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New United States Records in Bruchidae, with notes on Host Plants and Rearing Procedures (Coleoptera)[1]

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ABSTRACT

Old-World species of Bruchidae should be regarded as established in the United States only if their rearing from locally grown host plants has been accomplished. Canadian or Mexican species only if their presence seems the result of natural spread or migration. Host-plant material showing evidence of the infestation should be preserved along with the reared specimens, so that published records can be verified later. Collecting records are given for eight species new to the United States, with the known host plants, as follows: *Kytorhinus prolixus* (Fall), South Dakota; *Acanthoscelides submuticus* (Sharp), Arizona, from *Amorpha; A. mundulus* (Sharp), Arizona; *Sennius* **celatus** (*Bruchus c.* Sharp), Texas, from *Cassia; S.* **xanthopus** (*Bruchus x.* Suffrian), Florida and Georgia, from *Cassia; Callosobruchus ademptus* (Sharp), Alabama and North Carolina, from *Pueraria; Megacerus leucosomus* (Sharp), Texas, from *Ipomoea;* and *M. leucospilus* (Sharp), Texas, from *Ipomoea.* The occurrence of *Callosobruchus phaseoli* (Gyllenhall) in Florida in *Dolichos* seeds is also discussed. Details are given on rearing bruchids and their parasites, and a method is described for obtaining properly mounted bruchid specimens.

Since the discovery of the economically important *Bruchus brachialis* Fahraeus in the United States in 1930 (Bottimer 1937: 379), two species of *Callosobruchus* of at least minor importance to agriculture have been found living in their respective host plants within our borders. One of these has been recorded, but the record was not included in the Fifth Supplement to the Leng Catalogue. The other *Callosobruchus* thus far does not appear to have been recorded.

Of the described but as yet unrecorded noneconomic species on hand or seen from the United States, seven have been determined, and of these, five have been associated with host plants.

ESTABLISHMENT

It might be a matter of opinion, in some instances, just when a foreign bruchid, taken in the United States, rightfully should be added to our list of insects. Before a bruchid can become established in any new area its host plant, either native or introduced, must naturally be well established and producing mature seeds. There can be no doubt about adding to our list a species actually reared from such a host plant growing within our borders.

In the case of a bruchid known to occur in southern Canada or in northern Mexico, the mere collecting in nature of an individual of this species within our borders would amply justify its inclusion in our list. Most, if not all, host plants in the general area of our two borders will be found common to both sides of the river or imaginary line, neither of which acts as a barrier to the migration of plants and their insects.

The writer would include any New-World species which had been field-collected within our borders, provided its presence here appeared to be the result of a natural spread or migration of the insect and not due merely to movements of commerce. In the writer's opinion, the addition to our list of an Old-World bruchid, unless known at the time from nearby Canada or Mexico, should be based upon a positive rearing record from a locally grown host plant.

The interceptions of foreign bruchids in the United States by our federal and state quarantine officials have always been considered mere interceptions, and none of these officials, to the writer's knowledge, has ever proposed including such species in a list of United States insects.

Lintner's 1891 report of *Bruchus lentis* occurring in imported lentils in New York retail stores is well

[1] Contribution No. 10, Entomology Department, State Plant Board of Florida, Gainesville. This paper was endorsed and communicated by H. A. Denmark. Accepted for publication August 3, 1960.

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known. Bradley (1947: 33) reported that the Leibeck collection contains a single example of *Bruchus signaticornis* found in lentils in Pennsylvania. Based on these two records, he would have us consider these two species as the fourth and fifth of the genus "to be recorded from the United States" in spite of the fact that he was informed that these insects "are of no likelihood of becoming established." Such a proposal is rejected by the present writer, as it was by Blackwelder and Blackwelder (1948: 44). If we were to list these insects, it would be quite necessary to so list all of the hundreds of species of bruchids intercepted in seeds or otherwise taken at our borders by quarantine workers, and all other foreign species, dead or living, that in some manner gained entrance into this country.

BRUCHID HOST PLANTS

Considerable confusion exists in literature regarding bruchid host plants, due in part to misdetermination of either, or even both, the plant and the insect. However, much of the confusion is the result of the promiscuous use of "host" for any plant on which the insect was taken or from which it was actually reared. The terms bruchid host or host plant as used by the writer refer only to plants in some part of which the insect developed normally from the egg to the adult stage. Seeds (used in a rather broad sense) furnish food for the larvae of all of our American species whose host plant or plants are known, with one possible exception. Bridwell (1952: 124) referred to the record of Kieffer and Herbst (1905: 66) who reported a "*Bruchus* sp. n." reared from larvae found singly in bud galls on *Duvaua dependens* DC. (=*Schinus huigan* Molina), family Anacardiaceae, in Chile. No later reference to this species has been noted.

