952), Federal Writers Project (1950), Gannett (1900, 1906), Hubbs and Miller (1948), and Woodbury (1952).

ALPHABETICAL INDEX OF LOCALITIES REPRESENTED BY REPTILE SPECIMENS IN THE COLLECTIONS OF BRIGHAM YOUNG UNIVERSITY AND UNIVERSITY OF UTAH

<table>
<thead>
<tr>
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<td>L.A.</td>
<td>Palmdale</td>
<td>2664</td>
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<td>Swan L.</td>
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<td>B. L.</td>
<td>Deep L.</td>
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<td>B. L.</td>
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<td>Cassia</td>
<td>Birch Cr.</td>
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<td>Preston</td>
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<td>Churchill</td>
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<td>Winnemucca, 28 mi. E</td>
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<tr>
<td>Nev.</td>
<td>Lander</td>
<td>Battle Mountain</td>
<td>4507</td>
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</tbody>
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4 An asterisk (*) after the elevation indicates that the elevation is of the nearest town and not of the exact locality.
Dec. 31, 1966

REVIEW OF GREAT BASIN REPTILES

Nev. Lyon Fernley
Nev. Nye Cherry Cr.
Nev. Nye Currant, 35 mi SW
Nev. Nye Locke's
Nev. Nye Nuclear Test Site, Mercury
Nev. Nye Sunnyside
Nev. Nye Sunnyside, 19 mi S
Nev. Washoe Pyramid L.
Nev. Washoe Wadsworth
Nev. W. P. Big Spr.
Nev. W. P. Hot Cr. Spr.
Nev. W. P. Lehman Cave NM
Nev. W. P. Lund, & 1 mi E
Nev. W. P. Mt. Wheeler
Nev. W. P. Preston
Nev. W. P. Sacramento Pass 7154
Nev. W. P. Saw Mill Cn.

Utah Beaver Beaver 5970
Utah Beaver Beaver, 12.3 mi W 5970*
Utah Beaver Milford 4958
Utah Beaver Milford V., between Milford & Minersville
Utah Beaver Minersville 5625
Utah Beaver Minersville Dam 5625*
Utah Beaver Sulphurdale 5625
Utah Beaver Wah Wah Spr.
Utah Beaver W portion of county
Utah Beaver Wildcat, 10 mi S Cove Ft.

Utah Box Elder Bear R. 4215
Utah Box Elder Bird Id.
Utah Box Elder Blue Ridge Mtns.
Utah Box Elder Brigham 4307
Utah Box Elder Chesapeake Gun Club 4215
Utah Box Elder Como Spr.
Utah Box Elder Corrine, 6 mi W & 12 mi N 4229*
Utah Box Elder Dolphin Id.
Utah Box Elder Grouse Cr. Mtns., Rosebud Cr.
Utah Box Elder Hansel V. 4200-5000
Utah Box Elder Locomotive Spr.
Utah Box Elder Patterson Pass
Utah Box Elder Raft R. Mtns., Roseverse Cr.
Utah Box Elder Saline, 5 mi E 4217*
Utah Box Elder Snowville 4544
Utah Box Elder Tacoma Mtns., Lucin 4475
Utah Box Elder Tremonton 4315

Utah Cache Dry L.
Utah Cache Logan 4535
Utah Cache Logan Cn.
Utah Cache Smithfield 4450
Utah Cache Tony Cn.
Utah Cache Wellsville 5000
Utah Cache Wellsville Cn.

Utah Davis Bountiful 4398
Utah Davis Bountiful, cn. E
Utah Davis Clearfield 4487
Utah Davis Farmington 4200
Utah Davis Farmington Bay
Utah Davis Kaysville 4344
Utah Davis Phillips Oil Refinery 4253
Utah Davis Ward Cn.
<p>| Utah  | Davis | Woods Cross | 4292 |
| Utah  | Garfield | Bryce Cn, NP | |
| Utah  | Garfield | Panguitch | |
| Utah  | Iron | Cedar Brakes NM | 5834 |
| Utah  | Iron | Cedar City | |
| Utah  | Iron | Cedar City Cn. | |
| Utah  | Iron | Iron City | |
| Utah  | Iron | Ironton Ruins | |
| Utah  | Iron | Kanarraville | 5541 |
| Utah  | Iron | Lund | 5082 |
| Utah  | Iron | Newcastle, ±4 mi S | |
| Utah  | Iron | Parowan, 10 mi W | 5990* |
| Utah  | Iron | Summit on rd. between Paragonah &amp; Parquita | |
| Utah  | Juab | Birch Cr. Cn. | 5500 |
| Utah  | Juab | Callao | 4341 |
| Utah  | Juab | Callao, 10 mi SE | |
| Utah  | Juab | Callao, 15 mi S | |
| Utah  | Juab | Cherry Cr. | |
| Utah  | Juab | Deep Cr, Mtns., Thomas Cr. | |
| Utah  | Juab | Delta, 30 mi N | 5000 |
| Utah  | Juab | Fish Spr. | |
| Utah  | Juab | Fish Spr., 8 mi S | |
| Utah  | Juab | Gandy Spr. | |
| Utah  | Juab | Jericho | 5309 |
| Utah  | Juab | Jericho, 3 mi N | |
| Utah  | Juab | Levan | 5163 |
| Utah  | Juab | Levan, 4 mi S | |
| Utah  | Juab | Lynndyl, 10 mi N | 4784* |
| Utah  | Juab | Mammoth | 6026 |
| Utah  | Juab | Nephi | 5114 |
| Utah  | Juab | Salt Cr. Cn. | |
| Utah  | Juab | Silver City, 2 mi S | 6100* |
| Utah  | Juab | Topaz Mtn., nr. Lynndyl | 7110 |
| Utah  | Juab | Trout Cr. | 4675 |
| Utah  | Juab | Yuba Dam | |
| Utah  | Millard | Antelope Mtns., Antelope Spr. | 6743 |
| Utah  | Millard | Black Rock | 4852 |
| Utah  | Millard | Clear L. | 4750 |
| Utah  | Millard | Cove Ft. | 6000 |
| Utah  | Millard | Cove Ft., 3 mi N | |
| Utah  | Millard | Cove Ft., 10 mi N | 4649 |
| Utah  | Millard | Delta, 10 mi NW | |
| Utah  | Millard | Delta | |
| Utah  | Millard | Delta, 50 mi SW | |
| Utah  | Millard | Deseret | 4586 |
| Utah  | Millard | Desert Range Exp. Sta. | |
| Utah  | Millard | Fillmore | 5135 |
| Utah  | Millard | Fillmore Cn. | |
| Utah  | Millard | Fillmore, craters w | |
| Utah  | Millard | Fillmore, 15 mi NW (Devil's Kitchen) | |
| Utah  | Millard | Gandy | 5050 |
| Utah  | Millard | Hinckley, 15 mi S | |
| Utah  | Millard | Horse Range, Margum Pass | |
| Utah  | Millard | Iber | |
| Utah  | Millard | Leamington, 7 mi N | 4728* |
| Utah  | Millard | Lynndyl | 4785 |
| Utah  | Millard | Lynndyl, 6 mi N | |
| Utah  | Millard | Notch Mtn., US Hwy 6 | |
| Utah  | Millard | Oak City | 4700 |
| Utah  | Millard | Oak City, 2 mi W | |</p>
<table>
<thead>
<tr>
<th>County</th>
<th>Location</th>
<th>Notes</th>
<th>Coordinates</th>
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The Great Basin Naturalist
Vol. XXVI, Nos. 3-4
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Species Account

Sauria

Family Eublepharidae

Genus *Coleonyx* Gray

*Coleonyx variegatus utahensis* Klauber


Variation—Females attain a larger snout-vent length than males [♀ 12 (61.6) 44-70; ♂ 16 (54.13) 37-66]. Males, of course, possess developed anal pores [♂ 16 (5.87) 4-8], whereas these structures are not developed to be detectible in females. In our sample there are more postmentals in males than in females [♂ 16 (5.75) 3-7; ♀ 12 (5.5) 3-8].

The dorsal color pattern is variable with most specimens having a pattern similar to specimens from the type locality (St. George,

5. Number (mean) range. This sequence will be used throughout.
Utah). However, some are similar to or show indications of intergradation with *v. variegatus*.

**Remarks**—Tanner and Jorgensen (1963) extend the range of the Utah subspecies into southern Nye County, Nevada, and suggest that intergradation should be expected in western Nye County or in adjoining California. Inasmuch as these subspecies are largely determined by color pattern, and since the geographical and habitat of this area is rather uniform, it is expected that the area of intergradation may be wider than has been indicated in previous studies of Klauber (1945).

**Family Iguanidae**

**Genus Dipsosaurus** Hallowell

*Dipsosaurus dorsalis dorsalis* Hallowell


**Variation**—The above three specimens are females. The snout-vent lengths ranged from 97 to 122 with a mean of 110. Femoral pore counts ranged from 39 to 42 with a mean of 40.66. Ventrals, counted medially, ranged from 89 to 99 with a mean of 93.66. Dorsals ranged from 87 to 95 with a mean of 89. Two of the specimens have regenerated tails.

