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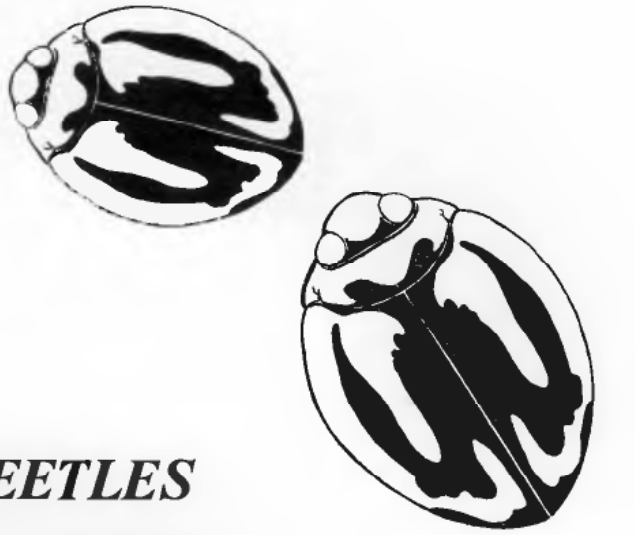
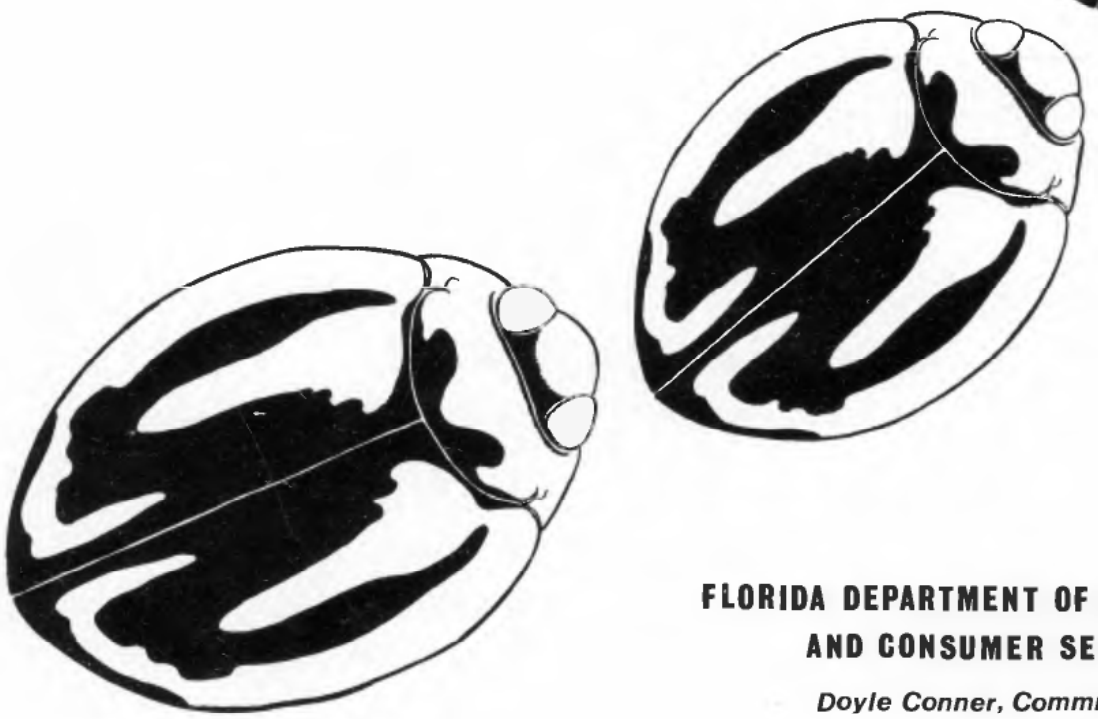


PREDACEOUS WATER BEETLES OF THE GENUS DESMOPACHRIA: THE CONVEXA-GRANA GROUP

(Coleoptera: Dytiscidae)

by
Frank N. Young, Jr.



FLORIDA DEPARTMENT OF AGRICULTURE
AND CONSUMER SERVICES
Doyle Conner, Commissioner

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PREDACEOUS WATER BEETLES OF THE GENUS DESMOPACHRIA: THE CONVEXA-GRANA GROUP (Coleoptera: Dytiscidae)

by
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FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES
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DIVISION OF PLANT INDUSTRY
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FOREWORD

The species of *Desmopachria* are found only in the New World. The *confusa-grana* group is North American, Antillian, Mexican, and Central American, while most of the rest of the groups are Mexican, Central, and South American. Many of the species are superficially very similar, but the male external genitalia are very diverse. There are 2 ecological groups: 1) larger, brightly marked species which live in open playas and streams in desert or semidesert areas and 2) smaller, unmarked species of varying shades of brown which live largely in shaded, mucky-bottomed situations and actively burrow into the bottom. The beetles in the first group, according to Dr. Young, are examples of disruptive coloration, the bright patterns breaking up the outline of the body against the bottom. Surprisingly, this group has rather featureless male external genitalia. In contrast the burrowers, which are almost certainly examples of color resemblance to the background, have the most diverse male genitalia to be seen in aquatic beetles. Dr. Young hypothesizes that "it seems possible that the brightly marked species use visual clues, in part at least, to avoid cross-species matings. The burrowers cannot use such clues, and it is possible that the elaborate male genitalia serve as pheromone transfer organs, allowing species recognition even in the stygian darkness of their mucky homes. To date there is no evidence for pheromones in aquatic beetles. Visual and auditory clues are used by some aquatic beetles, but in other insects which have been more thoroughly investigated, although visual clues are very important, the final coupling is controlled by pheromones, as with the butterflies".

By way of economic importance, *Desmopachria* and other water beetles which undergo massive dispersal flights may be of some importance in redistributing energy in many ecosystems. The rarity of water beetles where fish are present suggests that they must represent fairly acceptable fish food. Water beetles are good indicators of the degree of water pollution. Lack of water beetles may indicate a high degree of pollution, presence of few species may indicate some pollution, and presence of a large number of species and specimens is an indication of a high level of water purity.