Under the misleading title "Descriptions of some weevils reared from cotton in Peru," Pierce (1915: 5-9) described three species of bruchids collected by Townsend who suspected that all of them were reared from the squares. The author (1. c., p. 5) stated that "While it is not unusual to find these beetles on cotton squares at nectar, no species has yet been definitely reared from cotton." We have considered it quite improbable that bruchids can develop in cotton squares.

REARING PROCEDURE

Positive relationship of a bruchid with its host plant or a hymenopterous parasite with its bruchid host can be determined only through rearing. The writer's main object of rearing is to obtain such association of each species of bruchid with as many plant species as normally occur in nature. Other reasons that may be listed are to obtain bruchids and their parasites in fresh conditions, and in series to show variations that might exist, and to acquire species that in some instances have not been collected by other methods.

Basically, the rearing of these insects and their parasites is comparatively simple, for in most instances they will emerge from perfectly dry plant material. For rearing, the writer prefers a pint fruit jar with a screw ring holding a piece of cloth. Pods or other fruits are collected after they have become mature or practically so, carefully sorted, and all foreign material removed before being caged. Material so caged should be quite dry because of the danger of mold. Some bruchid hosts will be infested also with the larvae of Rhynchophora or Lepidoptera which cannot always be detected, but their injury can be distinguished easily from bruchid work.

For some reason, reared bruchids often have a tendency to die with their elytra slightly separated or their wings exposed. This can be prevented, usually, by first thoroughly chilling the jar, dumping the contents into a flat pan, and quickly picking up the insects with an aspirator and transferring them to a killing bottle before they recover. A quick kill followed by a few days of drying in the open usually will result in satisfactory specimens.

Upon the completion of the rearing, a representative sample of the bruchid-injured plant material of each lot is retained for further reference. This material is kept in cardboard trays of unit size, and these are arranged alphabetically according to plant genera.

With any reared bruchid, the writer has long realized the value of retaining portions of the plant showing definite evidence of the infestation, especially the seed or seed container (pod, capsule, fruit, etc.) showing the exit hole of the insect and the circular disc cut from either or both of these parts of the host plant. That part of the plant upon which eggs are deposited should be mounted, or the eggs kept dry in a gelatin capsule or minute vial. The cast skins of the mature larvae, usually remaining within the pupal cells, should be retained. First-stage larvae are obtained by transferring unhatched eggs of one species from the host to a gelatin capsule. Upon completing their development within the eggs, the larvae will cut their way out through their respective shells but will remain within the capsule, from which they can be transferred to a small vial of alcohol. Egg parasites are to be reared in this manner. If time permits, older larvae and pupae may be obtained by cutting them out of infested seeds. Some confusion will exist in cases of field-collected material where two or even three species of bruchids may be present in a single lot of seeds, and especially when two of them are closely related and have similar habits. Since many of these insects are continuous breeders, pure colonies may be obtained by caging freshly emerged adults of these species with uninfested seeds of its host plant.

In most combinations of reared bruchids and hosts, the writer has attempted to obtain at least a few adults that can be associated positively with their respective seeds or pods. By placing infested seeds, pods, or fruits singly in gelatin capsules or vials of suitable size, any insect that may emerge will be kept confined with its own work, and eventually both can

be mounted on the same pin. The writer will not mount on the same pin an insect and plant material unless their relationship has been positively determined by this or some related method. Gelatin capsules are used in mounting smooth seeds or other parts of the plant that cannot be pinned or permanently glued to a point.

In some instances where composite populations exist in one host plant, a single seed may be found in nature with eggs of as many as three species of Bruchidae. Such a seed may produce one or even two adults belonging to any one or two of the species concerned. It is not uncommon to rear a bruchid from a seed which has an egg of another species, or to rear a hymenopteron from a seed that may have been infested by any one of the three species involved. Hymenoptera reared from various lots of legumes could be bruchid egg parasites, primary or secondary parasites of larvae of bruchids, weevils, or lepidopterons, or with certain plant genera they could be seed chalcids or their parasites. Thus the correct association of a reared insect with host (plant or insect) may become rather complicated, requiring almost unlimited care in the rearing work.