**Remarks**—The Northern Crested Lizard does not enter the Great Basin in Utah and in Nevada reaches only the extreme southeastern edge of the basin in Nye County.

We concur with Stebbins (1954) that this lizard is usually found in areas where the creosote bush is a part of the desert community. However, the altitude of 3,200 feet reported for the Providence Mountains should not be considered as the maximum altitude for this species in Nevada. On the basis of the sight record from Cane Springs (NTS) we believe that this species ranges from the flats up to at least 3,500 feet, on the western slopes of the Frenchman Flat basin.

**Genus Crotaphytus** Holbrook

*Crotaphytus collaris baileyi* Stejneger


**Nev.:** Nye Co., NTS, Mercury (B.Y.U. 17275, 17940-2, 18815-6, plus nine uncatalogued specimens).


**Variation**—Males attain a greater snout-vent length than females in the samples examined [♂ 22 (89.4) 49-104; ♀ 21 (79.52) 50-92]. Females seem to have a slightly larger number of dorsal scales [♂ 22 (164.2) 140-179; ♀ 21 (166) 157-175]. There is very little sexual dimorphism exhibited by femoral pore counts [♂ 21 (33.9) 29-39; ♀ 21 (34) 30-38].

**Remarks**—The fact that populations of *C. collaris* have a much more extensive distribution than *C. wislizeni* outside of the Great Basin suggests that *collaris* is the older of the two species. Populations of *C. collaris* extend farther east onto the western prairie areas at the present time. They occur in areas which receive more precipitation than do any of the Great Basin valleys or foothills at the present time. This would tend to suggest that populations of *collaris* may have survived in the most moist situations of the Pluvial Periods in the Great Basin.

*Crotaphytus wislizenii* Baird and Girard


**Variation**—In contrast to *C. collaris baileyi*, female *C. wislizeni* attain a longer mean size than do males (42 males have a mean snout-vent length of 80.14, whereas 38 females have a mean of 86.24 mm.). There is only a slight difference in femoral pores for
males and females in the material examined. Females seem to have a larger number of dorsal scales than males [♂ 42 (193.6) 180-206; ♀ 38 (196.7) 180-213]. Ventral scales, counted medially, are also slightly higher in females [♂ 42 (100.2) 90-112; ♀ 36 (102.08) 90-117].

Specimens from the Nevada Test Site have slightly greater snout-vent lengths [♂ 12 (81.64) 46-119; ♀ 18 (96.83) 79-125]. Femoral pores in females from the NTS specimens were also slightly more than in samples from western Utah [♂ 14 (39.21) 36-43; ♀ 19 (40.58) 37-45]. There are only slight differences in the mean of the postmentals in the NTS and western Utah samples:

Utah ♂ 27 (4.15) 2-6; ♀ 22 (3.95) 3-6
Nevada ♂ 14 (4.43) 2-6; ♀ 19 (3.94) 2-7

Remarks—Existing populations of C. wislizeni occur in many of the valleys of the northern and western Great Basin. In many cases this species occurs in pinyon-juniper areas of the foothills of the larger mountain ranges. However, it is primarily found in the valleys, many of which were inundated by water during the Pluvial periods.

Whether populations of this species could have existed in the northern Great Basin during the various Pluvial periods poses an interesting and speculative problem. Its present wide distribution suggests that it may have survived in somewhat moister situations and possibly has become restricted in its distribution to the foothill areas adjacent to some of the Pluvial lakes; or it may have more recently migrated northward from areas in the southwestern United States, western Mexico, and Baja California where populations still exist.

Genus Sauromalus Dumeril

Sauromalus obesus obesus Baird


Variation—The present series does not differ to that presented by Tanner and Jorgensen (1963).

Remarks—Although chuckwallas inhabit the rocky foothills and mountains of the southwestern deserts, they do not ascend to the Pinyon-Juniper biotic communities. We therefore believe that this species is also one which has entered these more northern valleys in post-Pluvial times.

Genus Callisaurus Blainville

Callisaurus draconoides rhodosticus Cope

Variation—In the above samples males attain a longer mean snout-vent length than females \( \hat{\sigma} 13 (68.8) 31-89; \hat{\varphi} 24 (61.6) 33-80 \). Leg lengths are also longer in males than in females \( \hat{\sigma} 13 (65.4) 31-85; \hat{\varphi} 24 (61) 32-78 \). Males have much longer tails than females \( \hat{\sigma} 8 (104.5) 86-122; \hat{\varphi} 16 (86.5) 54-104 \). Ventral scale counts and femoral pores show no conspicuous differences in the sexes.

Remarks—Although populations of lizards of this species occur in the southern and western Great Basin, they do not seem to occur in the Bonneville Basin. There is need for further sampling in the Escalante Desert area in the southeastern Great Basin to verify this point. As has been already stated by one of us (Banta 1963a) the occurrence of *Callisaurus* in the Lahontan Basin in the western Great Basin is probably a post-Pluvial phenomenon.

**Genus Sceloporus Wiegmann**

*Sceloporus magister uniformis* Phelan and Brattstrom


Variation—Smith (1939) noted that "there is no geographical correlation in the . . . variational data. Extremes or near extremes are found in all parts of the range of *magister* . . ." Phelan and Brattstrom (1955) and Tanner (1956) have found sufficient differences in some characteristics to warrant the designation of subspecific categories for several populations in and adjacent to the southern and western portions of the Great Basin.

Males have a greater snout-vent length than females \( \hat{\sigma} 11 (92.09) 67-104; \hat{\varphi} 15 (84.73) 47-100 \). Femoral pores show only slight differences in the sexes \( \hat{\sigma} 11 (25.8) 22-31; \hat{\varphi} 15 (25.4) 23-28 \). Dorsal scales also show slight sexual differences \( \hat{\sigma} 11 (32.73) 30-36; \hat{\varphi} 15 (33.6) 31-36 \), as is likewise the case with ventrals \( \hat{\sigma} 11 (39.81) 36-43; \hat{\varphi} 15 (39.4) 36-43 \). There seem to be no obvious differences between our limited samples from California and Nevada.

Remarks—Populations of this species occur in the Mojave Desert of southeastern California and adjacent Nevada and extend northward into the basin of pluvial Lake Lahontan. It is not yet established whether this species occurs in the Escalante Desert of the southern Bonneville Basin. The higher elevations and more mesic areas (piñon-juniper) separating the southern Bonneville Basin from the Virgin River drainage may have prevented the establishment of populations there.

*Sceloporus undulatus elongatus* Stejneger

Variation—The limited samples available at this time do not permit us to comment upon the relationships of this form to the *S. occidentalis* complex. Our samples are so limited that we can only list the meristic and morphometric data: Snout-vent length: ♂ 1 (61) 61; ♀ 2 (72.5) 70-25. Femoral pores: ♂ 1 (38) 38; ♀ 2 (31) 25-37. Dorsal scales: ♂ 1 (46) 46; ♀ 2 (52) 51-53. Ventral scales: ♂ 1 (53) 53; ♀ 2 (52.5) 49-56.

Remarks—The occurrence of populations of *S. undulatus elongatus* in only certain sections of the extreme limits of the eastern Bonneville Basin suggests that this species probably did not occur in the Bonneville Basin during the last Pluvial Period and populations are only now beginning to move from the Upper Colorado Basin into the more favorable areas provided since the drying up of Lake Bonneville.

The relationships between the *S. occidentalis* complex and *S. u. elongatus* need further study. We would suppose that *S. undulatus elongatus* is actually closer to *S. occidentalis* than to the more eastern North American populations of *S. undulatus*. Detailed color notes, behavioral observations, ecological preferences, and possibly comparisons of blood serum proteins by available techniques of microelectrophoresis might help in resolving this problem.

*Scleroporus occidentalis longipes* Baird


Variation—Bell (1954) resurrected the name *S. o. longipes* for Great Basin populations. Although some authors (e.g., Norris 1958) have not recognized the validity of this designation, we believe Great Basin populations are sufficiently distinct, based on meristic and color pattern characteristics (Banta 1965) from populations occurring in southwestern California and northern Baja California, as to warrant such status.

Males attain a longer snout-vent length than females [♂ 10 (76) 69-83; ♀ 12 (72.33) 56-80]. Females have slightly more ventral scales than males [♀ 12 (55.09) 49-60; ♂ 8 (53.24) 52-56].
Femoral pores show little sexual dimorphism \([\sigma^* 8 (31) 28-33; \varphi 12 (30.5) 27-36]\), as is likewise the case with dorsal scales \([\sigma^* 8 (44.5) 43-46; \varphi 11 (44) 41-46]\). The ventral color pattern of live lizards is distinct when compared with other Sceloporus from the Great Basin and particularly those occurring in the Bonneville Basin. A single median blue throat spot and a yellowish-orange color on the legs and edges of the abdomen are peculiar to this species.