Dr. Frank N. Young, Jr. was born in Oneonta, Alabama, on 2 November 1915. His interest in natural history became evident at an early age after his family moved to Miami, Florida, in 1920. This interest was encouraged by 2 eminent biologists, Drs. Marston Bates and G. B. Fairchild. Like many other entomologists, his first interest was in Lepidoptera, to which he eventually added tree snails. While attending Miami High School he became acquainted with Mr. Oliver L. Cartwright and developed a keen interest in scarabaeid beetles. During his years at the University of Florida he came under the influence of 2 other world renowned entomologists, Drs. J. Speed Rogers and Theodore H. Hubbell, and it was then that he began his studies of water beetles. His degrees include the Bachelor of Science with a major in biology (1938), Master of Science with a biology-entomology major (1940), and Doctor of Philosophy with a biology-entomology major (1942), all from the University of Florida. He served in the U. S. Army from 1942-46, classified as an entomologist and parasitologist, continuing in the U. S. Army Reserve until 1974, when he retired with the rank of colonel. He began his civilian career in 1946 as an Assistant Professor of Biology at the University of Florida. In 1949 he joined the staff of Indiana University where he is now a Professor of Biology. His honors include: Guggenheim Fellow at the British Museum (Natural History), 1960-61; Fellow in Tropical Medicine and Parasitology, Louisiana State University, 1963; Editor, Florida Academy of Sciences, 1946-49; Director, Public Relations, Indiana Academy of Sciences, 1955-65; Editorial Board, Entomological Society of America, 1962-65; President, Indiana University Chapter of Sigma Xi, 1968-69; currently he is President of the Coleopterists Society. He has been a Research Associate of the Florida State Collection of Arthropods since 1972. He also is a Fellow in the Indiana Academy of Science.

In 1943 Dr. Young married Frances Elizabeth Norman. They have 2 children, Betty (now Mrs. Betty von Herrmann), and Frank N. Young, III. He and Frances have 4 grandchildren, Marnin, Nicholas, Martin, and Peter.

Dr. Young's primary interest is in the aquatic Coleoptera of the Western Hemisphere, and he has developed an extensive research collection of water beetles. In the course of his research he has described

75 new species of Coleoptera and 1 color form of tree snail (*Liguus).* His work has been supported by numerous research grants, including grants from the National Science Foundation, National Institute of Health, Indiana University Foundation, and the University of Michigan Museum of Zoology. He is the author of *Water Beetles of Florida* (1954), plus over 100 papers on insects and mollusks. His hobbies include the natural history of the Florida Keys and Everglades, especially the land mollusks of the genus *Liguus,* and French cuisine.

Howard V. Weems, Jr.
Editor

Bureau of Entomology
Division of Plant Industry
Florida Department of Agriculture and Consumer Services
13 May 1981

PREDACEOUS WATER BEETLES OF THE GENUS *DESMOPACHRIA*: THE *CONVEXA-GRANA* GROUP (COLEOPTERA: DYTISCIDAE)[1]

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ABSTRACT

Four described and 7 new species of the *Desmopachria convexa-grana* group are characterized and discussed. All are remarkably similar on superficial examination, but the male external genitalia are distinct. All are distinguishable from other members of *Desmopachria* (s. str.) by the leaf-like spurs on the parameres of the male external genitalia. New species described are *aspera* (Florida), *cenchramis* (Florida), *defloccata* (Texas, Mexico), *isthmia* (Panama and Canal Zone), *laesslei* (Jamaica), *lewisi* (Jamaica), and *glabella* (Cuba). A key and illustrations of male genitalia are given to aid in identification.

The typical subgenus of *Desmopachria* includes a number of small species of predaceous water beetles distributed from Argentina to Canada. Most of the species are associated with mucky or detritus ponds or pools, but *D. laesslei* n. sp. is apparently confined to water caught in leaf axils of air plants (*Vriesia* sp.) in Jamaica. Most species come to light readily, but only since the widespread use of ultra-violet or "black-light" traps have specimens become common in collections.

The *convexa-grana* group is remarkable in that all species look very much alike and are not readily distinguishable on external characters. Size and shape, together with punctation of the cuticle, have been the main characters relied on in the past for separating species. Size seems to be more reliable in this genus than in many others. Shape and punctation vary both in local populations and geographically.

The male external genitalia are complex, and some of the parts do not appear to be homologous to parts of the characteristic dytiscoid-hydroporine aedeagus and parameres. Parameres in the *convexa-grana* group are stout with a curved tip which is usually visible both from above (considered in copulatory position) and from the side (see figures). Each paramere also has a moveable spur just before the apex. This spur is broad, flattened, and curved. The aedeagus is strongly sclerotized in only 2 of the species and in the others may or may not be erect in dried preparations. Erected or not, it is accompanied by a pair of lobes of uncertain homology. These aedeagal lobes usually are partly sclerotized but may be variously expanded or twisted on drying.

Since most species of *Desmopachria* resemble small, smooth seeds, dissecting them is often difficult. However, by holding the specimen between thumb and forefinger, the male genitalia usually can be extracted with a fine needle. Female genitalia are not readily dissected, but a tiny spermatheca is usually detectable.

Key to Species of the *Desmopachria Convexa-Grana* Group

1. Punctation of elytra and hind coxae coarse and relatively close; length about 1.5 to 1.8 mm, usually distinctly larger

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than species with which it occurs; male external genitalia as in fig. 1; aedeagus not heavily sclerotized, sometimes sclerotized toward tip in very mature specimens; aedeagal lobes sclerotized with tips resembling a pair of tiny, twisted feet; range across Canada and Pacific Northwest south to Texas and Georgia ..... *convexa* (Aubé)

1′. Punctation of elytra and coxae relatively finer and usually sparser; size variable, length usually less than 1.8 mm; aedeagus sclerotized or not, with aedeagal lobes variously shaped at tips but not as above 2

2(1′). Aedeagus sclerotized, a single or bifid tip present; aedeagal lobes lanceolate, pointed, not expanded toward tips .. 3

2′. Aedeagus soft, very feebly sclerotized, often collapsed in dried specimens; aedeagal lobes not pointed, usually more or less expanded toward tips ... 4

3(2). Size larger, 1.4 to 1.68 mm; color dark, particularly on elytra; aedeagal lobes closely appressed to aedeagus which is bifid at tip (fig. 9); Florida..... ..... *cenchramis* n. sp.

3′. Size smaller, 1.35 to 1.4 mm; color lighter, but elytra usually darker reddish brown than head and pronotum; aedeagal lobes separated from aedeagus which is simply pointed (fig. 8); Florida, Cuba ..... *aspera* n. sp.

4(2′). Body form ovate or oval, not much narrowed behind; color usually uniformly brownish yellow to very dark brown . 5

4′. Body form ovate, narrowed behind; dorsum usually with base of head, pronotum, and a strip along suture of elytra darker brown; aedeagal lobes with tips expanded and truncate (fig. 10); Cuba.. ..... *tarda* Spangler

5(4). Head, pronotum, and elytra largely very dark brown, appearing black with edges lighter; body form elongate oval; male genitalia (fig. 6); habitat in bromeliads; length 1.6 to about 1.65 mm; Jamaica.. ..... *laesslei* n. sp.

