

**A TAXONOMIC REVISION OF THE GENUS GERSTAECKERIA,
NORTH OF MEXICO. (COL., CURC.)**

by

Charles W. O'Brien

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**A Thesis Submitted to the Faculty of the
DEPARTMENT OF ENTOMOLOGY
In Partial Fulfillment of the Requirements
For the Degree of
MASTER OF SCIENCE
In the Graduate College
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A TAXONOMIC REVISION OF THE GENUS DIPTEROMORPHA
MORPHOLOGY OF MEXICO (COLEOPTERA)

Charles W. D'Brin

Univ. of Arizona Library

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INTRODUCTION

The genus Gerstaeckeria contains 35 described species, all confined to the Western Hemisphere. Specimens are known from Canada, the United States, Mexico, Guatemala, the West Indies and the Galapagos Islands. This paper will deal with the 17 species found north of Mexico. Distribution records of the various species will be based on specimens seen by the author, unless otherwise stated, to avoid erroneous records due to incorrect determinations. Four of the 17 North American species were not available for study and so have not been treated in the key. These species have been placed in the incertae sedis with diagnoses based upon original descriptions and diagnoses. The range in length included at the end of each diagnosis is based on specimens on hand. The measurement is taken dorsally from the anterior margin of the prothorax to the apex of the elytra.

As far as is known, all of the species of Gerstaeckeria are cactus-feeders. Very little else is known of the biology of the group. The adults are apparently all nocturnal. Specimens of G. turbida (Lec.), G. porosa (Lec.) and G. unicolor Fisher have all been taken on Opuntia at night in large numbers. Specimens of G. turbida observed in cages were active only during the night, remaining inactive during the day. Only nine specimens of G. turbida have been taken in the field during the day on Opuntia by the author. Further evidence of a

nocturnal habit for all species might be the rather small number of specimens that has reached museum collections. Further notes can be found in the biology section for each species. The author's records will be indicated by an asterisk.

The male genitalia of the 13 species available for study have been examined. Specimens were relaxed by boiling in distilled water for five to ten minutes, and the genitalia were removed with a pair of fine-tipped forceps. Differences in the genitalia have proven to be of a great value in distinguishing some of the species. However, several of the species have very similar genitalia and these species cannot be readily separated on the basis of the genitalia alone.

Drawings of the male genitalia of 13 North American species are included in Plates I and II.

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TAXONOMIC SECTION

Genus Gerstaeckeria Champion

1905. Gerstaeckeria Champion, Biologia Centrali-Americana, Coleoptera, IV, Part 4, pg. 470.

1860. Genotype: Acalles bifasciatus Gerstaecker, Stettiner Ent. Zeit., XXI, pg. 393. Designated by Champion, loc cit.

The genus Gerstaeckeria belongs to the coleopterous family Curculionidae, subfamily Curculioninae, tribe Cryptorhynchini, subtribe Tylodina.

This genus has elbowed antennae, and the snout is received in a groove in the thoracic sternum. The eyes are more or less covered by ocular lobes when the snout rests in the sternal groove; and the pygidium is covered.

The genus Gerstaeckeria can be separated from its close relatives by the following characters. The scutellum is not visible; the ventral abdominal segments two through four are subequal, the sutures are straight and deep; and the femora are unarmed. The genus is further characterized by having a rather robust form, the elytra being distinctly inflated in most species. G. knullorum Sleeper and G. turbida (Lec.) usually have the sides of the elytra subparallel. Distinct humeri are lacking. There are post-humeral vittae present in all species except G. tessellata Pierce. These vittae are composed of pale scales usually

surrounded by dark scales. The vittae may be indistinct on G. unicolor Fisher. The elytra are clothed with more or less flattened scales. In G. unicolor these scales are usually curved. There is a more or less distinct fascia, composed of pale scales, on a dark scaled background. The fascia is found on the anterior margin of the apical third of the elytra except in G. tessellata, and occasionally this post-median fascia becomes indistinct in G. unicolor. The primary scale color is usually dark, but this is often flecked with light colored scales. This is especially true in G. unicolor. The elytral striae are distinctly punctured, and a single scale is found in each puncture.

The prothorax has deep, dense punctures except in G. hubbardi (Lec.) and G. dilatata Casey, both of which are coarsely sculptured. In G. doddi Fisher, and G. nobilis (Lec.) these punctures are very coarse and the rims are greatly elevated.

The head is densely clothed with recumbent scales and a frontal fovea is present. The beak may be carinate, partially clothed with scales and punctate.

KEY TO THE SPECIES OF GERSTAECKERIA NORTH OF MEXICO

1. Elytra with a distinct post-humeral prominence; scales sparse; prothorax coarsely sculptured
hubbardi Leconte
- Elytra without a post-humeral prominence; scales dense . . . 2

2(1). Elytra tessellate, never fasciate; scales dense 3

tessellata Pierce

- Elytra always fasciate, also sometimes tessellate; scales variable 3

3(2). Elytral suture and intervals 2, 4 and 6 elevated, three to four times as wide as other intervals

alternata Pierce

- Intervals subequal in height and width 4

4(3). Second and third tarsal segments equal in width 5

- Third tarsal segment distinctly wider than second, usually not less than one-third wider 6

5(4). Elytral suture with sparse recumbent scales; large (8mm.) with elytra inflated, very robust; prothorax strongly carinate bifasciata Gerstaecker

- Elytral suture with dense suberect scales; small (5-6mm.) with sides of elytra subparallel; elongate oval; prothorax with weak carina knullorum Sleeper