**Sceloporus gracilis gracilis** Baird and Girard


**Variation**—There seems to be only slight differences in snout-vent length for males and females \([\sigma^* 92 (48.77) 26-62; \varphi 86 (48.9) 26-68]\). Femoral pore counts are slightly higher in females \([\sigma^* 91 (25.9) 21-30; \varphi 82 (26.4) 22-32]\). Dorsal scales are also similar in number in the sexes \([\sigma^* 89 (48.5) 43-56; \varphi 87 (48.25) 37-57]\), and the same situation applies to ventrals \([\sigma^* 88 (54.9) 46-62; \varphi 78 (54.2) 49-61]\). We can conclude from these figures that sexual
dimorphism is not as highly developed in the scale patterns in *S. graciosus* as it is in most other iguanid lizards occurring in the Great Basin.

**Remarks**—The present distribution of *S. graciosus*, which is widespread in the entire Bonneville Basin, including the area formerly inundated by Pluvial Lake Bonneville, relates the movements of the populations from above the lake level in Pluvial times to lower elevations at the present time.

The ecological distribution is also more extensive than that for most other Great Basin genera (except *Eumeces* and *Phynosoma*). Sagebrush lizards occur altitudinally from the desert flats well into the higher Juniper-Pinyon Pine and oakbrush habitats. They are known to reach elevations above 7,000 feet.

**Genus Uta** Baird and Girard

*Uta stansburiana* stansburiana Baird and Girard


Phrynosoma douglassi ornatum Girard


Variation—The most recent review of the genus is that of Reeve (1952). Several of the morphological characters used to separate the various nominal varieties of P. douglassi are of questionable significance. The bordering of the dorsal spots posteriorly and mesially in a light color is a variable one suggesting clinal trends. At the present time we have not examined adequate samples of populations of this lizard to show the extent of variation within any one geographic area in the Great Basin.

Females have a greater mean snout-vent length than males [♀ 23 (66.9) 28-94; ♂ 11 (60.9) 39-88]. Femoral pores are only slightly greater in males than in females [♀ 33 (28.9) 20-33; ♂ 10 (29.8) 25-36], and there are only slight dimorphic differences in ventral scales [♀ 21 (68.9) 62-80; ♂ 9 (68.4) 61-76].
Remarks—Bell (1829) in the original description of *P. douglasi* remarked that these horned lizards are always found near water. Many of the distribution records are from higher elevations. Cockrell (1901) recorded a specimen of the related subspecies *hernandesi* collected at 10,000 feet in the Las Vegas Mountains in New Mexico. Specimens from Bryce Canyon National Park were taken from localities up to 9,000 feet.

From the available distribution records one could develop the hypothesis that populations of *P. douglasi* could have, and probably did, have a much more extensive distribution in the western Great Basin during the various moist periods of the Pleistocene. With the subsequent desiccation of the intermontane pluvial lakes and the incursion of more southern forms into the northern valleys, coupled with the climatic changes leading to the development of desert or semi-desert conditions, populations of *P. douglasi* have been and possibly still are continuing to retreat northward in the valleys and to the more humid environs afforded by the higher mountain ranges.

*Phrynosoma platyrhinos* platyrhinos Girard


Variation—*Phrynosoma platyrhinos* occurs in the Great Basin, portions of Upper Colorado Basin of southeastern Utah, northern Arizona and the Colorado Basin of southeastern Utah, northern Arizona and the Colorado Desert of southern California and northeastern Baja California. The species complex, as it is now understood, suggests that the group as a whole is in need of review beyond that provided by Reeve (1952).

Utah samples show slight sexual differences in snout-vent length [♂ 19 (67.1) 52-79; ♀ 23 (67.8) 31-80], whereas in the Nevada
Test Site material the females are larger than the males [♂ 19 (63.57) 29-78; ♀ 13 (67.84) 35-87]. Femoral pore counts exhibit slight sexual differences in both the Utah and Nevada material:

Nevada  ♂ 18 (17.66) 14-21; ♀ 13 (18.15) 16-21
Utah    ♂ 20 (19.7) 16-24; ♀ 24 (18.66) 14-26

In Nevada specimens ventrals are noticeably higher in females than males [♀ 13 (85.54) 74-92; ♂ 19 (82.68) 74-90] but in Utah samples they are only slightly higher in males [♂ 20 (78.55) 68-88; ♀ 26 (77) 68-87].

Remarks—Bryant (1911) wrote that *P. platyrhinos* "is truly a desert species and is found in the most arid and barren places." Available records tend to support Bryant's statement, with modifications to the effect that populations also occur in areas that are not extremely arid. Populations of this lizard also exhibit a considerable altitudinal and latitudinal distribution. However, they do not seem to occur at such high elevations or in such moist situations as do populations of *P. douglasi*.

Reeve (1952) regarded *P. platyrhinos* as one of the oldest members of the genus. On the basis of an examination of the distributional records alone, Reeve's interpretation may be untenable. Morphologically, *P. platyrhinos* is a more complex form than *douglasi*. Combine the distributional data with that of morphology, with *douglasi* occurring in more moist areas and with far fewer expressions of development of the ornamentation of cephalic spines, and the conclusion that *douglasi* is more primitive than *platyrhinos* could be drawn. We are inclined to accept *platyrhinos* as the most specialized and aggressive horned lizard in the Great Basin.

Family Xantusidae
Genus Xantusia Baird

*Xantusia vigilis vigilis* Baird


Variation—Sexual dimorphism is not well developed and we did not reliably determine the sexes of the samples observed. Such a reliable sex determination would necessitate histological section of the gonads, and this was not done.

There are slight differences to be noted in the sample from Mercury, Nevada, in comparison to Cajon Pass. California. The California samples had a slightly larger mean dorsal scale count of 104 (N=6) in comparison to 100.81 (N=16) for Mercury. The ventral counts for the California samples were lower (28.66—N=6) than the Mercury samples (30.06—N=16). The mean snout-vent lengths of the California samples were larger (41—N=6) than the Mercury samples (35.5—N=20). It must be pointed out that these
are very tentative comparisons and a much more intensive examination of xantusiid material is necessary before more exact parameters of variation within the various populations can be determined.

Data available for the Washington County, Utah, population provides the following averages for dorsals (104.00), ventrals (29.12) and femoral pores (16.40). The slight variations suggest that the Great Basin populations of *X. vigilis* are similar throughout but with slight clinical variations appearing such as in femoral pores. Cajon Pass (14.83), Mercury (16.14) and SW Utah (16.40). Variations of additional characters of *Xantusia* are listed by Tanner (1957).

**Remarks**—Turner (1959) reported the collection of several specimens of this species from various elevations in the Panamint Mountains, Inyo County, California, ranging as high as 8,500 feet. Previously populations of *X. vigilis* were unknown from such high altitudes and the species was considered to be restricted to the Joshua tree covered alluvial fans and flaked granite outcrops of the lower mountain ranges. Turner's report opens up an entirely new aspect of the distribution of *X. vigilis*. On just what mountain ranges do populations occur? What is the actual extent of altitudinal variation of their distribution? Banta (1963b) has remarked upon the species' occurrence in the Inyo and Nelson Mountains of the Saline Valley hydrographic basin, Inyo County, in situations where Joshua trees are either nonexistent or greatly reduced.

The restriction of populations of this lizard to special moist situations either in decaying Joshua tree trunks or under debris at the higher elevations of the mountain ranges in the southwestern Great Basin suggests that the animal could have survived around the lake-filled basins during the various Pluvial periods. With the desiccation of the various lakes and the developing aridity, the lizard presumably retreated to the favorable situations afforded by Joshua trees and the higher elevations of the desert mountain ranges.

According to Savage (1952) the subspecies *X. v. vigilis* is believed to be the progenitor to the nominal forms that he discussed from Baja California, Mexico.

**Family Teiidae Gray**

**Genus Cnemidophorus Wagler**

*Cnemidophorus tigris* Baird and Girard

**Material Examined**—**Nev.:** Nye Co., NTS, Mercury (B.Y.U. 17269-72, 17281, 17334-17368, 17563-17616, 20844-20862); Lockes (B.Y.U. 18051-2).


Variation—Camp (1916) remarked that specimens from the southern areas of this lizard’s distributional range possessed darker ventral colors and a larger size than the lizards obtained in the more northern areas. Burt (1931) noted that in Great Basin specimens “the dorsal coloration . . . is predominantly brown and the ventral coloration often deep black or slaty,” and that “specimens from the lower levels, particularly from deserts, tend to become brownish above and black below, whereas those from the higher, more mountainous districts tend to become black above in ground color and white below.” In the desert specimens “the dorsal pattern is poorly defined, but it is well defined in the mountain specimens.”

Specimens examined show some sexual dimorphism in snout-vent length with males being larger than females. This is true of the limited Utah samples [♂ 11 (79.63) 44-99; ♀ 8 (74.5) 42-97], and the more extensive Nevada Test Site material [♂ 52 (85.63) 76-95; ♀ 43 (83.74) 71.98]. There is only limited sexual dimorphism in femoral pores and dorsal scales. As already indicated there are significant differences in size between the Utah and Nevada Test Site samples. However, we desire additional material from more areas in western Utah before final evaluation is made of these data.

Remarks—This single representative species of the essentially South American lizard family Teiidae (Dunn, 1931) is widespread throughout the entire Great Basin and adjacent areas. Although large populations are frequently found in the numerous Great Basin valleys, they also occur in the lower foothill areas as well.