5′. Dorsum not very dark brown or appearing black; body form regularly oval or broadly oval; length variable, 1.35 to 1.8 mm 6

6(5′). Average size larger, 1.6 to 1.8 mm long; aedeagal lobes rounded at tips (fig. 5); color ranging from uniformly brownish yellow in teneral specimens to very dark brown, especially dark along suture of elytra in fully mature specimens; Guatemala, Mexico ..... *circularis* Sharp

6′. Average size smaller, usually less than 1.6 mm long; aedeagal lobes cut off at tips more or less squarely or at an angle (figs. 2, 3, 4, 7, 11) 7

7(6′). Average size smaller, 1.35 to 1.5 mm long; aedeagus figs. 2, 4, 11..... 8

7′. Average size larger, 1.5 to 1.68 mm long; aedeagus figs. 3, 7..... 10

8(7). Aedeagal lobes more or less triangular at tips, the apices squarely cut off (fig. 2); southeastern Texas to Florida.. ..... *grana* (LeConte)

8′. Aedeagal lobes not much expanded at tips, squarely or angulately cut off (figs. 4, 11); length 1.4 to 1.5 mm; Cuba, Panama 9

9(8′). Length 1.35 to rarely 1.5 mm; aedeagal lobes not or only slightly expanded at their bases, the tips more or less squarely cut off (fig. 4); Panama and Panama Canal Zone .... *isthmia* n. sp.

9′. Length about 1.4 mm; aedeagal lobes expanded, bulbous at bases (fig. 11); Cuba..... *glabella* n. sp.

10(7′). Length 1.5 to 1.65 mm; color variable, often uniformly brownish yellow; aedeagal lobes fleshy, expanded at tips (fig. 3); Texas and northeastern Mexico.... ..... *defloccata* n. sp.

10′. Length 1.6 to 1.68 mm; aedeagal lobes irregular, expanded at tips (fig. 7); color usually brown, vaguely darker on pronotal disk, on base of head, and along elytral suture, possibly similar to *tarda* when fully mature; habitat in ground water; Jamaica ..... *lewisi* n. sp.

Desmopachria convexa (Aubé 1838: 479)

Diagnosis: Body form ovate, somewhat attenuate behind from about middle of elytra; moderately convex above and below. Punctation of pronotal base and bases of elytra coarse separated by 2-3 times the diameter of each puncture. Discal elytral striae of coarser punctures not conspicuous. Outer laminae of hind coxae coarsely punctate; punctures about as large as those on elytral bases, but not as dense. Total length 1.5 to over 1.8 mm; greatest width near middle of elytra 1.0 to 1.2 mm. Male external genitalia (fig. 1) distinctive; parameres with articulated spurs at tips; aedeagus usually collapsed but darkened and appearing bifid at tip in very mature specimens; aedeagal lobes well sclerotized with tips resembling a pair of tiny, twisted feet.

Punctation generally coarser than in other members of group both above and below and especially on the base of pronotum, elytral bases, and outer laminae of hind coxae. Punctation of front of head and clypeus fine, separated by 3-4 times the diameter of each puncture; punctation behind clypeal tubercles (above bases of antennae) irregular not forming distinct rows. Pronotum with discal punctures about same size as those on front of head, but more irregular in shape and sparser, separated by 3-5 times the diameter of each; punctures along base conspicuously coarser, denser, and more irregular in shape; punctures along front margin also coarser, denser, and more irregular in shape, but not as coarse as those on base. Elytral bases with coarse punctures similar to those on pronotal base, but more regular in shape and distributed in irregular rows, separated by 2-3 times the diameter of each; punctures finer and shallower apically and laterally, but some punctures readily visible at 90X magnification even on lateral margins; discal striae of coarser elytral punctures detectable but not conspicuous (distinct in some species). Outer laminae of hind coxae conspicuously punctate with coarse punctures about the same size as those on elytral bases but somewhat sparser. Abdominal sternites with some fine punctures; last visible sternite with fine punctures at sides but nearly smooth in middle and weakly transversely impressed. Microsculpture between larger punctures not detectable at 90X magnification either on dorsum or venter.

Color varies with age of specimens at time of collection. Teneral (callow) individuals are almost uniformly brownish yellow above and below. Fully mature specimens have the head and pronotum light to dark brown, the pronotum darker along base. The elytra are often dark brown contrasting with the lighter head and pronotum. The base of the pronotum and the elytra along the suture may be very narrowly very dark brown (piceous). Venter and appendages usually about the same color as head and pronotum with darker areas around joints and sutures as usual.

Range: Texas, Louisiana, Alabama, Georgia north to Nova Scotia, Quebec, Ontario, Alberta, Manitoba, British Columbia, Washington, Nebraska, and Wyoming. It has not been recorded from the coastal plain in Florida, Georgia, or South Carolina where *D. grana* is abundant.

D. convexa was described from the United States and Brazil, but all South American *Desmopachria* which resemble it differ in male external genitalia. Since there seems little doubt that Aube had the common North American species before him, I suggest that we confine the name to the species as defined above.

Desmopachria grana (LeConte 1855: 290)

Diagnosis: Similar to *D. convexa* but smaller, more elongate oval, and relatively more finely punctate both above and below. Punctures of front of head, clypeus, and disk of pronotum fine, not easily visible at 10X magnification. Punctures of pronotal base and elytral bases relatively coarse, but finer than in *convexa*, separated by 1-3 times the diameter of each. Lateral margins of elytra just visibly punctate at 90X magnification. Outer laminae of hind coxae with punctures about as large as those on elytral bases but sparser, separated by 2-5 times the diameter of each. Total length 1.35 to 1.5 mm; greatest width near basal one-third of elytra about 0.9 to 1.0 mm. Male external genitalia (fig. 2) distinctive; parameres similar to those of *convexa*; aedeagus usually collapsed between parameres; aedeagal lobes widened at tips and squarely cut off (truncate).

Color, as in *convexa*, varies with age of specimens at time of preservation. Mature specimens usually have head and pronotum brownish yellow, and elytra reddish brown, darker than head and pronotum and contrasting with them. Venter and appendages brownish yellow or light brown, darker around joints and along sutures as usual.

Range: Florida, southern counties of Georgia, coastal counties of South Carolina, Alabama, Mississippi, Louisiana, and southeastern Texas (Hardin County). It is reported from South America, but, as in the case of *D. convexa,* all species that I have seen which resemble it belong to other groups on the basis of the male external genitalia. Cuban specimens which I formerly considered to be *grana* belong to the following species.

Desmopachria aspera Young, new species

Diagnosis: Extremely similar to *grana* in color and punctation except for the more coarsely punctate outer laminae of hind coxae. Body form slightly narrower and more regularly oval than in *grana.* Elytra often deep reddish brown contrasting with lighter head and pronotum so that dorsum appears bicolorous. Total length 1.35 to 1.4 mm; greatest width near basal one-third of elytra about 0.8 to 0.9 mm. Male genitalia distinctive (fig. 8); parameres similar to those of *grana,* but aedeagus partly sclerotized, distinctly pointed at tip; aedeagal lobes lancet-like, not expanded at tips. Coarser punctation of outer laminae of hind coxae is only consistent external difference between this species and *grana* which I can detect.