6(4). Tarsal claws approximate; prothorax carinate, with coarse punctures, many of which have rims as high as the carina . . . 7

- Tarsal claws widely divergent; prothorax when carinate with
rims of punctures not elevated as high as carina 8

7(6). Scales at base of second, third and fourth intervals erect;
groups of erect scales just anterior to the post-median
fascia; transverse and sutural portion of the post-median
fascia white nobilis Leconte

- Scales on elytra recumbent or subrecumbent; post-median fascia
a transverse white band; entire length of suture light brown.
. doddi Fisher

8(6). Prothorax and elytra nearly equal in width; prothoracic
punctures deep, very coarse with many of them confluent. . .
. opuntiae Pierce

- Elytra distinctly wider than prothorax; prothoracic
punctures deep, but not confluent 9

9(8). Elytral punctures shallow; elytra strongly convex; distinct
prothoracic carina present; usually small, 5mm. or less
. clathrata Leconte

- Elytral punctures deep; elytra less convex; carina present or
absent; usually larger, more than 5mm. 10

10(9). Elytral scales erect, curved, separate or with a few of them contiguous; humeral vittae and post-median fascia indistinct; carina absent unicolor Fisher

- Elytral scales recumbent or erect, more or less flattened, usually contiguous; humeral vittae and post-median fascia distinct; carina present or absent 11

11(10). Elytral scales recumbent; strial punctures quadrate; striae twice the width of intervals; apical one-fourth to one-third of prothorax with light-colored scales, basal one-third variable, median area usually black

porosa Leconte

- Elytral scales erect or suberect; strial punctures round or subquadrate; striae less than twice the width of intervals; prothorax usually not as above 12

12(11). Prothorax at least one-third wider than long; elytra usually less than 2.5 times as long as prothorax

basalis Leconte

- Prothorax less than one-third wider than long; elytra usually more than 2.5 times as long as prothorax

turbida Leconte

Gerstaeckeria hubbardi (Leconte), 1880

1880. Acalles Hubbardi Leconte, Trans. American Ent. Soc. VIII, p. 216.

1912. Gerstaeckeria hubbardi (Leconte), Pierce, Proc. U.S. Nat. Mus. XLII, p. 161.

Type Locality - Crescent City, Florida.

This species is very closely related to dilatata Casey, but has round, isolated punctures on the elytra. Both species have very distinct post-humeral vittae and a very distinct post-median fascia. For the 18 specimens on hand the range in length is 7.5 to 9.5mm.

DISTRIBUTION

ALABAMA : Selma.

FLORIDA : Crescent City; Enterprise, V-13; 1 Mi. E. Lake City, VIII-5; Palm Boh.

GEORGIA : Brunswick.

BIOLOGY

FLORIDA : Crescent City, found under Opuntia leaves (Leconte, 1880); 1 Mi. E. Lake City, various weeds.

GEORGIA : Brunswick, Opuntia.

Gerstaeckeria tessellata Pierce, 1912

1912. Gerstaeckeria tessellata Pierce, Proc. U.S. Nat. Mus. XLII, p. 162.

Type Locality - Cheyenne, Wyoming.

This species is closely allied to bifasciata (Gerstaecker) and to alternata Pierce. It differs from bifasciata in having larger,

coarser, elytral punctures and in having legs which are less stout. It differs from alternata in having a more slender, elongate, antennal club and a less inflated elytra. For the eight specimens on hand the range in length is 8.5 to 9.6mm.

DISTRIBUTION

COLORADO: Crescent City, VIII-12.

BIOLOGY

The author has found no record of the habits of this species.

Gerstaeckeria alternata Pierce, 1912

1912. Gerstaeckeria alternata Pierce, Proc. U.S. Nat. Mus. XLII, p. 163.

Type Locality - Fort Grant, Arizona.

This species is closely related to bifasciata (Gerstaecker), but differs from it by having more distinctly inflated prothorax and elytra and by having all scales subrecumbent, bifasciata having intermixed patches of erect and subrecumbent scales. The one specimen on hand is 8.4mm. in length.

DISTRIBUTION

ARIZONA : Fort Grant, VIII-15.

BIOLOGY

The author has found no record of the habits of this species.

Gerstaeckeria bifasciata (Gerstaecker), 18601860. Acalles bifasciata Gerstaecker, Stettiner Ent. Zeit. XII, p. 393.1905. Gerstaeckeria bifasciata (Gerstaecker) Champion, Biologia Centrali-Americana, Coleoptera, IV, Pt. 4, p. 470.1912. Gerstaeckeria bifasciata (Gerstaecker) Pierce, Proc. U.S. Nat. Mus. XLII, p. 162.

Type Locality - Mexico.

This species is closely allied to both alternata Pierce and tessellata Pierce, but it differs from alternata in having less inflated elytra and from tessellata in having a distinct post-median fascia and intervals which are more greatly elevated. For the 13 specimens on hand the range in length is 8.2 to 9.6mm.

DISTRIBUTION

ARIZONA : Santa Rita Range Reserve, VI-18, VII-20.

TEXAS : Alpine (sic), VI-24; Laredo, VI-2; San Antonio, XI-1.

BIOLOGY

TEXAS : Laredo, alive in Coryphanta from Cadereyta, Qro. Mex.; San Antonio, in Echinocactus setispinus Engelm.MEXICO : alive eating Coryphanta andreae Bod.Gerstaeckeria knullorum Sleeper, 19541954. Gerstaeckeria knullorum Sleeper, Ohio Jour. Sci. LIV, No. 3, p. 184.

Type Locality - Huachuca Mts., Arizona.