The extreme variation in altitude and latitude exhibited by present populations of this lizard suggests that previous populations could have survived the pluvial periods in and around the freshwater lakes extant at that time.

Family Scincidae Gray
Genus *Eumeces* Wiegmann

*Eumeces skiltonianus utahensis* W. Tanner

**Material Examined**—Ida.: Bannock Co., Lava Hot Spr. (B.Y.U. 11645).

Remarks—The distributional pattern of this form is somewhat comparable with the iguanids Sceloporus occidentalis and S. gracilus. Like both S. occidentalis and S. gracilus, E. skiltonianus inhabits lower elevations in the northern Great Basin and is restricted to higher altitudes of the larger isolated mountain ranges in the south. Also, as for S. occidentalis, the larger, more continuous populations of the species complex occur in mountain ranges and foothill areas of the Pacific Coast of California, Oregon and Washington.

Knowledge pertaining to the distribution of this species is extremely spotty. This is due primarily to the fact that collecting activities have been restricted, and, owing to the fact that in those areas visited by the numerous collectors of zoological specimens over the years, concern for obtaining suitable samples of lizard specimens has been limited.

Populations of Eumeces skiltonianus possibly could have occupied more extensive areas than at present during some of the more humid periods of the Tertiary, which, according to the works of Axelrod (1940, 1948, 1950, 1956, 1957, 1958) and Wells and Jorgensen (1964), is borne out by the paleobotanical record from many localities in the Great Basin.

According to Norris (1958) the "lack of differentiation of the isolated populations points to a Pleistocene separation." As has been pointed out by Banta (1963b) populations of this lizard would have been very comfortable in the more moist environments surrounding the various Pluvial lakes during the Pleistocene. With the desiccation of the Pluvial lakes, as a result of increasingly arid conditions, populations survived only in the more mesic niches occurring in the higher mountain ranges or along the courses of the more permanent streams. This type of distribution is particularly apparent in the mountains of Nevada.
Eumeces gilberti rubricaudatus Taylor

**Material Examined—Calif.: Inyo Co., Nelson Mtns., Saline Valley hydrographic basin (B.Y.U. 16566).**

**Remarks**—The distribution of this skink is poorly known in the southeastern Great Basin. Hardy (1948) reported a specimen from the Sheep Mountains, indicating that the distribution extends across southern Nevada east of Saline Valley. Banta (1962) reported the occurrence of this species in the Spring (Charleston) Mountains of Clark County. Bradley and Deacon (1966) reported additional material verifying the occurrence of this species in the Spring Mountains.

Order: Serpentes
Family: Boidae
Genus Charina Gray

**Charina bottae utahensis** Van Denburgh


**Variation**—Van Denburgh (1920b) and Klauber (1943) have shown some of the distinct features of the Great Basin populations compared with those populations inhabiting the more humid regions of the Pacific Coast of North America. Comparable samples from the Toyabe Range (Linsdale 1938, 1940) and other central Great Basin mountains are not yet available for systematic assessment. Only those populations in the Wasatch Mountains along the eastern edge of the Great Basin have been sampled sufficiently to provide variation data (Tanner, 1933).

Snout-vent lengths of males are noticeably greater than females [♂ 22 (390.72) 202-533; ♀ 26 (344.27) 170-586]. This is likewise true of tail lengths [♂ 22 (59.36) 27-83; ♀ 26 (53.27) 22-72]. There is only slight sexual differences in the number of ventral plates [♂ 24 (204.5) 193-214; ♀ 32 (205) 196-212]. Caudal scales are greater in males than females [♂ 23 (36.7) 35-38; ♀ 31 (35.7) 23-38]. Dorsal scales at midbody are also slightly greater in males than in females [♂ 23 (44.8) 40-46; ♀ 32 (41) 39-44].

**Remarks**—The disjunction of the distribution of populations of this animal as demonstrated by available published records (Lins-
dale, 1938, 1940) indicate its preference for more humid environments. Indeed this would suggest that *C. bottae* enjoyed a wider distribution during the moister periods of the Pluvial periods and that the present disjunct distributions reflect the environmental changes brought about by the relatively recent desiccation of fresh water lakes in many areas of the Great Basin. Rubber boa's occur in isolated island populations in those higher mountain ranges affording suitable habitat.

Family Colubridae

**Genus Thamnophis** Fitzinger

*Thamnophis elegans vagrans* Baird and Girard


**Variation—** Fitch (1940, 1948), Tanner (1950), and Fox (1951b), have provided the most recent studies of variation of this garter snake within the Great Basin and adjacent areas.

Mean snout-vent lengths are much greater in males than females [♂ 75 (390.3) 168-577; ♀ 75 (303.72) 150-594]. This difference is also exhibited by tail lengths [♂ 62 (139.8) 53-195; ♀ 65 (117.5) 50-186]. Pronounced sexual dimorphism also occurs in scale characters. Ventral plates are greater in number in males than females [♂ 85 (171.8) 164-180; ♀ 71 (166.24) 158-178] as is likewise the case with caudals [♂ 75 (84.6) 61-94; ♀ 66 (76.77) 67-91]. Dorsal
scales at midbody are very slightly greater in females than males [♀ 72 (20.83) 19-21; ♂ 84 (20.7) 19-21]. Variations occurring in populations from the eastern Great Basin and including many of the specimens listed above as well as specimens from adjoining populations is summarized by Tanner (1950).

Remarks—The fact that a number of specimens of this wide-ranging garter snake have been found away from the immediate proximity to water indicates its adaptation to more terrestrial conditions. This fact alone would account for its pronounced success and present wide distribution throughout the Great Basin. Populations of this snake could have enjoyed as wide or possibly even a much wider distribution, particularly in the desert valleys, during the more Pluvial periods.

Thamnophis sirtalis parietalis Say


Variation—The ventrals and caudals are higher in the males than in the females [♂ 34 (164.56) 159-170; ♀ 40 (160.50) 156-168]. Caudals [♂ 31 (83.48) 78-89; ♀ 34 (76.76) 72-84]. There is also a sexual dimorphism in the ratio of the tail to total length with the males 2 to 3 percent longer. [♂ 17 (252) 238-267; ♀ 11 (235) 222-248]. The infralabials vary between 9 and 10 with many specimens having a formula of 9-10.

Remarks—Although Fitch and Maslin (1961) provided a re-description of several recognized subspecies of Thamnophis sirtalis, they did not provide specific variation or locality data for material examined in the eastern Great Basin. Their general statement that scalation is remarkably uniform, that variation follows clines and is chiefly to be found in the color pattern agrees generally with our findings. We have examined eighty specimens from the Great Basin and compared them with a small series from the Snake River drainage and a series from Kansas.

The skin pattern as represented for fitchi (Fitch and Maslin, Fig. 2) does not represent the pattern generally found in Utah
sirtalis. Although there is individual variation, most specimens show the small red spots above the major red H marks (between the 7-9 scale rows). This character is similar to parietalis except that in the Utah series a darker background usually surrounds the red splotches.

The paired dark dots on the anterior edge of each ventral in parietalis are also present in most (60 percent) of the Utah series. There is considerable variation as to size, darkness of spot and their regular occurrence on each ventral. There is obviously a difference when compared with Kansas parietalis and yet if one is to choose between presence or absence of ventral spots as a key character, most specimens would fall into the parietalis subspecies.

Four clutches of young were examined (3 Utah and 1 Kansas) to determine if there was a difference in the color pattern between young and adults. None could be noted; however, it was noted that the individuals of two Utah clutches had ventral spots, whereas in the third, most were without.

On the basis of the material examined we are not convinced that the Continental Divide is the dividing line between parietalis and fitchi. If specimen characteristics are the criteria to be used, then the Utah series is, on the basis of percentage, a part of parietalis. We believe that the populations in southeastern Idaho and northern Utah are more closely related to parietalis, but that the influence of fitchi is apparent in some local populations, and will become more obvious in more western populations.

We note that Fitch and Maslin (1961:304) place sirtalis in the Sevier River valley; however, their distribution map (Fig. 1) extends only into Utah Valley. Our records conform to the distribution map.

**Genus Diadophis** Baird and Girard

**Diadophis regalis regalis** Baird and Girard

**Material Examined**—Ida.: Franklin Co., Preston (U.A. Coll.).

**Variation**—In the limited samples available females have a longer snout-vent length than males [♂ 4 (341) 280-378; ♀ 10 (351.25) 167-573]. Tail lengths are slightly greater in males than in females [♂ 4 (87) 71-106; ♀ 10 (84.75) 34-120]. Ventral plates are significantly greater in females [♂ 4 (209.33) 208-211; ♀ 10 (227.37) 219-233], and caudals are noticeably greater in males [♂ 3 (73.66) 72-76; ♀ 8 (67.5) 62-72]. Dorsal scales at midbody were usually 17. In none is there an indication of a nape band.

**Remarks**—As the present records indicate, this is one of a group of colubrid snakes which seems to be restricted to the more moist east-
ern portions of the Great Basin. Its near total absence from the western Great Basin, according to available records, would not indicate a wider distribution into central Nevada during the Pluvial periods. However, the present spotty distribution in Utah and the difficulty in finding it prevents us from precluding its presence in higher ranges of central Nevada.