Holotype ♂: Length 1.4 mm; greatest width near basal one-third of elytra 0.9 mm; width of pronotum at base 0.72 mm; width of pronotum at apex 0.50; length of pronotum at midline 0.28 mm; width between eyes 0.24 mm, slightly less than pronotum at midline. Head and pronotum constructed and punctate much as in *grana*; punctures fine, separated by 2-5 times the diameter of each. Pronotum with punctures on disk in part about as fine and dense as on head but more irregularly shaped and distributed; punctures along base coarser, separated by 1-3 times the diameter of each, irregular in shape and in part confluent; coarser punctures along anterior margin with some finer punctures intermixed. Elytral bases with punctures about as coarse as on base of pronotum but more regular in shape and in irregular rows, separated by 1-3 times the diameter of each; some small punctures barely visible at 90X at sides of elytra. Metasternum with scattered fine punctures about like those on head. Outer laminae of hind coxae with punctures coarser than those on elytral bases separated by 1-3 times the diameter of each. Abdomen and last visible sternite much as in *grana.* Elytra deeper reddish brown than usual in *grana* and without the intensely dark brown (piceous) narrow edges along suture and bases. Head and pronotum brownish yellow. Venter and appendages mostly brownish yellow darker along sutures and around joints as usual.

Females very similar to males in shape, punctation, and coloration.

HOLOTYPE ♂ and 6 ♂, 5 ♀ PARATYPES from: Florida: Dade County, Miami, 3-XI-1960, BLT, P. E. Briggs (FSCA). Other PARATYPES from Florida: Pinellas County, Dunedin, W. S. Blatchley (2 ♂ CAS; 1 ♂ PUC); Putnam County, Crescent City, Hubbard and Schwarz (2 ♂ NMNH). (Total 16).

This species also occurs in Cuba (Cayamas, E. A. Schwarz, in NMNH; Soledad, P. J. Darlington, Jr., in MCZ; and Baragua, L. C. Scaramuzza, in MCZ). A female from Rum Cay near Port Nelson, Bahamas, 16-II-1963, E. B. Hayden (VanVoast Expedition, AMNH) is probably *aspera.*

I have seen specimens from Mobile, Alabama (Sherman Collection, NMNH), which may represent this species.

(Aspera, roughened, in reference to hind coxae.)

Desmopachria cenchramis Young, new species

Diagnosis: Similar to *convexa* and *grana* and about intermediate in size. Dorsal outline more elongate than either, the pronotum proportionately longer along midline. Total length 1.4 to nearly 1.7 mm; greatest width near middle of elytra about 1.0 mm. Male external genitalia distinctive (fig. 9), the aedeagus sclerotized and bifid at tip; aedeagal lobes lanceolate but closely appressed to aedeagus.

Holotype ♂: Total length 1.6 mm; greatest width near middle of elytra 1.0 mm; width of pronotum at base 0.8 mm; width of pronotum at apex 0.5 mm; length of pronotum at midline 0.32 mm; width between eyes 0.3 mm, slightly less than length of pronotum at midline. Front of head and clypeus finely punctate, the punctures irregularly distributed and separated by 1-4 times the diameter of each; clypeal tubercles above antennal bases with an arc of fine punctures behind them, but clypeal impressions irregular not distinctly marked by a row of punctures. Pronotum with disk slightly more coarsely punctate than head, the punctures very irregularly distributed, separated

by 2-4 times the diameter of each; coarser basal and lateral punctures irregular in shape, separated by 1-2 times the diameter of each; anterior margin with some coarse, irregular punctures and some very fine punctures intermixed. Elytra with punctures on base about as coarse as those on base of pronotum, more regularly distributed in irregular rows and separated by 2-5 times the diameter of each; punctures becoming shallower laterally and apically; lateral edges of elytra above epipleurae appearing almost impunctate at 90X. Metasternum finely, sparsely punctate. Outer laminae of hind coxae less densely but about as coarsely punctate as elytral bases, the punctures separated by 2-5 times the diameter of each. Abdomen very finely punctate; last visible sternite appearing nearly smooth, transversely impressed as in *convexa* and *grana*.

Color of head yellowish brown. Pronotum similar in color to head at sides, somewhat darker on disk and along base. Elytra dark reddish brown, intensely darker narrowly along suture and bases. Venter largely yellowish brown, darker along outer edges of hind coxae, apices of abdominal sternites and at joints. Hind coxae slightly darker (reddish brown in some specimens). Prosternal process, epipleurae, and appendages yellowish brown.

Females very similar to males, but some are smaller in size.

HOLOTYPE ♂ and 11 PARATYPES from: Florida: Pasco County, pond in hammock near Elfers, 21.III.1947, F. N. Young (FSCA).

(Cenchramis, a fig seed.)

Desmopachria circularis Sharp 1882: 18

Diagnosis: Similar in size to *convexa*. Dorsal outline regularly oval, but sides of pronotum not continuing line of elytral side margin. Pronotum strongly recurved at humeral angle, the outer angles inflexed and difficult to see from directly above. Front of head and clypeus about as finely and irregularly punctate as in *convexa*; clypeal impressions behind tubercles not conspicuous. Disk of pronotum less coarsely and densely punctate than head, larger punctures along base and an interrupted row of punctures back of anterior margin not conspicuously coarse. Basal elytral punctures about as large as those on base of pronotum, finer, sparser, and shallower than in *convexa*. Each elytron with a distinct discal stria of coarser punctures extending about one-third length of elytron. Metasternum and outer laminae of hind coxae with a few shallow punctures in center, almost impunctate toward outer margin, much less coarsely punctate than in *convexa*. Male external genitalia (fig. 5) distinctive; parameres similar to those of *convexa*; aedeagal lobes rounded at tips. Total length 1.6 to 1.8 mm; greatest width near basal one-third of elytra 1.0 to 1.2 mm.

Color of lectoholotype from Guatemala light yellow-brown with base of head, sides of pronotum, and elytra somewhat darker. Elytra very narrowly darker reddish brown along suture and at base of pronotum. Metasternum and hind coxae reddish brown, darker than pronotum. Appendages and most of venter light yellowish brown.

Specimens from Guatemala (Estancia Virgen, 12-VIII-1965, P. J. Spangler, NMNH) are much darker than the lectoholotype and female cotype. The head, base of pronotum, disk of elytra, and most of venter is deep brown. The pattern of darkening is vaguely suggested in the types, and I believe that the darker coloration represents the more normal condition. Similar dark specimens are from Guatemala City, 24-VI-1976, W. H. Steiner (NMNH) and Mexico, Patzcuaro, 7-VII-1964, P. J. Spangler (NMNH).