MOUNTING

The proper mounting of bruchids is considered by the writer as being difficult and tedious, and no short cut in the detailed procedure has been found. Except for large examples of *Caryobruchus* among our species, bruchids are usually ruined by pinning. Degreasing is essential, and the rearrangement of the legs and antennae is invariably necessary. Most of the adults die with the head and appendages closely applied to the body, and if mounted in this condition, particularly with too broad a point or with too much adhesive, characters useful in making a determination often are hidden. These characters are to be found on the coxal plates, on the first abdominal segment, and on the hind legs, both of which should be more or less straightened out and moved downward exposing the coxal plates and the often characteristic armature on the lower margin of the femora. Starting with a dry specimen the procedure is to relax it slightly by placing it in Barber's relaxing fluid for from 15 seconds to 1 minute or more, depending upon the size of the insect. Upon its removal from this solution, the excess liquid is blotted off and the insect held on its back while the legs and antennae are moved into the desired positions. Holding the insect while the appendages are being moved into position without rubbing off the very fine pubescence on the upper surface of most of the species is a difficult procedure. After drying thoroughly, the specimen is placed in benzene for one or more days, again depending upon its size. Large species may require two or more changes of the solvent. The insect can be mounted as soon as dry. Shell vials are used to hold the relaxing medium and the solvent, one suitable for the few insects usually handled at a time being approximately 5/8 x 1-1/4 inches in size. The insect or insects are lifted from the liquids by means of a homemade device consisting of a small handle to which is fastened a short piece of metal 3/6 of an inch wide, the apical 1/4-inch of the metal being bent at a right angle and the inner edge rounded to conform with the curvature of the shell vial. The points used by the writer vary in width at the apex according to the size of the insect. They are used either straight with the bruchid mounted upright at the tip, or with the end bent down at an angle to conform with the right side of the body of the insect. A minimum amount of a nonwater-soluble adhesive is used.

PRESERVING PLANT EVIDENCE

The maintenance of a small herbarium and a seed collection is considered a necessity by the writer in the collection and study of Bruchidae. In practically all cases, herbarium specimens should be taken from the same plant (if possible) from which seeds were collected, even though the plant may be well known to the collector and its scientific name appears to be quite stable. Often only the seeds or seed containers are to be found during the dormant season of the plant, and among bruchid hosts, many of these can be placed to genus and some specifically determined, especially with the aid of a seed collection with named material for comparison. Specimens for the herbarium are limited primarily to the Leguminosae and to several other plant families having genera known to include hosts or suspected hosts of bruchids. These two botanical collections, together with the bruchids and their work, when maintained as one unit, provide a rather permanent record of the natural relationship of the insect with its host. Published statements on the insect-plant associations based upon such a composite collection can be verified readily or corrected later if desired or necessary. In the absence of plant evidence, a published record based upon a misdetermined host is quite impossible to correct.

NEW UNITED STATES RECORDS

Kytorhinus prolixus (Fall)

Mylabris prolixus Fall 1926: 204.
Kytorhinus prolixus (Fall) Bridwell 1946: 53.

The first reference to this insect was that of Bridwell (1922: 467) who published a note on the type of *Kytorhinus* Fischer and stated that an undescribed species of this Old-World genus was known from Alberta. It was described in *Mylabris* a few years later by Fall, from examples he collected at McKinley Park Station, Alaska. In 1946 it was assigned to its proper genus by Bridwell. Brown (1952: 342) reported the insect from Reindeer Depot and Norman Wells, Northwest Territories, and from Edmonton and Calgary, Alberta. At the first locality the bruchid was abundant on *Hedysarum alpinum* L. var. *americanum* Michx. In addition to the Canadian specimens mentioned by Bridwell, the U. S. National Mu-

seum has one example from "Matanuska, Alaska VII-5-44 J C Chamberlain." On hand are three specimens collected by F. S. Carr at Edmonton and Ft. Saskatchewan, Alberta, "On *Hedysarum boreale*." No definite rearings have been recorded.

One specimen labeled "Hills City, S. D. July 8, 1946 H. C. Severin, Coll." was received for determination from the collector. Based upon this record, the species is added here to the United States list.

Acanthoscelides submuticus (Sharp)

Bruchus submuticus Sharp 1885: 455.