This species can be distinguished from bifasciata

(Gerstaecker), alternata Pierce and tessellata Pierce by its smaller size and elongate, narrow appearance. It can be readily separated from porosa (Leconte) and turbida (Leconte) by its second and third tarsal segments being equal in width. For the 24 specimens on hand the range in length is 3.8 to 7.2mm. Most of these specimens lie between 4.8 to 5.9mm.

DISTRIBUTION

ARIZONA : Ft. Grant, VII-16; Huachuca Mts., VI, VII-20, VIII-12; Miller Cn., Huachuca Mts., VII-4; Nogales, VIII-10; Orcutt, V-3; Palmerlee, VI-30, VII-10, VII-14, VII-27.

TEXAS : Mt. Locke, Ft. Davis, VI-19.

BIOLOGY

ARIZONA : Miller Cn. Huachuca Mts., taken in large numbers on the light colored walls of a cabin (Sleeper, 1954); Orcutt, bred from Neomammillaria Wilcoxii Britt and Rose (= Mammillaria Wilcoxii Toumey).

TEXAS : Mt. Locke, Ft. Davis, taken under dead Agave.

Gerstaeckeria nobilis (Leconte), 1876

1876. Acalles nobilis Leconte, Proc. American Philos. Soc. XV, p. 241.

1912. Gerstaeckeria nobilis (Leconte) Pierce, U.S. Nat. Mus. XLII, p. 164.

Type Locality - Texas.

This species resembles bifasciata (Gerstaecker), but has the third tarsal segment distinctly wider than the second, bifasciata

having the second and third tarsal segments equal in width. G. nobilis has approximate claws; bifasciata has widely divergent claws. G. nobilis differs from porosa (Leconte) and turbida (Leconte) in having more inflated elytra and a very large, cruciform or T-shaped fascia which is entirely white. For the 58 specimens on hand the range in length is 5.7 to 9.5mm. Approximately 80% of these specimens lie between 7.4 to 7.8mm.

DISTRIBUTION

KANSAS : Clark Co.

TEXAS : Beeville IV-30; Brownsville; College Station, III-6; Corpus Christi, II-20, III-18, III-25, V-15; Encinal, IV-10; Floresville, X-25; Hondo, IV-20; Live Oak Co., IV-30; Oakwood, VI-19; N. Braunfels, XI-17; San Antonio, XI-20, XI-22; San Diego, II-5, IV-26, IV-27, IV-30; Sinton, XI-10; Uvalde, VI-18; Victoria, IV-7, IV-17.

BIOLOGY

TEXAS : Beeville, eating fruit of Opuntia; Brownsville, bred Opuntia engelmanni Salm-Dyck; Corpus Christi, bred Opuntia engelmanni Salm-Dyck joint, on Opuntia sp.; Encinal, under Opuntia; Floresville, Opuntia sp.; Hondo, on Opuntia; Live Oak Co., on Opuntia sp.; Victoria, Opuntia; breeds in the margins of the joints of Opuntia engelmanni Salm-Dyck causing masses of black gum to form on the outside of the joint (Hunter, Pratt and Mitchell, 1912).

Gerstaeckeria doddi Fisher, 1925

1925. Gerstaeckeria doddi Fisher, Jour. Washington Acad. Sci. XV,
p. 425.

Type Locality - Uvalde, Texas.

This species resembles opuntiae Pierce, but has approximate claws and a distinct carina. It differs from porosa (Leconte) and turbida (Leconte) in having the prothorax nearly as wide as the elytra. For the nine specimens on hand the range in length is 6.8 to 8.4mm.

DISTRIBUTION

TEXAS : San Diego, VII-5; Uvalde, I-30, VII, VIII, XII-II: Uvalde
Co., V-3.

BIOLOGY

The author has found no record of the habits of this species.

Gerstaeckeria opuntiae Pierce, 1912
1912. Gerstaeckeria opuntiae Pierce, Proc. U.S. Nat. Mus. XLII, p. 165.

Type Locality - Encinal, Texas.

This species is closely allied to clathrata (Leconte), but can be distinguished by its broader prothorax, less convex elytra, and its lack of a prothoracic carina. For the 30 specimens on hand the range in length is 4.9 to 6.8mm. Most of these specimens lie between 5.9 to 6.3mm.

DISTRIBUTION

TEXAS : Alpine (sic), VI-10; Cotulla, IV-16, IV-17; Encinal, IV-10, IV-12; Hondo, XI-7; Lower Rio Grande; San Diego, IV-27, V-6; Uvalde, VI-15.

BIOLOGY

TEXAS : Cotulla, on Opuntia; Encinal, on Opuntia lindheimeri Engelm., under Opuntia; Hondo, under Opuntia; Uvalde, Opuntia leptocaulis D.C.

Gerstaeckeria clathrata (Leconte), 1876

1876. Acalles clathratus Leconte, Proc. American Philos. Soc., XV, p. 242.

1912. Gerstaeckeria clathrata (Leconte) Pierce, Proc. U.S. Nat. Mus., XLII, p. 165.

Type Locality - Colorado.

This species is allied to porosa (Leconte) and turbida (Leconte), but can be separated from porosa by its more or less separate, erect scales and its distinct carina, and from turbida by its more distinct striae. For the 101 specimens on hand the range in length is 3.5 to 5.3mm. Approximately 75% of these specimens lie between 4.1 and 4.6mm.

DISTRIBUTION

TEXAS : Brownsville, VI-5; Bruni, VI-27; Cotulla, III-2; Floresville; Hidalgo; Laredo, III-26, V-28; 5 Mi. N. Rio Grande City, VI-2; San Diego, IV-27, V-2, V-6, V-7, V-31; Uvalde, V-23; VI-15, VI-18.