Genus *Coluber* Linnaeus

*Coluber constrictor mormon* Baird and Girard


**Variation**—Sexual dimorphism is developed in the samples examined. Males have a slightly lower ventral count than females \( \sigma^1 \text{ 16 (170.8) 167-178; } \phi^1 \text{ 15 (172.8) 168-180}. \) Females have a lower number of caudals \( \sigma^1 \text{ 16 (93.12) 86-100; } \phi^1 \text{ 11 (88.27) 84-92}. \)

Approximately one third of the specimens have seven supra-labials on one or both sides; the others have eight. Infracarals have about the same ratio (1.2) of eight and nine scales respectively. The dorsals are uniformly 17 rows anteriorly but are occasionally 16 at the vent.

**Remarks**—This is a wide-ranging snake. It occurs not only in much of the Great Basin but extends to the Pacific Coast regions of California, Oregon and Washington in a distribution pattern somewhat resembling that of the boid *Charina bottae*. However, populations of the yellow-bellied racer do not seem to be restricted to as moist an environment as *C. bottae* and in the Great Basin are frequently found where streams extend out into the sagebrush-steppe areas which occupy much of the northern parts of the region. It is unlikely that the yellow-bellied racer was affected as much as other Great Basin reptiles by the more moist conditions which prevailed during Pluvial times.
The habitat of this species has been extended in those areas where irrigation is practiced. Presumably it originally inhabited only the stream-side habitats of the valleys and from the oak brush foot hills up to the aspen-conifer forest at elevations of 7,000 ft. Adults have been taken in the spring and fall as they emerged or entered dens also occupied by *Crotalus* and *Pituophis*.

Genus *Masticophis* Baird and Girard

*Masticophis taeniatus taeniatus* Hallowell.


**Variation**—Dorsal scale rows at midbody are 15 in all the above specimens. Variation occurs before the vent where there may be 11, 12 or 13 rows. Approximately 65 percent have 12 rows with 11 more common than 13 rows. Sexual dimorphism occurs in the ventrals and caudals, with the females having the higher average ventral count [♀ 21 (207.14) 199-218; ♂ 27 (204.52) 199-210] and the males the higher average caudal count [♂ 21 (139.29) 127-143; ♀ 19 (132.21) 124-147]. Supralabials are usually 8, occasionally 7 or 9. Infralabials are more commonly 9 but with many specimens having 10.

Remarks—Populations of this snake are widespread in the northern two-thirds of the Great Basin. In the southwestern Great Basin populations have become restricted to the higher mountain ranges surrounded by inhospitable hot desert valleys in contrast to the large populations on the foothills and in the valleys of western Utah. This disjunction would tend to indicate that the species did have a wider distribution, probably during Pluvial times, and the distribution we find today occurred during the interval since desiccation of Pluvial lakes and the drastic environmental changes which have occurred since.

*Masticophis flagellum piceus* Cope

**Material Examined**—Calif.: Inyo Co., Oasis (B.Y.U. 18048).
Genus Opheodrys Fitzinger

Opheodrys vernalis blanchardi Grobman


Variation—Specimens examined show a considerable degree of sexual dimorphism in the number of ventral plates being significantly higher in females than in males [♀ 24 (147.04) 144-151; ♂ 27 (136.33) 132-140]. Dimorphism also exists in the caudal scale differences but with the males having the higher counts [♀ 20 (71.75) 66-76; ♂ 24 (81.42) 74-89]. Except for an occasional specimen having one or no loreals, all other scale patterns are usually uniform.

Remarks—The smooth green snake is restricted to the Wasatch Mountains bordering the eastern edge of the Great Basin. Many of the present records are from high elevations (Aspen-Conifer forests) having a more moist and cooler climate. It is conceivable, though difficult to establish, that this animal extended its distribution well into the eastern margins of Lake Bonneville during the Pluvial periods and that its present distribution reflects survival of populations only at the higher elevation.

Genus Salvador Cope

Salvadora hexalepis mojavensis Bogert


Variation—Quite in contrast to the other racers occurring in the Great Basin (Coluber constrictor and M. taeniatus) this species does not indicate any obvious sexual dimorphism. The ventrals are similar [♀ 12 (195.25) 193-199; ♂ 7 (194.5) 192-195] and the caudal average diverges only slightly more [♀ 12 (105.42) 99-109; ♂ 6 (103.4) 95-109]. There is a wider range of caudal variation in the males.

Remarks—Populations of this snake are restricted to the warmer and drier environments of the Lahontan basin of western Nevada, the Mojave, Colorado and Sonora Deserts and the deserts of Baja California. Its present occurrence in the Lahontan Basin is doubtless a post-Pluvial phenomenon for it occurs to a large extent within the areas which were inundated by Pluvial Lake Lahontan, and other Pluvial Basins in southwestern Nevada and east central California.
W. W. TANNER, B. H. BANTA

The Great Basin Naturalist

Vol. XXVI, Nos. 3-4

17392-17395, 17948, 18736, 18762-18764), C. P. Cane Springs turn
off along rd., NTS, Mercury (B.Y.U. 18985).

Variation—Ventral plates in seven males ranged from 196 to
204 with a mean of 198.57. In 3 females the range was 194 to 207
with a mean of 200. Subcaudals in females had a mean of 84.33
with a range of 77-89. In males subcaudals ranged from 89-95 with
a mean at 91.66. Males were larger than females in snout-vent
length [♂ 7 (521.85) 252-697; ♀ 3 (392.33) 256-494].

Remarks—Patchnose snakes at the Nevada Test Site occur in
the valleys and on the adjoining foothills surrounding them. They
have been found invading live wire mammal traps in study plots
presumably in quest of captured lizards. At the N.T.S. this species
is found in habitat commonly inhabited by such species as Crotap-
hytus wislizeni, Phrynosoma platyrhinos, Callisaurus draconoides,
Masticophis flagellum and Crotalus cerastes.

This species, as in the case of several others, has apparently
invaded the western Great Basin since the last Pluvial period.

Genus Phyllorhynchus Cope

Phyllorhynchus decurtatus perkinski Klauber

Material Examined—Nev: Nye Co., NTS, Mercury (B.Y.U.
17924-5, 17758-9, 23730-1).

Variation—Five of the above specimens are males, with 169
to 173 ventrals; the one female has 182 ventrals and 30 subcaudals.
Caudals in the males range from 38 to 40 with a mean of 38.6. The
female is 371 mm. in total length with a tail of 25 mm. The males
range in total length from 253 to 374 with a mean of 325. The male
tail lengths range from 33 to 57 with a mean of 48.33. The percent
of tail to total length is as follows: males 15 to 16.5 percent and the
female approximately seven percent. This sexual dimorphism is also
reflected in the caudal counts.

Remarks—Variations in the populations of the northern part
of the range are not well understood because of the few specimens
available. However, the six specimens from the N.T.S. do indicate
fewer ventrals, more caudals and longer tails in males, but a shorter
tail in the single female. It is possible that there is considerable
isolation between the populations occurring in the several pluvial
valleys of southwestern Nevada.

Genus Arizona Kennicott

Arizona elegans candida Klauber

Material Examined—Nev.: Nye Co., NTS, Mercury (B.Y.U.
17396-7, 17400, 18760); 15 mi NW Main gate, NTS (B.Y.U.
21215); 3.4 mi S Main gate (B.Y.U. 21285); 15.7 mi SE Main gate
(B.Y.U. 21284).
Variation—Three males and four females have been examined. Sexual dimorphism is apparent but not well developed in the scales which usually reflect it. The ventrals average \( \sigma \) 211.7, \( \varphi \) 216.5, caudals \( \sigma \) 50, \( \varphi \) 49. Other scale patterns are within the limits of variation set up by Klauber (1946) for this subspecies.

Remarks—Tanner and Jorgensen (1963) reported the first record of this subspecies in Nevada. This seems to establish *candida* as the only subspecies occurring in the Great Basin from Nye County north and west into other possible counties in Nevada and in adjoining California. Such a distribution is plausible and leaves southeastern Nevada (Clark Co.) and adjoining Arizona and Utah (Washington Co.) to the northeast in the range of *eburnata*.

Genus *Pituophis* Holbrook

*Pituophis catenifer deserticola* Stejneger

Variation—Reviews by Tanner (1939), Stull (1940) and Klau-
ber (1947) have provided some insight into the variation of the
samples of Great Basin populations which they examined. In each
of these reviews the subspecies stejnegeri proposed by Van Den
burgh (1920) for those populations occurring in the eastern Great
Basin (type locality Fort Douglas, Utah) was not recognized. Tanner and
Jorgensen (1963) reaffirmed the clines noted previously by other
authors in the dorsal rows and ventrals.

Remarks—This is one of the most common colubrid snakes in
many portions of the Great Basin. A fact amply demonstrated not
only by noting the number of individuals of this snake killed on
the various paved highways which traverse the region, but also by
the large number of preserved specimens in research collections.
Many of the records are from or near cultivated areas, which sug-
gest that this form has enjoyed some success in adapting to the
revolutionary ecological situations created by man, populations
may be drawn into such areas because of the increased rodent (food)
supply which normally occurs in cultivated areas.