Lectoholotype and female cotype are from Guatemala City, San Geronimo (Champion), 5000 feet, Biologia centrali-americana material (BMNH).

Desmopachria defloccata Young, new species

Diagnosis: Similar to *circularis* and *convexa*, but averaging smaller and with dorsal outline of body more elongate oval. Punctation similar to that of *circularis*, distinctly more finely punctate than *convexa* both above and below. Elytra with basal punctures slightly coarser than those of *circularis*, with discal striae reduced, detectable but not conspicuous. Male external genitalia (fig. 3) similar to those of *circularis* but aedeagal lobes more expanded with tips cut off at an angle; often distorted on drying. Length 1.45 to 1.65 mm; greatest width near basal one-third of elytra about 1.0 to 1.1 mm.

Holotype ♂: Total length 1.64 mm; greatest width near basal one-third of elytra about 1.1 mm; width of pronotum at base 0.8 mm; width of pronotum at apex 0.67 mm; length of pronotum at midline 0.32 mm; width between eyes 0.28 mm.

Head, clypeus, and pronotum punctate much as in *circularis*, basal and anterior marginal punctures relatively finer and sparser than in *convexa*. Basal elytral punctures coarser than in *circularis* but about as dense and similarly distributed; discal striae of elytra with some setate punctures a little larger than those of elytral bases but not confluent. Metasternum and outer laminae of hind coxae finely punctate except on metasternal wings; punctures of coxal laminae inconspicuous, but some irregular sculpture between punctures.

Color generally yellowish brown, the elytra somewhat darker along suture. Venter and appendages largely brownish yellow somewhat darker along sutures and around joints as usual. None of the types is much darker than the holotype, but some, obviously teneral specimens, are lighter. The light pigmentation may be characteristic of this species from the clear streams and playas of Texas and northeastern Mexico.

Females very similar to males in shape, punctation, and color.

HOLOTYPE ♂ from Mexico: Tamaulipas, Rio Frio at El Limon, 11-VI-1960 F. N. Young (FSCA). PARATYPES collected by F. N. Young, unless otherwise cited, are designated as follows: Texas: Harris County, Houston, II-1971, K. Stephan (5 CU). Refugio Co., Stream north of Refugio, 9-VI-1960 (53). Jackson County, ditch near Edna, 8-VI-1960 (3). Victoria County, Coleta Creek, 12 mi. south Victoria, 9-VI-1960 (2). Cameron Co., Brownsville, 11-16-VI-1933, P. J. Darlington, Jr. (19 MCZ). "Texas," "1195," Belfrage ex Coll. C. V. Riley (1NMNH). Mexico: Tamaulipas, Rio Guayalejo near Magiscatsin, 11-VI-1960 (26); Rio Guayalejo near Llera, 11-VI-1960 (7); ditch north of Mante, 12-VI-1960 (4); Rio Frio at El Limon, 18-XII-1942 (4). Four mi. south of Mante, 20-VII-1969 (2); Rio Salinas, near El Limon, 20-VII-1969 (2). Ciudad Mante, 22-VII-1965, P. J. Spangler (3 NMNH). San Luis Potosi, stream near Palmira, 20-VII-1969 (6); near Tamuin east of Valles, 23-VII-1969 (13); 16 mi. west Valles, 24-VII-1969 (3); clear stream at Palitla, 22-XII-1948, H. B. Leech (12 CAS). Fifteen mi. east Ciudad del Maiz, 19-XI-1948, H. B. Leech (5 CAS). Quinta Chilla near Tamazunchale, 21-XI-1948, H. B. Leech (1 CAS). Nuevo Leon, Puente Cristolina, 17 mi. S. Monterrey, 19-VII-1969 (4); Rio Ramos at Allende, 19-VII-1969 (4). Vera Cruz, Lake Catemaco, "Coyame," 5-VII-1963, BLT, R. E. Woodruff (1 FSCA). Nine mi. W. Poza Rica, 22-VII-1965, P. J. Spangler (3 NMNH); 15 mi. S.E. Tantoyuca, 28-VIII-1965, P. J. Spangler (27 NMNH). (Total 210).

(Defloccata, scant of locks or bald.)

Desmopachria isthmia Young, new species

Diagnosis: Superficially similar to *grana* but somewhat more convex and pronotum relatively longer at midline. Distinctly less coarsely punctate on pronotum, elytral bases, and particularly on outer laminae of hind coxae than *grana*. Elytra with distinct shallowly sulcate discal striae of coarser setate punctures at about one-third distance from suture to outer margin and extending to middle. Male external genitalia (fig. 4) similar to those of *grana*, but aedeagal appendages narrow, squarely cut off at tips. Length 1.35 to 1.5 mm; greatest width near bases of elytra about 0.9 to 1.1 mm.

Holotype ♂: Total length 1.47 mm; greatest width near bases of elytra 0.96 mm; width of pronotum at base 0.8 mm; width of pronotum at apex 0.76 mm; length of pronotum at midline 0.32 mm; width between eyes 0.24 mm. Head very finely, irregularly punctate, the punctures separated by 2-6 times the diameter of each. Pronotum with somewhat coarser punctures on disk but more finely punctate than in *grana*; basal punctures not conspicuously coarser except toward sides; coarser punctures along anterior margin not very dense. Punctures of elytral bases finer than in *grana*, about as coarse as coarsest punctures on pronotal base, irregular in distribution, separated by 2-5 times the diameter of each. Each elytron with a distinct, shallowly sulcate discal stria of setate punctures at about one-third distance from suture to outer margin and running to middle of elytron. Metasternum and outer laminae of hind coxae appearing almost impunctate but with some rough sculpture between very fine punctures. Abdominal sternites appearing very smooth; last visible sternite not visibly punctate at 90X but rather deeply and narrowly transversely impressed before apex.

Color basically light yellowish brown, base of head and pronotum darker. Elytra darker reddish brown in part with suggestion of mottling. Metasternum and hind coxae darker reddish brown. Appendages and abdomen light yellowish brown with darkening along sutures and around joints as usual.

Females are very similar to males in punctation and coloration.

HOLOTYPE ♂ and 8 PARATYPES from: Panama: Tocumen, various dates in July, 1970, BLT, Diego Navas (FSCA). Other PARATYPES from: Panama: Gamboa, Chagras River, 30-VI-1969, L. B. O'Brien (1 FSCA). Panama Canal Zone: Albrook forest site, V-X-1967, II-V-1968, BLT, R. S. Hutton (26). (Total 35).

(Isthmia, of the isthmus.)

Desmopachria glabella Young, new species

Diagnosis: A small species, superficially very similar to *grana* but less strongly punctate on dorsum and outer laminae of hind coxae. Male external genitalia (fig. 11) distinctive, the parameres resembling those of *tarda* but the aedeagal lobes unique, expanded at their bases. Total length about 1.4 mm; greatest width near basal one-third of elytra about 0.96 mm.