BIOLOGY

TEXAS : Bruni, Opuntia leptocaulis D.C.; Floresville, on Opuntia sp.;
Laredo, bred Opuntia leptocaulis D.C., on Opuntia leptocaulis
D.C.; 5 Mi. N. Rio Grande City, bush-cactus.

Gerstaeckeria unicolor Fisher, 1928

1928. Gerstaeckeria unicolor Fisher, Proc. Ent. Soc. Washington, XXX,
No. 1, p. 5.

Type Locality - San Luis Potosi, Mexico.

This species is closely allied to porosa (Leconte), and often has a prothoracic color pattern which is similar (as outlined in the key), but it can easily be recognized by its erect scales. It has a variable color from light brown and white to black and grey. For the 99 specimens on hand the range in length is 5.2 to 7.4mm. Approximately 80% of these specimens lie between 6 to 6.9 mm.

DISTRIBUTION

ARIZONA : Carrizo, VI-20; Cochise Stronghold, VII-29, VIII-15; Coronado National Monument, VII-11.

TEXAS : Artesia, IX-10; Chisos Basin, VI-16, VI-17; Cotulla, IV-15; Floresville, X-25; Live Oak Co., IV-30; 5 Mi. N. Rio Grande City, VI-2; San Antonio, IV, V-16; San Diego, IV-24; Uvalde, VI-18; Victoria, IV-17.

BIOLOGY

- ARIZONA : Carrizo, on cholla *; Cochise Stronghold, feeding on
Opuntia spinosior (Engelm. and Bigel.) Toumey *;
 Coronado National Monument, on cholla.
- TEXAS : Cotulla, on Opuntia; Floresville, Opuntia sp.; Live Oak
 Co., on Opuntia; San Antonio, bred from Opuntia;
 Victoria, Opuntia.

Gerstaeckeria porosa (Leconte), 1876

1876. Acalles porosus Leconte, Proc. American Philos. Soc., XV, p. 242.

1905. Gerstaeckeria porosa (Leconte) Champion, Biologia Centrali-
 Americana, Coleoptera, Pt. 4, p. 470.

1912. Gerstaeckeria porosa (Leconte) Pierce, Proc. U.S. Nat. Mus.,
 XLII, p. 165.

Type Locality - Colorado.

This species is closely related to turbida (Leconte) and basalis (Leconte), but has wider striae and recumbent scales. It is variable in color ranging from light brown to grey. For the 118 specimens on hand the range in length is 5.4 to 8.5mm. Approximately 80% of these specimens lie between 5.8 to 7.1mm.

DISTRIBUTION

- ARIZONA : Cochise Stronghold, VII-29, VIII-15; 2 Mi. E. Dos Cabezas,
 VII-4; Ft. Grant, VII-13.
- COLORADO : Colorado Springs, IV-4, VI-15, VI-22; Denver, VI; Greeley.
- KANSAS : Topeka; Wallace Co., VI.
- NEW MEXICO: Clovis, VIII; Las Vegas; Mesilla Park, IV, VI-4; Santa Fe.

TEXAS : Hale Center, VI.

WYOMING : Medicine Bow, VI-23.

BIOLOGY

ARIZONA : Cochise Stronghold, feeding on Opuntia engelmanni Salm-Dyck *, feeding on Opuntia macrocentra Engelm. *, feeding on Opuntia phaeacantha Engelm. *; 2 Mi. E. Dos Cabezas, on prickly pear *.

COLORADO : Colo., from Opuntia tortispina Engelm. and Bigel. (= Opuntia phaeacantha Engelm.).

NEW MEXICO: Mesilla Park, cactus.

Gerstaeckeria basalis (Leconte), 1876

1876. Acalles basalis Leconte, Proc. American Philos. Soc., IV, p. 241.

1912. Gerstaeckeria basalis (Leconte) Pierce, Proc. U.S. Nat. Mus., XLII, p. 165.

Type Locality - Colorado.

This species is closely allied to turbida (Leconte), but has more inflated elytra and a broader prothorax. It is often darker in color with larger post-humeral vittae that frequently expand to form a basal fascia. The prothoracic carina if present is not usually distinct. For the 73 specimens on hand the range in length is 4.7 to 7.3mm. Most of these specimens lie between 5.9 to 6.2mm.

DISTRIBUTION

ARIZONA : Baboquivari Mts.; Cochise Stronghold, VIII-15.

COLORADO: Canon City, V-15, XI-24; Colorado Springs, IV-4; Denver,
VII-10, VII-14, X-23; Greeley, XI-6.

KANSAS : Hamilton Co.; Topeka.

MONTANA : Powderville.

TEXAS : Amarillo, VIII.

UTAH : Kamas, VI-4.

CANADA : Lethbridge, Alta., VI-29; Medicine Hat, Alta., IV-28, V-4,
V-6, V-9, V-24, VI-22, VIII-22, IX-21.

BIOLOGY

ARIZONA : Cochise Stronghold, feeding on Opuntia spinosior (Engelm.
and Bigel.) Toumey *.

CANADA : Lethbridge, Alta., on cactus.

Gerstaeckeria turbida (Leconte), 1876

1876. Acalles turbidus Leconte, Trans. American Ent. Soc. VIII,
p. 242.

1912. Gerstaeckeria turbida (Leconte) Pierce, Proc. U.S. Nat. Mus.
XLII, p. 167.

Type Locality - Arizona.