Genus Lampropeltis Fitzinger

Lampropeltis pyromelana infralabialis W. Tanner

2814A).

Utah: Beaver Co., Beaver (B.Y.U. 10340, 11287-8), Piute Co.,

Variation—Some aspects of the variation of this seemingly rare
snake were provided by Tanner (1953). Ventral scales in the above
samples are higher in females than males [♂ 4 (226.5) 213-230; ♀
3 (221) 216-224]. There does not seem to be a comparable degree of
sexual dimorphism in subcaudals [♂ 2 (69) 67-71; ♀ 3 (69.66)
68-71]. Sexual differences in the number of body spots are not too
conspicuous [♂ 4 (46) 40-49; ♀ 3 (44.33) 39-50].

Remarks—Present records indicate that this beautiful snake
is limited to the eastern Great Basin. It was probably derived from
progenitors in the Mexican Plateau. It seems to be quite hydrophilic
not extending in the more xeric portions within its range, but re-
stricted to montane island populations where such areas are sur-
rounded by xeric environments.

Lampropeltis getulus californiae Blainville

Material Examined—Calif: Inyo Co., Independence (B.Y.U.
18965).

Nev.: Nye Co., NTS, Mercury (B.Y.U. 17398, 17946, 21758,
23614).

Variation—The specimen from Independence was so badly
smashed that but few characters could be discerned. Selected data
for the Nevada specimens are: ventrals 4 (247.33) 236-253; sub-caudals 3 (55) 53-59; snout vent length 3 (739.66) 401-975. All specimens seen are of the banded color pattern and resemble closely those seen from the Colorado River drainage in southwestern Utah.

**Lampropeltis doliata utahensis** W. Tanner and Loomis


**Variation—** Few additional specimens are available since the description of *L. d. taylori*. It is therefore suggested that variations listed by Tanner and Loomis (1957) be considered.

**Remarks—** The habits and habitats of this subspecies are not well known. Most specimens were collected by amateur or interested laymen and given to the universities at a later date.

Many specimens are brought to the universities dead, most of them having been killed by the collectors. When asked why the specimen was killed one of two answers is given: Isn’t it a poisonous coral snake? Or, the snake bites. Most individuals bite, even young ones; however, they are neither poisonous nor a coral snake. In the Great Basin of Utah, snakes having an appearance of coral snakes are king snakes.

**Genus Rhinoceluis** Baird and Girard

**Rhinoceluis lecontei lecontei** Baird and Girard


**Variation—** There is little variation in the small series from southern Nevada and western Utah. Males average a few more ventrals [♀ 6 (203.8), ♂ 4 (200.5)] and caudals [♀ 5 (52.2), ♂ 5 (49.0)] than the females. Other scale patterns are uniform.

For a discussion of the variation in the color pattern the study of Tanner and Jorgensen (1963:24) includes the same material examined above and expresses our views adequately.
Remarks—The occurrence of *Rhinocheilus* in the Bonneville Basin of eastern Nevada and western Utah is of more than passing interest. Such species as *Crotalus cerastes*, *Crotalus mitchelli*, *Tantilla utahensis*, *Trimorphodon lambda*, *Lampropeltis getulus*, *Arizona elegans*, *Salvadora hexalepis*, *Masticophis flagellum*, *Sceloporus magister*, *Sauromalus obesus* and *Coleonyx variegatus* inhabit the same general habitat as does *Rhinocheilus* in Washington County, Utah, and in southern Nevada. In spite of this, *R. lecontei* is the only species of this presumably Lower Sonoran group to invade the Bonneville Basin. All specimens thus far taken in western Utah have come from the western valleys, strongly suggesting that it has extended its range since the last Pluvial Period.

Genus *Sonora* Baird and Girard

*Sonora semiannulata isozona* Cope


Variation—All of the above specimens are males except for one female. One specimen has a striped pattern with the four middorsal rows reddish-orange grading laterally into gray. All others are of the usual bicolored phase.

Sizes in terms of snout-vent length ranged from 209 to 295 mm. with a mean of 251.4. Ventral plates in the males ranged from 161-168 with a mean of 165. Caudals ranged in number from 56-61 with a mean of 57.

Remarks—Considerably more collecting must be done in the Great Basin before we will understand the distribution of this species. Its occurrence in the Snake River Valley below Boise, Idaho, suggests that its distribution extends throughout the Great Basin; however, the Idaho population appears to be isolated with no known populations in western Utah or in central and northeastern Nevada. Other than the Nye County records Banta (1965) lists this species as occurring in Humboldt, Pershing and Washoe Counties all in the western (Lahontan) basin. Indications are that *Sonora* reached the Snake River Valley through the western part of the Great Basin in Nevada, southern Oregon and then into Idaho. Proper collecting methods (can traps, etc.) at the appropriate seasons may yet connect these disjunct populations.

Genus *Chionactis* Cope

*Chionactis occipitalis talpina* Klauber

Variation—The variations occurring in this subspecies are summarized for Nye County by Tanner and Jorgensen (1963) and for adjoining California by Elvin (1963). The averages for the ventrals and caudals for the specimens listed above are $\sigma^{\prime} 151.3$, $\varphi 161.0$ and $\sigma' 45.3$, $\varphi 44.8$ respectively.

Remarks—Variations in the ranges of the ventrals and caudals ($\sigma' 18, 148-155$, $\varphi 14, 155-166$; $\sigma' 18, 41-49$, $\varphi 13, 43-47$) overlap these scale patterns in o. occipitalis. We therefore designate o. talpina as a subspecies on the color pattern (presence of secondary bands) and not for any distinctness in the scale pattern.

Genus Hypsiglena Cope

Hypsiglena torquata deserticola W. Tanner


Variation—Variations in the ventrals [$\sigma' 14 (182.2)$; $\varphi 16 (190.3)$] and caudals [$\sigma' 11 (57.5)$; $\varphi 16 (50.1)$] are similar to the variations listed by Tanner (1946) for the entire subspecies. The dorsal rows rarely vary from the 21 rows at midbody; however, before the vent 15, 16 or 17 rows may occur. Most specimens having 16 or 17 rows are females with rarely a male failing to reduce to 15 rows. Females are about equally divided between those having 16 or 17 rows and those with 15.

Remarks—Night snakes are one of the commonest snakes in lower foothill habitats of the Great Basin. In the few areas where intensive collecting has been done this species has provided as many specimens as have other common species. Their habit of moving at night and hiding under rocks in the day has led to the conclusion that the species is rare, an illusion held by the senior author until this snake was intensively studied.

A study now in press (Tanner, 1966) will discuss in part the distribution of this species in the southern Great Basin. We apply the same general thesis that Hypsiglena has extended its range considerably since the last major Pluvial Period, and particularly in the northern parts of the Great Basin (principally Lahonton and Bonneville basins).
Genus *Trimorphodon* Cope

*Trimorphodon lyrophanes* Cope


**Variation**—The above specimens are males with total lengths of 408 and 502. Tail lengths are 61 and 88 respectively. Both have 221 ventral plates and 75, 77 caudals. Body and tail blotches number 29, 16 and 32, 18 respectively.

**Remarks**—Collecting records would indicate a small population in the Great Basin of southern Nevada; however, little is known about the specific habits and habitats of this species.

Genus *Tantilla* Baird and Girard

*Tantilla planiceps utahensis* Blanchard

**Material Examined**—Nev.: Nye Co., NTS, Mercury (B.Y.U. 17922-3).

Variations and remarks concerning these specimens and others from many localities in southwestern United States and northwestern Mexico are provided in the recent study by Tanner (1966).

Family Crotalidae

Genus *Crotalus* Linnaeus

*Crotalus cerastes cerastes* Hallowell


**Variation**—There is a noticeable sexual dimorphism in both the ventrals [6 ♀ (145.2) 143-146; 9 ♂ (139.7) 138-142] and caudals [6 ♀ (17.7) 16-19; 9 ♂ (22.9) 21-25]. Other variations occur in the labials with both the upper and lower series ranging from 12 to 16 scales, but with most counts 13, 14 or 15 scales.

The color pattern is remarkably uniform. The only variation noted is a slight change in the ground color.

**Remarks**—The horned rattlesnake occurs in the desert valleys and the adjacent foothills in south and western Nevada. Its present distribution indicates a post-pluvial extension of its range into these more northern valleys. As yet its range does not include areas where *Artemisia tridentata* is the dominant shrub.

*Crotalus mitchelli stephensi* Klauber

**Material Examined**—Nev.: Nye Co., NTS Mercury (B.Y.U. 17390-1, 17950-1, 17921, 18772-9, 18970).

**Variation**—Fifteen specimens (4 females and 11 males) show little variation in the ventrals which average 175.9 and 175.75 re-
spectively. Caudals show sexual dimorphism (♀ 19.0 and ♂ 26.6) and the scale rows are approximately equally distributed between 23 and 25 rows at midbody. There is considerable variation in the labials with both the upper and lower series ranging from 12-16 scales. Most specimens show individual variation with some varying as much as three scales (12-15 or 13-16); however, most vary only a scale or two and are more commonly 13, 14 or 15 scales.