Holotype ♂: Ovate, not very convex either above or below. Total length 1.4 mm; greatest width near basal one-third of elytra 0.96 mm; width of pronotum at apex about 0.6 mm; width of pronotum at base about 0.76 mm; length of pronotum at midline 0.26 mm; width between eyes 0.26 mm. Head slightly more coarsely and closely punctate than in *grana*. Pronotum with basal and anterior punctures less dense than in *grana*. Elytra with basal punctures sparser and not as strongly impressed as in *grana*. Outer laminae of hind coxae more finely punctate than in *grana* but with some irregular sculpture between fine punctures.

Color, not fully hardened, largely brownish yellow with base of head, disk of pronotum, and disk of elytra diffusely darker yellowish brown. Venter largely brownish yellow with some darker areas along sutures and around joints as usual.

HOLOTYPE ♂ from: Cuba: Laguna Base, J. A. Mella, 24-III-1973, V. Decu (NMNH).

(Glabella, without hair, smooth.)

Desmopachria laesslei Young, new species

Diagnosis: Similar in size to *convexa* but more elongate oval, pronotum relatively longer along midline, punctation much less coarse on elytra, pronotum, and hind coxae than in *convexa* or *grana*. Color deep brown almost black above. Male external genitalia (fig. 6) distinctive. Total length about 1.6 to 1.65 mm; greatest width near basal one-third of elytra about 1.0 mm.

Holotype ♂: Length 1.64 mm; greatest width near basal one-third of elytra 1.0 mm; width of pronotum at base 0.84 mm; width of pronotum at apex 0.56 mm; length of pronotum at midline 0.36 mm; width between eyes 0.32 mm. Front of head and clypeus with punctation slightly coarser than in *convexa* or *grana*, punctures separated by 2-5 times the diameter of each; tubercles over antennal bases distinct but minute; anterior margin just perceptibly straightened (truncate) in front. Pronotum with disk very finely and sparsely punctate the coarser punctures along base and anterior margin not conspicuously large, much finer than in *convexa* or *grana*. Elytral bases very finely punctate, punctures smaller or shallower than those on pronotal disk; discal elytral striae of coarser setate punctures detectable but not conspicuous. Venter with fine punctation; punctures of outer laminae of hind coxae fine, separated by 4-10 times the diameter of each. Abdominal sternites with some coarser punctures but appearing nearly smooth; last visible sternite transversely impressed much as in *convexa*.

Color unique in group; dorsum deep brown almost black with margins lighter; venter somewhat lighter brown with prosternum, epipleurae of prothorax and elytra, venter of head, anterior coxae, appendages, and trochanters of hind legs light yellowish brown. Male external genitalia (fig. 6) with parameres and aedeagal lobes distinctive.

Females very similar to males in shape, coloration, and punctation.

HOLOTYPE ♂ and 4 PARATYPES from: Jamaica—St. James Parrish, 1 mile north of Sweetwater in *Vriesia* (airplants), 17-VIII-1952, A. M. Laessle (FSCA). One ♂ PARATYPE, same data except 18-VIII-1952 (FSCA).

This is the only "black" species in the genus except for *D. niger* Zimmermann from Brazil. The latter is much larger (2.0 mm long), more coarsely punctate, and probably not bromeliadicolous.

I take pleasure in naming this distinctive species for my friend and mentor, Albert M. Laessle of the University of Florida.

Desmopachria tarda Spangler 1973: 355

Diagnosis: About the size of *convexa* but less convex above, more attenuate behind, and with head and pronotum proportionately broader in dorsal aspect. Elytral bases and outer laminae of hind coxae less coarsely and deeply punctate than

in *convexa*. Color largely yellowish or reddish brown with base of head, disk, and base of pronotum, and an irregular stripe along elytral base and suture darker brown (see Spangler, 1973, fig. 1). Length about 1.6 mm; greatest width near basal one-third of elytra about 1.1 to 1.2 mm. Male external genitalia (fig. 10) with parameres and aedeagal lobes distinctive.

Types from Cuba: Oriente Province, Cabezadas de Rio Indio, Gran Piedra, V. Decu (NMNH). This species also occurs in Oriente Province on Pico Turquino and in the mountains north of Imias, P. J. Darlington, Jr. (MCZ).

Desmopachria lewisi Young, new species

Diagnosis: Similar to *tarda* in size and probably in coloration when fully mature. Elytral punctation and that of outer laminae of hind coxae coarser than in *tarda* but not as coarse as in *convexa*. Male external genitalia (fig. 7) unique; scratch-like sculpture on outer faces of parameres distinctive. Length 1.6 to 1.68 mm; greatest width near basal one-third of elytra about 1.0 to 1.1 mm.

Holotype ♂: Ovate, attenuate behind much as in *tarda*. Total length 1.64 mm; greatest width near basal one-third of elytra 1.12 mm; width of pronotum at base 0.88 mm; width of pronotum at apex 0.56 mm; length of pronotum at midline 0.36 mm; width between eyes 0.24 mm. Front of head and clypeus and pronotum punctate much as in *tarda*. Punctation of pronotal base and anterior margin less conspicuously coarse than in *convexa* or *grana*. Punctation of elytral bases moderately coarse, coarser than in *tarda* but not as coarse as in *convexa*; discal elytral striae of coarse setate punctures distinct, more so than in *tarda* or *convexa*. Venter with outer laminae of hind coxae with small punctures and some irregularly impressed sculpture between punctures; punctures coarser than in *tarda* but distinctly finer than in *convexa*. Abdominal sternites much as in *tarda*.

Color largely yellowish brown, darker on base of head, base and anterior margin of pronotum, and vaguely along base and suture of elytra; venter deeper brown on metasternum, hind coxae, and abdominal sternites; light brownish yellow on prothorax, venter of head, epipleurae of prothorax and elytra, and appendages. Male external genitalia (fig. 7) with parameres similar to those of *convexa* but aedeagal lobes irregular and expanded at tip and outer faces of parameres with distinctive, scratch-like sculpture.

Females very similar to males in shape, punctation, and coloration.

HOLOTYPE ♂ from: Jamaica: St. Catherine Parish, Worthy Park, 17-VI-1975, BLT, R. E. Woodruff (FSCA). PARATYPES designated as follows: Jamaica: same data as holotype, various dates in V-VI-1969-75 (34). St. Catherine Parish, Bushy Park, Amity Hall, ex small pool in narrow gulley, 9-II-1947, G. B. Thompson (3 IJ). Clarendon Parish, Mason River Savanna, 17-IV-1955, M. W. Sanderson and T. H. Farr (1 IJ). St. Andrews Parish, Fetty River Ferry, 22-XI-1946, G. B. Thompson (1 IJ). St. Catherine Parish, Linsted, 17-VI-1970, BLT, E. G. Farnsworth (1 FSCA). Moneague, 26-VIII-1944, P. J. Darlington, Jr. (9 MCZ). Ocho Rios, 24-VIII-1934, P. J. Darlington, Jr. (3 MCZ). (Total 52).