This species is extremely variable in form, color and size. Most often it is elongate, with the sides of the elytra subparallel, but specimens are on hand with distinctly inflated elytra. The post-humeral vittae are normally distinct. Rarely these diminish and become very indistinct. The post-median fascia ranges from an indistinct series of spots to a broad band which may cover the apical one-fourth of the elytra. Normally this fascia is a distinct white

or brown, narrow band. The prothoracic carina may be distinct, indistinct or absent entirely. For the 510 specimens on hand the range in length is 4.3 to 8.6mm. Approximately 80% of these specimens lie between 6.6 to 8mm.

DISTRIBUTION

ARIZONA : Aravaipa Creek, XII-14; Baboquivari Mts., VI-9; Box Cn., Sta. Rita R.R., VI-8; Browns Cn., Baboquivari Mts., VI-29, VIII-21; Carrizo, VI-20; Catalina Springs, VI-24; Chiricahua Mts., VII-5; Chiricahua Mts., 6000', VII-30; Cochise Stronghold, VII-29, VIII-15, XII-8; Continental, I-12, II-2; Cordes, V-25; 2 Mi. E. Dos Cabezas, VII-4; Ft. Grant, VII-20; Gardener Cn., Sta. Rita Mts., IV-26; Globe, VI-19, VI-24, VIII-18, XI-2; Molino Basin, Sta. Catalina Mts., I-21, X-17, X-20, XI-2; Noon Creek, Graham Mts., VII-21; Phoenix; Pinal Mts., VIII; 15 Mi. N. Rock Springs, VII-18; Rucker Cn., Chiricahua Mts., VII-15; Sabino Cn., Sta. Catalina Mts., I-5, I-24, II-3, XI-7; Saguaro Nat. Mon., II-21; Sta. Rita Mts., V-26; Sta. Rita R.R., VI-7, VI-8, VI-20, VII-8; 12 Mi. S. Sedona, VII-18; S.W. Res. Stat., Portal, VI-20; Texas Cn., VII-27; Tucson, XII-19; 3 Mi. W. Tucson, VIII-13; 8 Mi. W. Tucson, VIII-13; 17 Mi. N. Tucson, IV-5, V-12, XI-2, XI-9, XI-10.

CALIFORNIA: Redlands, XII-21.

NEW MEXICO: 15 Mi. E. Hope, VII-25; San Marcial, VI-22.

TEXAS : Chisos Basin, VI-16; Chisos Mts., VI-16; Davis Mts., V-13, VI-23; D'Hanis, V-12; Sabinal, V-6; Uvalde, VI-18.

BIOLOGY

ARIZONA : Aravaipa Creek, under prickly pear *; Box Cn., Sta. Rita R.R., under prickly pear *; Browns Cn., Baboquivari Mts., on and under prickly pear *; Carrizo, on prickly pear *; Chiricahua Mts. 6000', feeding on Opuntia compressa var. macrorhyza (Engelm.) Benson *; Cochise Stronghold, feeding on Opuntia engelmanni Salm-Dyck *, feeding on Opuntia macrocentra Engelm. *, feeding on Opuntia spinosior (Engelm. and Bigel.) Toumey *, under prickly pear *; Continental, under prickly pear *; Cordes, prickly pear *; 2 Mi. E. Dos Cabezas, on prickly pear *; Gardener Cn., Sta. Rita Mts., under Prickly pear *; Globe, on cholla *, on Opuntia *; Molino Basin, Sta. Catalina Mts., on and under prickly pear *, under rock near prickly pear *; Noon Creek, Graham Mts., feeding on Opuntia spinosior (Engelm. and Bigel.) Toumey *, on prickly pear *; 15 Mi. N. Rock Springs, under prickly pear *; Rucker Cn., Chiricahua Mts., on prickly pear *; Sabino Cn., Sta. Catalina Mts., on and under prickly pear *; Saguaro Nat. Mon., reared from Carnegiea gigantea (Engelm.) Britt. and Rose seedling *; Sta. Rita R. R., feeding on Opuntia engelmanni Salm-Dyck *, on or under prickly pear *, on cholla *; 12 Mi. N. Sedona, under prickly pear *; S.W. Res. Stat., Portal, Opuntia *; Texas Cn., under prickly pear *; 3 Mi. W. Tucson, on prickly

pear *; 8 Mi. W. Tucson, on Opuntia *; 17 Mi. N. Tucson,
on and under prickly pear *.

Forty specimens of turbida, collected 17 Mi. N. of Tucson, under prickly pear, were placed in cages containing prickly pear joints and observed for several days. Individuals were observed in several instances feeding on the glochids. The joints were excavated on the margin except in one case. This joint had several wounds and three specimens fed on the material in the wound. One weevil was observed feeding on a spine which had broken loose. The front legs were used to hold and manipulate the spine while the weevil fed. Numerous specimens were seen feeding on the true leaves of the new growth.

Feeding took place in the following manner. The weevils began with the beak perpendicular to the body and gradually drew it in toward the sternal groove, leaning forward as they did this. Repetition of this feeding activity leads to the formation of holes; usually one-eighth inch in diameter and approximately one-eighth inch deep.

1892. Amalid profunda Casey, Ann. New York Acad. Sci. VI, p. 446.

1912. Garricosternus profundus (Casey) Pierce, Proc. U.S. Nat. Mus. XLII, p. 162.

Type Locality - Tama.

According to Casey, this species is closely allied to pubilis (Leconte), but differs in having less inflated elytra and in having dense, white scales on the base of the beak. He also states that it differs from purpureus (Leconte) and localis (Leconte) in its larger size and strongly carinate prothorax.