The late J. C. Bridwell had concluded long ago that *submuticus* occurred in the United States, and he applied Sharp's name to numerous lots he so determined without publishing a note on his conclusion. This binomial appeared in print for the first time when Glick (1939: 36) reported collecting one bruchid by airplane at 1000 feet altitude at Tallulah, Louisiana. The determination was furnished him by Bridwell, who, unfortunately, misidentified the insect. The badly broken Tallulah specimen was examined later by the present writer and recognized as an *Acanthoscelides* quite distinct from the Mexican species in question.

Sharp's description was based upon a series of 12 examples collected by Morrison in "Northern Sonora." Insects from this locality can be expected quite naturally to occur in southern Arizona. The writer had tentatively determined as *submuticus* certain examples from Ramsey Canyon in the Huachuca Mountains of Arizona. On September 28, 1956, the writer collected in the upper portion of this canyon and found maturing pods of *Amorpha fruticosa* var. *occidentalis* (Abrams) Kearney & Peebles. The first bruchid to emerge from this crop of pods appeared on October 3. This species proved to be a continuous breeder and several hundred specimens were reared from this one lot. With the aid of this additional reared material, the determination as *submuticus* has been considered definite. Although the exact relationship between Sharp's species and certain of our several bruchids associated with *Amorpha* is unsettled at the moment, the writer considers it quite safe to add *A. submuticus* (Sharp) to our United States list.

Acanthoscelides mundulus (Sharp)

Bruchus mundulus Sharp 1886: 448.
Acanthoscelides mundulus (Sharp) Blackwelder 1946: 760.

This species was described from a single example from Guanajuato, Mexico. Of the 11 Mexican specimens of this species on hand, 10 were taken by the writer at Chapala, Jalisco, August 17-18, 1949, and one is labeled "35 Mi S Puebla 11 25 53 Pueb D G Kissinger." Material kindly loaned the writer by H. B. Leech of the California Academy of Sciences included two Mexican examples of *mundulus*. One is labeled "8 mi. S. Izucar de Matamoros, Puebla Mex. Xii-10-48 H. B. Leech Collector" and the other, from the Fenyes collection, is simply labeled "Matamoros, Mex. May." Mr. Leech wrote that Fenyes' locality is almost certainly Izucar de Matamoros in Puebla.

The California Academy collection also contains the first specimens of *mundulus* seen by the writer from the United States. Labels on these two examples read, respectively, "Baboquivari Mts. Ariz. Aug. 20, 1924 O. C. Poling Collector" and "Baboquivari Canyon W side Baboquivari Mts. Pima Co. Ariz. 25-27.VII.52 H. B. Leech J. W. Green Collectors." Later, one example of this species was received from the American Museum of Natural History through M. A. Cazier for naming. It is labeled "Coyote. Mts. Ariz. Aug. 3-7, 1916 About 3500 ft." More recently three specimens of *mundulus* were observed in the Fall collection in Cambridge, through the kindness of P. J. Darlington, Jr. These were undetermined and bore the following labels: "Baboquiv. Mts. Ariz. VII/15-30/24" (1), and same data except "X/1-15/24" (2). The host plant is unknown.

Sennius celatus (Sharp), new combination

Bruchus celatus Sharp 1885: 449.

This species was described from two examples from Bugaba, Panama. Recently determined specimens in the American Museum of Natural History collection are labeled: "Salina Cruz, Oaxaca, Mex. July 17, 1947 B. Malkin" and "Mazatlan, Mexico." Twelve examples in the Dreisbach collection are labeled: "Alvarado, Mex. II-15-54 R. R. Dreisbach" (1); "Rosario, Mex. Sinoloa, 6-28-56 R. & K. Dreisbach" (9); "Wollamo, Mex. Sinaloa, 6-22-56 R. & K. Dreisbach" (1); and same data except for date, "6-27-56" (1).

In mid-February and again about May 1, 1936, J. W. Monk collected pods of a *Cassia* at Donna, Texas, and forwarded them to the writer for possible rearings of bruchids. The plant was not recognized from the pods, but the flowering plants which were readily grown from the seed were determined as *Adipera bicapsularis* (L.) B. & R. in North American Flora, in which publication the authors (Britton and Rose 1930: 240) recorded the distribution of the plant as Bolivia and Paraguay to Mexico, West Indies, and Florida. The writer's specific determination has been verified by several botanists, but *Adipera* has been synonymized under the older genus *Cassia*. The plant has not been recorded from Texas, and was not mentioned in Turner's recent publication "The Legumes of Texas" (1960). The source of the Donna plant is unknown to the writer, but the one mentioned below from McAllen was cultivated. The only specimens of *Cassia bicapsularis* collected by the writer were taken at roadside in Brownsville, quite definitely here an escape from cultivation, although in a location where road improvement would probably eradicate the small colony.