I am pleased to name this pretty little species in honor of C. Bernard Lewis, former curator and director of the Institute of Jamaica, who has done much to encourage study of the fauna of Jamaica.

ACKNOWLEDGMENTS

I acknowledge the help of the many museum curators and others who have so kindly lent me types and other specimens of *Desmopachria*. I am especially indebted to Hugh B. Leech of the California Academy of Science who called my attention to the complexity of the *convexa-grana* group many years ago. Others who have been of special assistance are: Paul J. Spangler, National Museum of Natural History; J. Balfour-Browne and M. E. Bacchus, British Museum (Natural History); H. Freude and G. Scherer, Zoologische Sammlung des Bayerischen Staats, Munich, West Germany; and the staff (especially B. Beck, H. V. Weems, Jr., and R. E. Woodruff) of the Florida State Collection of Arthropods, Gainesville, Florida.

ABBREVIATIONS

AMNH, American Museum of Natural History, New York, New York
BM(NH), British Museum (Natural History), London, England
CAS, California Academy of Science, San Francisco, California
CU, Cornell University, Ithaca, New York
FM, Field Museum, Chicago, Illinois
FSCA, Florida State Collection of Arthropods, Gainesville, Florida
IJ, Institute of Jamaica, Kingston, Jamaica

MCZ, Museum of Comparative Zoology, Cambridge, Massachusetts

NMNH, National Museum of Natural History, Smithsonian Institution, Washington, D. C.

PUC, Purdue University Collection, West Lafayette, Indiana

SM, Snow Museum, Lawrence, Kansas

ZSBS, Zoologische Sammlung des Bayerischen Staats, Munich, Germany

Paratypes of the new species, wherever available, will be deposited in the above and other museums in the United States and abroad.

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Male external genitalia of species *Desmopachria convexa-grana* group are shown below. Figure 1 shows genitalia of *D. convexa* (Aubé) as viewed from above when in copulatory position and as viewed from side. Parameres in left hand figure slightly spread apart to reveal aedeagus and aedeagal lobes. Figures 2-11 show the same views of genitalia of *D. grana, D. defloccata* n. sp., *D. isthmia* n. sp., *D. circularis* Sharp, *D. laesslei* n. sp., *D. lewisi* n. sp., *D. aspera* n. sp., *D. cenchramis* n. sp., *D. tarda* Spangler, *D. glabella* n. sp.

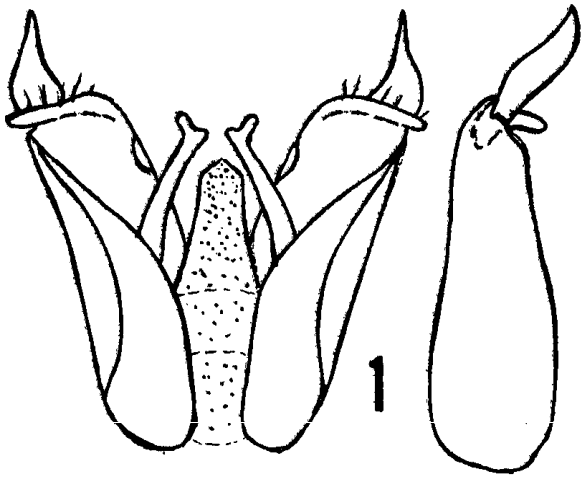

Fig. 1. Genitalia of *D. convexa* (Aubé)

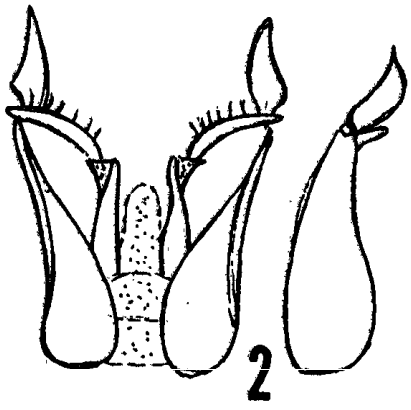

Fig. 2. Genitalia of *D. grana* (LeConte)

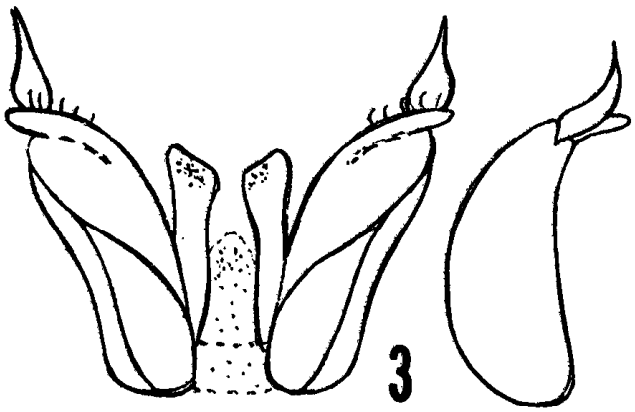

Fig. 3. Genitalia of *D. defloccata* n. sp.

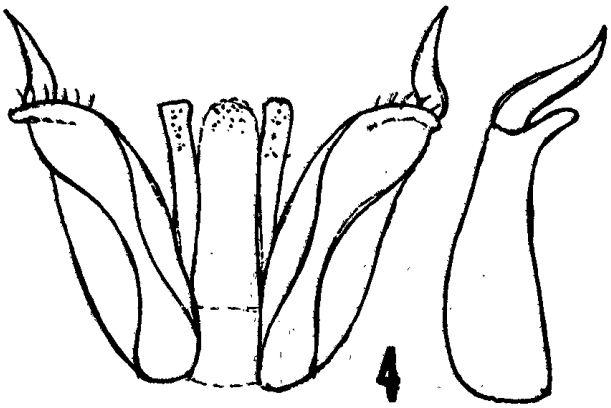

Fig. 4. Genitalia of *D. isthmia* n. sp.