INCERTAE SEDIS

Gerstaeckeria dilatata (Casey), 1895

1895. Acalles dilatatus Casey, Ann. New York Acad. Sci, VIII, p. 838.

1912. Gerstaeckeria dilatata (Casey) Pierce, Proc. U.S. Nat. Mus. XLII,
p. 161.

Type Locality - Florida.

Casey states that this species is very closely allied to hubbardi (Leconte) and that it can be distinguished by its more elongate, elytral punctures which coalesce. Also, he states that the frontal fovea is deeper and less elongate and that the post-humeral prominence is more greatly enlarged. It is the opinion of Pierce, loc. cit., that dilatata is a sculptural variant of hubbardi.

Gerstaeckeria profusa (Casey), 1892

1892. Acalles profusus Casey, Ann. New York Acad. Sci. VI, p. 446.

1912. Gerstaeckeria profusa (Casey) Pierce, Proc. U.S. Nat. Mus. XLII,
p. 162.

Type Locality - Texas.

According to Casey, this species is closely allied to nobilis (Leconte), but differs in having less inflated elytra and in having dense, white scales on the base of the beak. He also states that it differs from porosa (Leconte) and basalis (Leconte) in its larger size and strongly carinate prothorax.

Gerstaeckeria cactophaga Pierce, 1912

1912. Gerstaeckeria cactophaga Pierce, Proc. U.S. Nat. Mus. XLII, p. 166.

Type Locality - Point Isabel, Texas.

According to Pierce this species is closely allied to opuntiae Pierce, but has narrower elytral interspaces and the claws moderately divergent. In his key he indicates that it can be separated from porosa (Leconte) and turbida (Leconte) by its thorax being nearly as wide as the elytra.

Gerstaeckeria fasciata Pierce, 1912

1912. Gerstaeckeria fasciata Pierce, Proc. U.S. Nat. Mus. XLII, p. 166.

Type Locality - Buck Key, Florida.

It is the author's opinion that Pierce's key and descriptions of this species and opuntiae Pierce indicate that they are closely allied. However, he says that fasciata has approximate claws, while opuntiae has widely divergent claws.

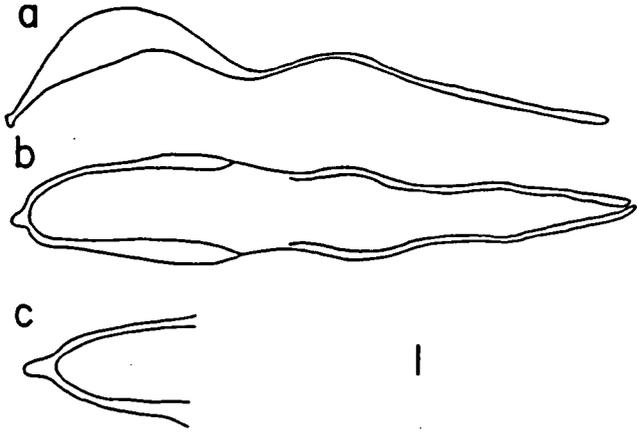
PLATE I

For all of the genital illustrations of the dorsal view, the genitalia were placed on a flat surface with the apex of the phallus and the base of the phallic apodemes touching this surface. The apex of the phallus was drawn with the genitalia tilted so that a horizontal plane passed through the apical third of the genitalia.

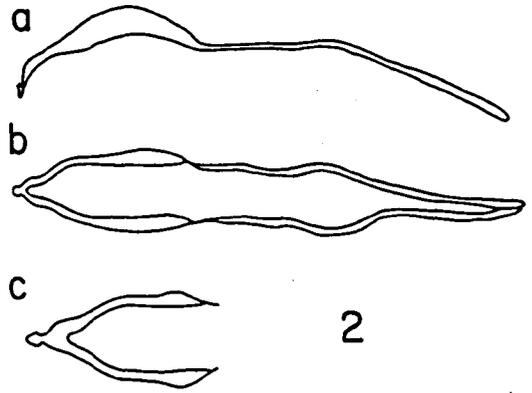
In all of the illustrations a is lateral, b is dorsal and c is a dorsal view of the apex.

1. Gerstaeckeria hubbardi (Leconte) - Enterprise, Florida
2. Gerstaeckeria opuntiae Pierce - Encinal, Texas
3. Gerstaeckeria porosa (Leconte) - Cochise Stronghold, Arizona
4. Gerstaeckeria turbida (Leconte) - 17 Mi. N. Tucson, Arizona
5. Gerstaeckeria unicolor Fisher - Cochise Stronghold, Arizona
6. Gerstaeckeria clathrata (Leconte) - Hidalgo, Texas
7. Gerstaeckeria basalis (Leconte) - Denver, Colorado
8. Gerstaeckeria knullorum Sleeper - Huachuca Mts., Arizona