The ground color may vary from a slate grayish to a decided pinkish with the spots taking on shades of brown which compliment and blend with the basic color.

Remarks—We have designated the subspecies occurring in Nye County, Nevada, as *stephensi*. In this species, as in several others (*Arizona elegans*, *Chionactis occipitalis*, *Coleonyx variegatus*) intergradation appears to occur in the adjoining areas to the east. Although most subspecies do not respect the boundaries of the Great Basin, a few seem not to intergrade at or near its boundary in western Clark County.

*Crotalus viridis lutosus* Klauber


Variation—Sexual dimorphism is moderately developed; however, there is an overlapping of the ranges of variation in the ventrals and caudals so that sex in all specimens cannot be determined by scale counts alone. The ranges of variation and averages are as follows: ventrals, $\sigma$ 65 (177.66) 170-188; $\varphi$ 70 (182.98) 175-191; caudals, $\sigma$ 66 (25.5) 21-32; $\varphi$ 69 (21-55) 18-26. Males are longer than females. An average of fifteen of the largest specimens of each sex indicates the approximate differences in total length: $\sigma$ (952.5) 826-1031; $\varphi$ (855.6) 713-952. Other variations occur in the dorsal rows before the vent, with 19 usually occurring, but occasionally with 21 rows. The labials are variable with both the upper and lower labials ranging from 14 to 17 with 15 the more common number.

Remarks—The Great Basin rattlesnake is perhaps the most widely distributed species in the area. Specimens have been recorded from the low valleys and up to elevations of 9,000 feet. They occur in low brush and also in the oak-aspen habitats at higher elevations.

Throughout the northern part of the Great Basin this species can usually be found in rocky areas in the spring and fall as they emerge or move toward the denning areas. In the summer the valleys serve as feeding grounds for most of the population denning in the surrounding foothills. It is not uncommon for rattlesnakes to move into orchards or other irrigated areas during the summer.

Bibliography


THREE NOTEWORTHY COLUBRIDS FROM SOUTHERN SONORA, MEXICO

Max A. Nickerson and H. L. Heringhi

Two separate collections of amphibians and reptiles were made by private collectors during the summers of 1964 and 1966 in and around Alamos, Sonora, Mexico. These collections are deposited in the herpetological collection of Arizona State University (ASU). This report concerns three rare species of colubrids from these collections.

Dryadophis cliffoni Hardy

This snake was originally described as Dryadophis fasciatus Hardy, 1963 (Copeia, 669-672). This name was found to be preoccupied and was replaced by Dryadophis cliffoni Hardy, 1964 (Copeia, 714). A single, adult female (ASU 5848) was taken near the Anna Maria Mine, approximately 20 miles east of Alamos, near the Sonora-Chihuahua border, between August 1-15, 1964. This is the fifth specimen reported and the first from Sonora. It represents an extension of the range about 325 miles NNW from Plumosas, Sinaloa, Mexico.

This specimen differs from those described by Hardy (1963) as follows: infralabials 10-11, most previously 10-10; the dorsal surface of the head is tan from the parietals anterior, whereas in others only the top of the head anterior to eyes was tan; and 32 dark dorsal blotches (which become lighter anteriorly), less than the 40-46 recorded.

Sonora aemula Cope

All five specimens were collected within the city limits of Alamos except ASU 6458, which was taken a short distance south of Alamos. Two males (ASU 5850, 5851) were collected in July, 1964, and two females (ASU 6611, 6612) and one male (ASU 6458) in July, 1966. They ranged in size from a total length of 242 mm. and 35 mm. tail length (ASU 6612) to 365 mm. total length and 58 mm. tail length (ASU 5850). This brings the known number of specimens to ten.

None of the five snakes showed the same dorsal or ventral pattern. Zweifel and Norris (1955) state that body color pattern is variable and shows little consistency in the arrangement of the red, black, and white rings. (Fig. 1 shows the diversity encountered.) Such a polychromatic condition is difficult to interpret. Zweifel and Norris (op. cit.) state that in the specimens they studied each red scale (dorsal assumed) was centered with black. In the ASU specimens some of the dorsal scales approaching the venter lose the black pigmentation, also the black is not always centered on the scale.

1 Department of Zoology, Arizona State University, Tempe, Arizona.
### Scutellation and Size in Three Species of Sonoran Colubrids

<table>
<thead>
<tr>
<th></th>
<th>Dorsals</th>
<th>Ventrales</th>
<th>Caudales</th>
<th>Supralabiales</th>
<th>Infra-labiales</th>
<th>Preoculars</th>
<th>Postoculars</th>
<th>Loreals</th>
<th>Temporals</th>
<th>Total Length</th>
<th>Tail Length</th>
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<td>ASU 5848 D. cliftoni f.</td>
<td>17-17-15</td>
<td>192</td>
<td>146</td>
<td>8/8</td>
<td>10/11</td>
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<td>15-15-15</td>
<td>146</td>
<td>40</td>
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<td>8/8</td>
<td>1/1</td>
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<td>1.2/1-2</td>
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<tr>
<td>ASU 5851 m.</td>
<td>15-15-15</td>
<td>149</td>
<td>41</td>
<td>7/7</td>
<td>7/7</td>
<td>1/1</td>
<td>2/2</td>
<td>1/1</td>
<td>1.2/1-2-2</td>
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<td>ASU 6458 m.</td>
<td>16-15-15</td>
<td>144</td>
<td>21*</td>
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<td>8/8</td>
<td>1/1</td>
<td>2/2</td>
<td>0/0</td>
<td>1.2/1-2</td>
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<td>28mm*</td>
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<td>ASU 6611 f.</td>
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<td>162</td>
<td>35</td>
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<td>ASU 6612 f.</td>
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<td>38</td>
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<td>8/7</td>
<td>1/1</td>
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<td>1.2/1-2</td>
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<tr>
<td>ASU 5849 S. lippiens m.</td>
<td>19-19-19</td>
<td>214</td>
<td>20</td>
<td>6/6</td>
<td>7/7</td>
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<td>ASU 6634 m.</td>
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<td>22</td>
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<td>1/1</td>
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<td>0/0</td>
<td>1.3-3/</td>
<td>388mm</td>
<td>33mm</td>
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* Part of tail missing.
1 These specimens tend toward a third row of temporals on the left.
One specimen (ASU 6612) is devoid of any bands or rings on the dorsum of the body and has lost the black band which borders the posterior margin of the white nuchal band (characteristic of all of the other specimens). One specimen (ASU 6611) is devoid of bands or rings for the first third of its length. Zweifel and Norris (op. cit.) report one female (MVZ 50746) and Bogert and Oliver (1945), one male (AMNH 63738) as having lost the banded pattern anteriorly. The dorsal pattern of this series, except ASU 6612, consists of a series of triads either white-black-white or black-white-black on a red ground color. Apparently on three specimens (ASU 5850, 6458, 6611) the black spots (usually centered on each scale) have fused to form black bands on both sides of what would be a white-black-white triad converting this to a five-banded sequence black-white-black-white-black. The other alternative being that two triads may have fused, losing one band in the process. The number of the five-banded sequences varied from zero to three.

The triads of an individual may all be black-white-black at ASU 5851, or white-black-white (except those fused) as ASU 6458, or change from one to the other as ASU 5850. The number of body triads (counting the aberrant bandings as one) varies from zero to ten. Zweifel and Norris (op. cit.) mention red rings on two specimens; however, only ASU 5850 had red crossing the venter to form rings. In this specimen all bands—black, white, and red (except anteriorly)—cross the venter to form rings. In the remaining specimens in the Arizona State University collection the venter is white with only the black crossing it to form rings. However, on the tail the red extends down to produce a red ventral surface with black and white rings. One specimen (ASU 6612) has an immaculate venter except for a black and white ring at the tip of the tail.

*Sympholis lippiens rectilimbus* Hensley

An adult male (ASU 5849) was taken on the road between Los Trincheros and Alamos (14 mi. W. of Alamos on the Alamos-Navajoa road) between June 27 and July 10, 1964 (10:00 p.m.-1:30 a.m.). Another adult male (ASU 6634) was taken 10 mi. W. of Alamos August 6, 1966, 11:00 p.m.

According to Hensley (1966), this subspecies differs from *S. l. lippiens* principally in shape and position of nuchal band, ventral pattern details, and head scutellation. He describes *S. l. rectilimbus* as having a straight margin on the anterior border of the white nuchal collar, a dark blotch or wide line in each interspace on the venter (at midline), narrower interspaces between the body bands than *S. l. lippiens*, only the third supralabial entering the orbit, and loreals often reduced or absent. Both specimens (ASU 5849, 6634) agree with the last three characteristics but not with the first two. The anterior border of the white nuchal band of ASU 5849 projects caudal forming a V. On ASU 6634 it makes a looplike extension cephalad similar to *S. l. lippiens*, although not as pronounced as Hensley (op. cit., Fig. 2B, p. 51) illustrates.
Figure 1. Variability in dorsal pattern of *Sonora aemula*. Top to bottom ASU 6612, 6611, 6458.
Furthermore, the ventral pattern of both snakes has a closer resemblance to *S. l. lippiens* than *S. l. rectilimbus* (Hensley, *op. cit.*, Fig. 2 G&H, p. 51). The interspaces on ASU 5849 are nearly immaculate, whereas on ASU 6634 some interspaces are diffusely pigmented. More specimens should be examined to evaluate these characters and the validity of this subspecies.