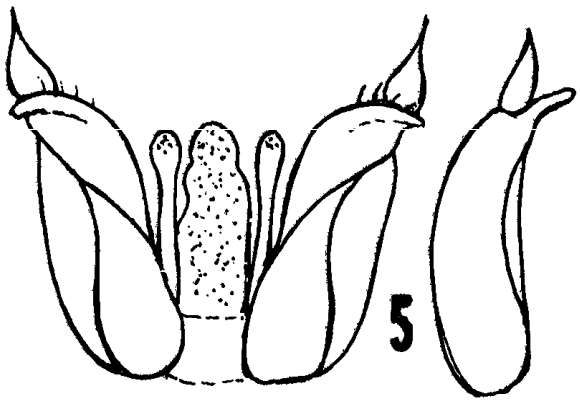

Fig. 5. Genitalia of *D. circularis* Sharp

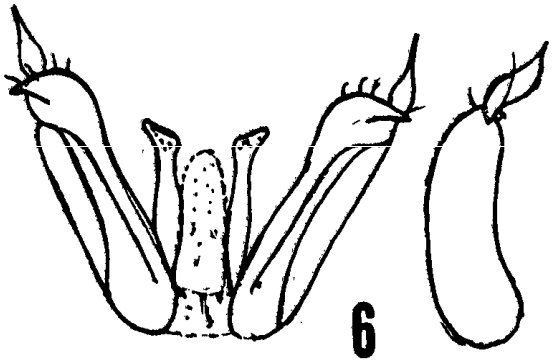

Fig. 6. Genitalia of *D. laesslei* n. sp.

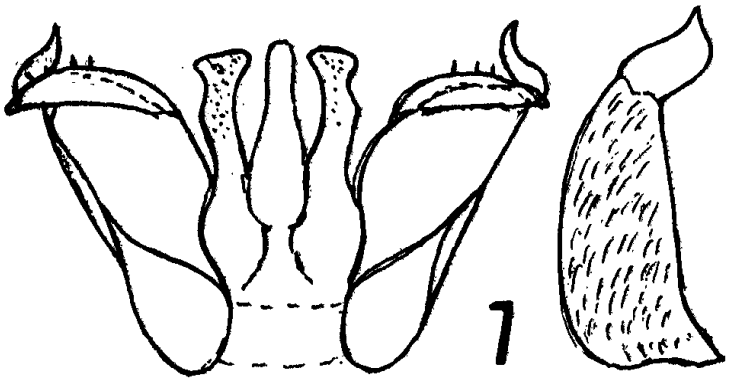

Fig. 7. Genitalia of *D. lewisi* n. sp.

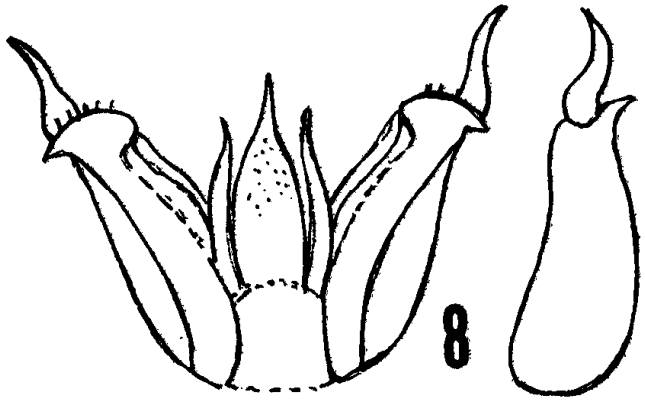

Fig. 8. Genitalia of *D. aspera* n. sp.

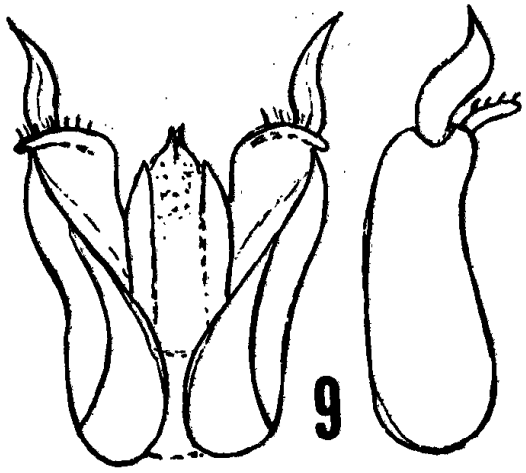

Fig. 9. Genitalia of *D. cenchramis* n. sp.

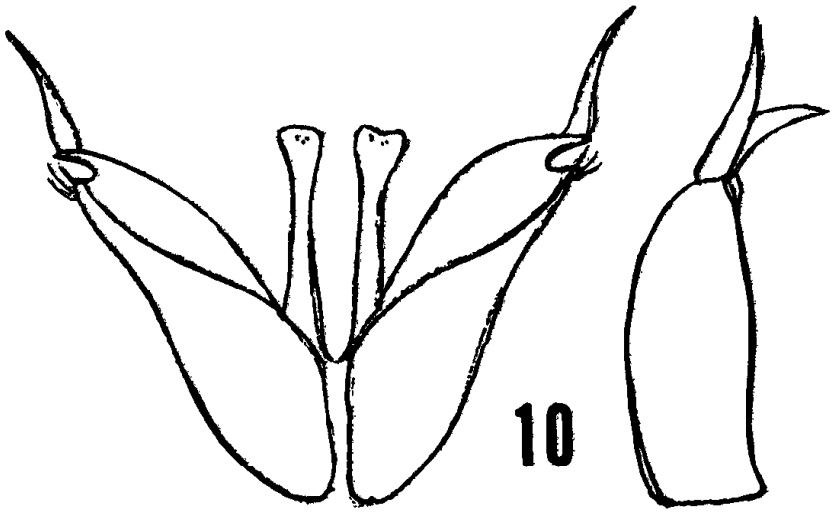

Fig. 10. Genitalia of *D. tarda* Spangler

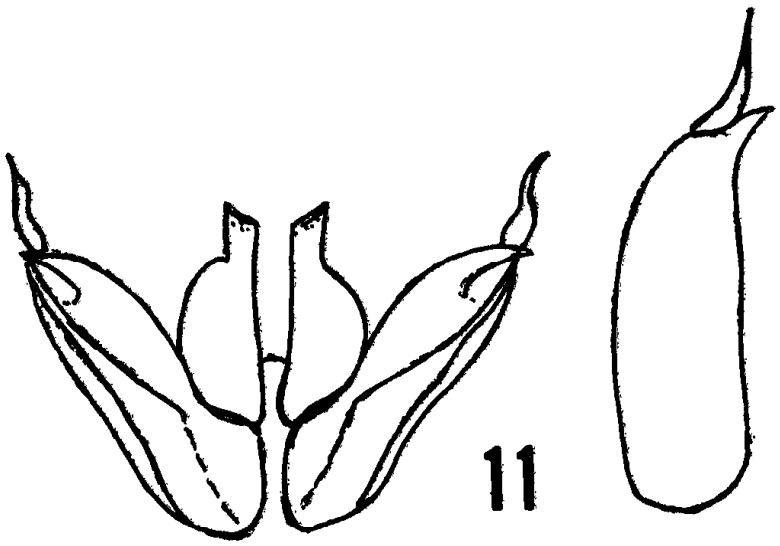

Fig. 11. Genitalia of *D. glabella* n. sp.