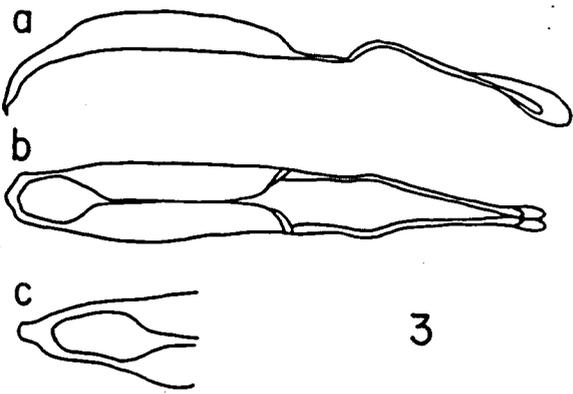
PLATE I



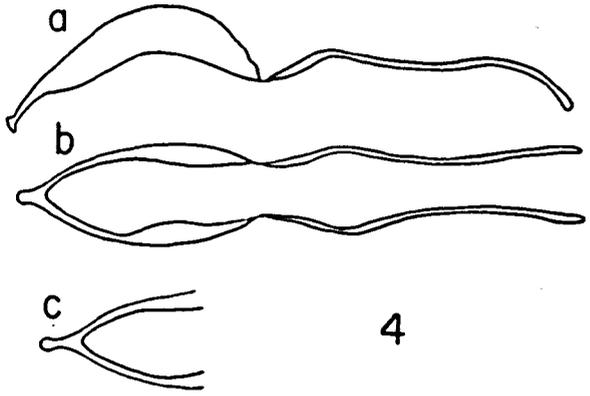
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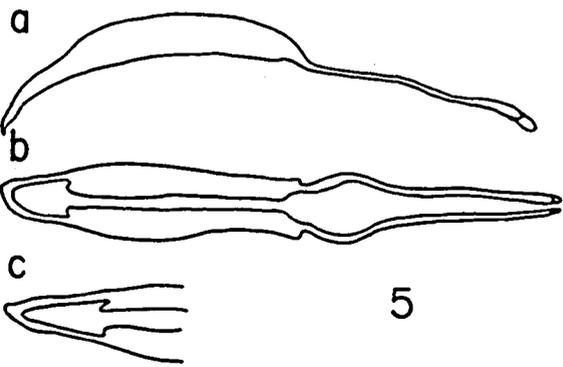
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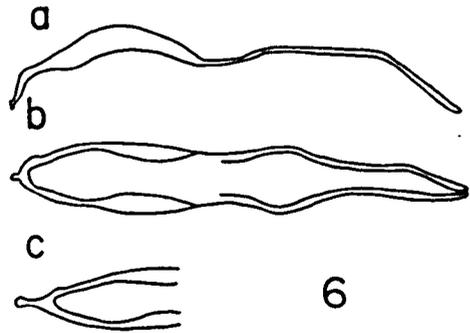
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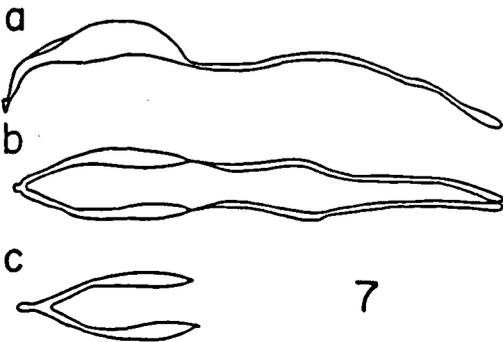
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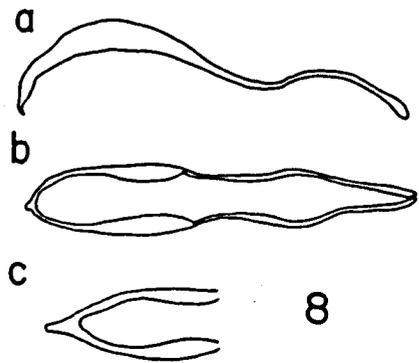
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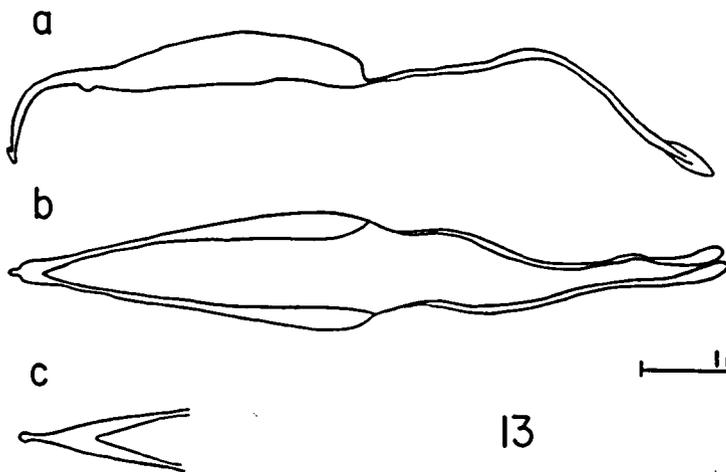
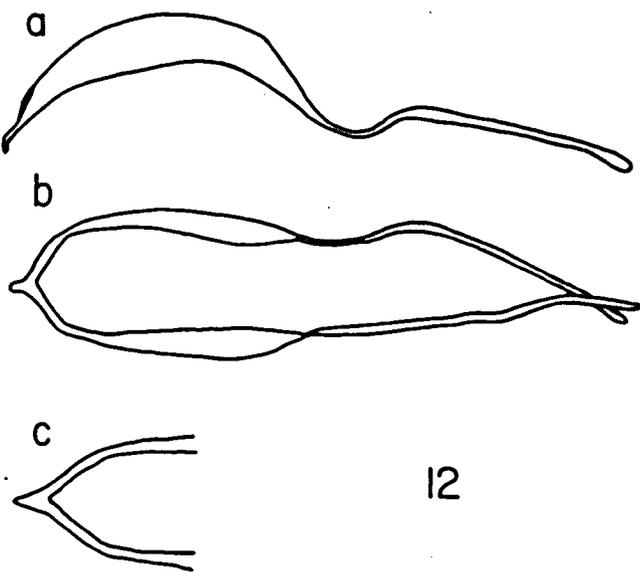
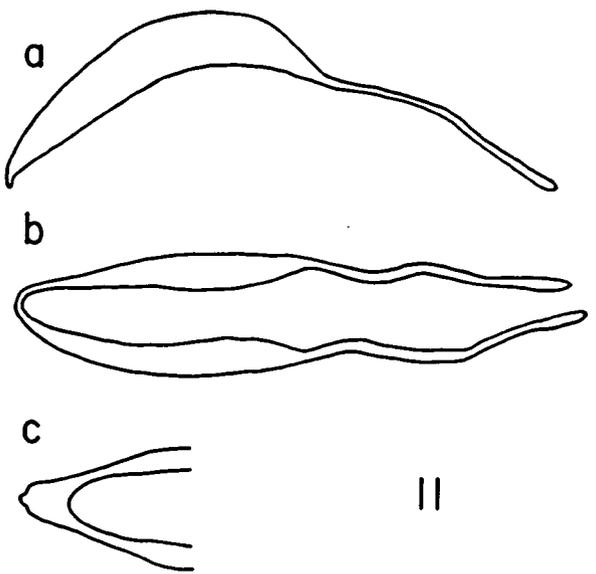
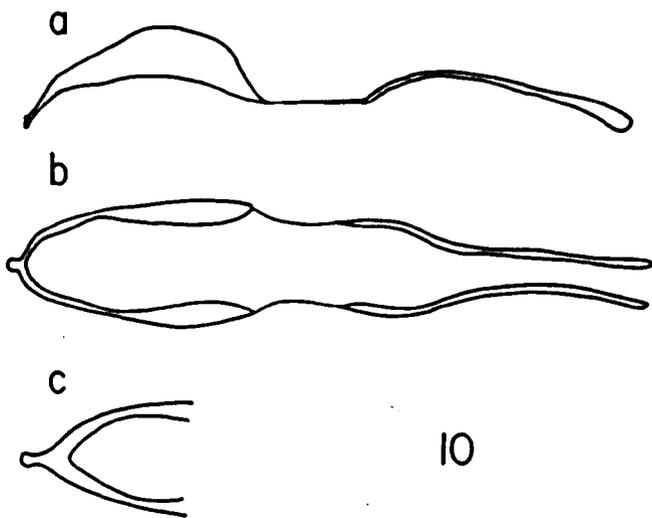
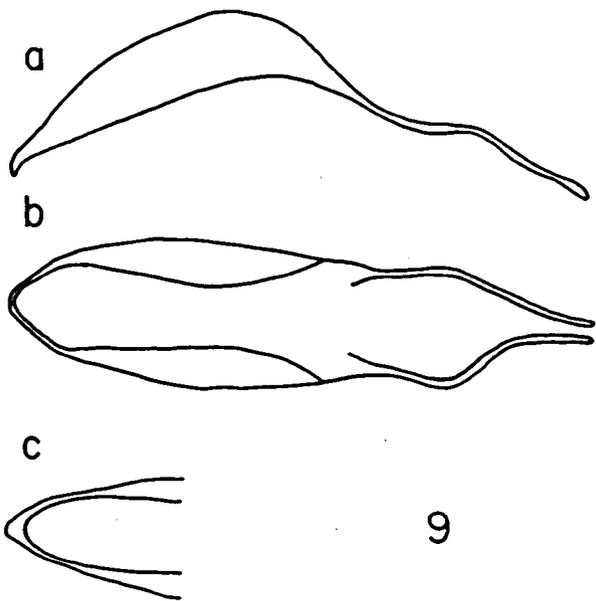
8