Our thanks go to the following for their contributions: Dr. W. L. Minckley, Dr. M. J. Fouquette, Jr., Milton Lieberman, John Sloan, Stan Williams, Pat Martino, Rene Martinez De Castro, and Luis Carlos Felix.

Some funds supporting this study were received from Arizona State University.

**LITERATURE CITED**


INDEX TO VOLUME XXVI

The new genera and species described in this volume appear in bold face type in this index.

Alexander, Charles P., Article by, 1.
Allred, Dorald M., see Beck, 9, Article by, 34.
Ancyloderes Blackman, 18.
Ancyloderes pilosus (LeConte), 21.
A Systematic Review of the Great Basin Reptiles in the Collections of Brigham Young University and the University of Utah, 87.
Austin, George T. and W. Glen Bradley, Article by, 41.
Aythya marila, 41.
Banta, Benjamin H., see Tanner, 87.
Beck, D Elden, Article by, 76.
Beck, D Elden and Dorald M. Allred, Article by, 9.
Boidae, 115.
Brachyspartus emarginatus (Eggers), n. comb., 22.
Brachyspartus Ferrari, 18.
Bradley, W. Glen, see Austin, 41.
Cenocephalus epistomalis, n. sp., 47.
Cheilotrichia (Empeda) aklavikensis, n. sp., 7.
Clethrionomys gapperi uintaensis Doutt, 73.
Colubridae, 116.
Corthylocurus, n. g., 18.
Corthylus flagellifer Blandford, 22.
Crotalidae, 128.
Cryptalophus exprs Blandford, n. comb., 22.
Cryptalophus knabi Hopkins, 22.
Dendrocranulvs schedli, n. n., 23.
Dendrotrupes costiceps Broun, 23.
Dicranota (Dicranota) bernardinesis, n. sp., 4.
Dryadophis cliftoni Hardy, 136.
Egoscue, Harold J., Article by, 71.
Eublepharidae, 101.
Evans, Howard E., Article by, 35.
Forlida caerulea, 41.
Gallinula chloropus, 41.
Gnathotrupes fimbriatus Schedl, n. comb., 23.
Heringhi, H. L., see Nickerson, 136.
Hylastes flohri (Eggers), n. comb., 24.
Hylocerus hirtellus (LeConte), n. comb., 24.
Hypothenemus (Stephanoderes) rufescens Hopkins, 29.
Iguanidae, 102.
Index, 141.
Ips DeGreer, 19.
Ips latidens LeConte, 24.
Lagurus curtatus intermedius (Taylor), 74.
Limnophila (Idioptera) nearctica, n. sp., 5.
Mammals of the Paunsagunt Plateau Region, Utah, 43.
Mecopelmus seteki Blackman, 45.
Microdipodops magacephalus leucotis Hall and Durrant, 72.
Microtus longicaudus latus Hall, 73.
Microtus pennsylvanicus pullatus Anderson, 74.
Mimips chiriquensis (Blandford), n. comb., 24.
Mniotilta varia, 41.
Monarthrum bisetosum (Schedl), n. comb., 24.
Monarthrum exornatum (Schedl), n. comb., 25.
Monarthrum Kirsch, 19.
Monarthrum laterale (Eichhoff), n. comb., 25.
Monarthrum scutellare (LeConte), 26.
Mustela erminea muricas (Bangs), 74.
Neodryocoetes limbatis (Eggers), n. comb., 27.
Neotarachyostus obliquus, n. sp., 49.
Nests and Prey of Two Species of Philanthus in Jackson Hole, Wyoming (Hymenoptera, Sphecidae), 35.
New and Additional Host-Flea Associations and Distributional Records of Fleas from Utah, 71.

New Records and Species of Neotropical Platypodidae (Coleoptera). Illustrated, 45.

Nickerson, Max A. and H. L. Heringhi, Article by, 136.

Perognatus formosus incolatus Hall, 72.

Perognathus longimembris gulosus Hall, 72.

Perognathus parvus olivaceus Merr., 72.

Peromyscus maniculatus sonoriensis (LeConte), 72.

Philanthus pulcher Dalla Torre, 35.

Philanthus zebratus nitens (Banks), 38.

Phloeosinus punctatus LeConte, 27.

Pityokeites ornatus (Swaine), n. comb., 27.

Pityophthorus schwarztjefgeri (Schedl), n. comb., 28.

Platypus abditulus, n. sp., 50.

Platypus angustatulus, n. sp., 55.

Platypus amnexus, n. sp., 62.

Platypus brevicornis, n. sp., 61.

Platypus chiriquensis, n. sp., 59.

Platypus clunalis, n. sp., 67.

Platypus cluniculus, n. sp., 69.

Platypus clunis, n. sp., 68.

Platypus connexus, n. sp., 65.

Platypus coronatus Schedl, 17.

Platypus equadorensis, Schedl, 17.

Platypus eugustus, n. sp., 64.

Platypus exitialis, n. sp., 51.

Platypus liraticus, n. sp., 58.

Platypus longior, n. sp., 56.

Platypus longuis, n. sp., 57.

Platypus longulus Chapuis, 53.

Platypus occipitis, n. sp., 54.

Platypus otiosus Schedl, 53.

Platypus pini Hopkinds, 17.

Platypus prænexus, n. sp., 64.

Platypus schedli, n. sp., 51.

Platypus senexus, n. sp., 66.

Platypus simpliciformis, n. sp., 57.

Platypus vegetus, n. sp., 63.

Poecilips advena Blandford, 28.

Polygraphus rufipennis (Kirby), 28.

Pseudephanytides t res mariae (Schedl), n. comb., 29.

Pteleobius Bedel, 20.

Pteleobius mundulius (Broun), 29.

References on Nevada Test Site Ecological Research, 79.

Reithrodontomys megalotis megalotis (Baird), 72.

Rhabdomastix (Sacandaga) hynesi, n. sp., 6.

Schultz, Vincent, Article by, 79.

Scincidae, 113.

Scolytus tsugae (Swaine), 30.

Scolytus unispinosus LeConte, 30.

Setopaha picta, 41.

Sonora aemula Cope, 136.

Sorex palustris navigator (Baird), 71.

Sorex vagrans obscure Merriam, 71.

Spiza americana, 42.

Stephenson, Stephen N., Note by, 43.

Sympholis lippiens rectilimbus Hensley, 138.

Tanner, Wilmer W., and Benjamin H. Banta, Article by, 87.

Teiidae, 112.

Three Noteworthy Colubrids from Southern Sonora, Mexico. Illustrated, 136.

Tingidae, Neididae (Berytidae) and Pentatomidae of the Nevada Test Site, 9.

Tipula (Lumatipula) mecrotrichia, n. sp., 2.

Tipula (Pterelachisus) horningi, n. sp., 1.

Triculus nodifer Blandford, 30.

Trypodendron Stephens, 20.

Undescribed Species of Nearctic Tipulidae (Diptera) VII. 1.

Unusual Records of Utah Mites, 34.

Wood, Stephen L., Articles by, 17, 45.

Xantusidæ, 11.

Xyleborus capucinus Eichhoff, 31.

Xyleborus coartatus Sampson, 31.

Xyleborus intersetosus Blandford, 31.

Xyleborus obliquus Sharp, 32.

Xyleborus spinulosus Blandford, 32.

Xyleborus vulcanus Perkins, 32.

Xylosandrus zimmermanni (Hopkins), n. comb., 33.

Zapus princeps utahensis Hall, 74.
The Great Basin Naturalist
Founded in 1939 by Vasco M. Tanner

A journal published from one to four times a year by Brigham Young University, Provo, Utah.

Manuscripts: Only original unpublished manuscripts, pertaining to the Great Basin and the western United States in the main, will be accepted. Manuscripts are subject to the approval of the editor.

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Subscription: The annual subscription is $2.50 (outside the United States $3.25). Single number, 80 cents.

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Reprints Schedule of The Great Basin Naturalist

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<tbody>
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# TABLE OF CONTENTS

New Records and Species of Neotropical Platypodidae (Coleoptera). Illustrated. Stephen L. Wood ................................. 45

New and Additional Host-Flea Associations and Distributional Records of Fleas from Utah. Harold J. Egoscue ............. 71

Siphonaptera (Fleas) of Mesa Verde National Park, Montezuma, Colorado. D Elden Beck .............................................. 76

References on Nevada Test Site Ecological Research. Vincent Schultz .................................................................................. 79

A Systematic Review of the Great Basin Reptiles in the Collections of Brigham Young University and the University of Utah. Illustrated. Wilmer W. Tanner and Benjamin H. Banta .................................................................................. 87

Three Noteworthy Colubrids from Southern Sonora, Mexico. Illustrated. Max A. Nickerson and H. L. Heringhi .......... 136

Index .............................................................................................................................................................................. 141