1mm

PLATE II

9. Gerstaeckeria bifasciata (Gerstaecker) - Cadereyta Qro., Mexico
10. Gerstaeckeria nobilis (Leconte) - Oakwood, Texas
11. Gerstaeckeria tessellata Pierce - Crescent City, Colorado
12. Gerstaeckeria alternata Pierce - Ft. Grant, Arizona
13. Gerstaeckeria doddi Fisher - Uvalde, Texas

PLATE II



1 mm

LITERATURE CITED

- Casey, T. L., 1892, Coleopterological Notices IV, Ann. New York Acad. Sci., VI, pp. 359-712.
- _____ 1895, Coleopterological Notices VI, Ann. New York Acad. Sci., VIII, pp. 435-838.
- Champion, G. C., 1905, Rhynchophora, Biologia Centrali Americana, Coleoptera, IV, Pt. 4, pp. 1-750.
- Fisher, W. S., 1925, New Cactus Weevil from Texas, Jour. Washington Acad. Sci., XV, pp. 425-426.
- _____ 1928, New Cactus Beetles II, Proc. Ent. Soc. Washington, XXX, pp. 1-7.
- Gerstaecker, C. E., 1860, Beitrage zur Kenntniss der Curculionen, Stettiner Ent. Zeit., XXI, pp. 376-398.
- Hunter, W. D., F. C. Pratt, and J. D. Mitchell, The Principal Cactus Insects of the United States, U.S. Dept. Agric., Bur. of Ent., Bull. No. 113, pp. 1-71.

Leconte, J. L., pp. 240-243, in Leconte, J. L. and G. H. Horn, The Rhynchophora of America North of Mexico, Proc. American Phil. Soc., XV, pp. 1-455.

_____ 1880, Short Studies of North American Coleoptera, Trans. American Ent. Soc., VIII, pp. 163-218.

Pierce, D. W., 1912, Systematic Notes and Descriptions of Some Weevils of Economic and Biological Importance, Proc. U.S. Nat. Mus., XLII, pp. 155-170.

Sleeper, E. L., 1954, New Rhynchophora II, Ohio Jour. Sci., LIV, No. 3, pp. 180-186.