Eggs of a *Sennius* were found within the pods of the first lot from Donna wherever there was a hole or break in the valve large enough for the female

bruchid to enter or through which eggs could be deposited. Most of the eggs were deposited singly or in irregular masses on the black partitions separating the seeds, but some were placed on seeds when they were exposed. Bruchids had emerged in numbers from the second lot of pods when received, and hundreds of examples of *S. celatus* were reared during May from the two lots.

From pods of *Cassia bicapsularis* collected in McAllen, Texas, for the writer early in June, 1948, by H. S. Barber and R. B. Lattimore, a single example of *S. celatus* was eventually found dead within a pod associated with the seed from which it had emerged.

Sennius xanthopus (Suffrian), new combination

Bruchus xanthopus Suffrian 1870: 156.

This West Indian bruchid was described from Cuba and was reported from Puerto Rico by Wolcott (1936: 285), based upon a determination by H. S. Barber. The insect has been in Florida for a long time, judging from specimens in the U. S. National Museum labeled as follows: "Tampa 18.4 Fla Coll Hubbard & Schwarz," "N Smyrna 6 Fla Coll Hubbard & Schwarz," and "N Smyrna 3.6 Fla Collection C. V. Riley." Museum specimens from Orlando, Florida, labeled "Bred from *Cassia* sp. R. T. Cotton Collector" are perhaps the first to be associated with a host plant.

The writer has made numerous rearings of this bruchid in Florida, and a few in Georgia, all from two species of *Cassia*, *C. occidentalis* L. and *C. obtusifolia* L. (*C. tora* of authors). These two "coffeeweeds" are natives of tropical America, but they have long been well established in the southeastern United States, especially in the Gulf States, where they are often found in mixed colonies. The pods of both usually mature in the late fall and remain on the plants over winter and well into the following season. They are slowly dehiscent, the valves eventually splitting open, exposing the seeds, and allowing most of them to fall to the ground. The bruchid is a continuous and very prolific breeder, at least in Florida, and thousands of specimens have been reared. Bruchid eggs are first deposited on the maturing pods, then on seeds as soon as these become exposed. Some lots of pods and seeds collected in central Florida during 1929 became infested with a predaceous mite, and the insect colonies had to be fumigated.

Florida rearing records from *Cassia obtusifolia* follow. The first evidence of an infestation was noted October 26, 1929, when bruchid eggs were found on pods of this plant at Lakeland. Additional pods were collected from the same plant colony November 11 and added to the first lot. The first emergence was noted November 23 when four adults were found in the rearing jar. Nearly 100 additional specimens emerged during the next 5 weeks. Adults also started to emerge November 23 from pods collected November 2, 1929, at Loughman. About 90 bruchids emerged from this lot during the next 5 weeks, and a second generation of 37 emerged during late February. Adults again were reared in numbers from seeds collected in this locality March 30, 1933. From pods collected at Bartow, November 11, 1929, the first emergence was noted on November 23. About 75 additional specimens appeared before the first of the year, and a second generation of 70 emerged during late February. On February 2, 1930, about two dozen mature and partially opened pods were collected near Dunedin. About 150 adults were obtained from this lot during the next 14 months. Old pods still containing seeds were collected April 3-5, 1933, at Dade City, Lake City, Belleview, and Silver Springs. The bruchid was reared from all of these lots, and in great numbers from the last one mentioned. Numerous adults also were reared from old seeds collected near Gainesville, April 29, 1937.

Florida records from *Cassia occidentalis* involve collections from two localities. Infested pods were found along with those of *C. obtusifolia* at Loughman on November 2, 1929. The first bruchids to emerge were noted in the rearing jar on November 29. More than 1700 bruchids emerged from this lot during the following 12 months, the main periods of emergence being mid-winter, May, August, and October-November, indicating four generations. Normally one seed supports a single insect. In a few cases, however, a second larva was able to develop in a seed, but because of insufficient food the resulting adult was dwarfed. A greater number of these insects was reared from pods collected in the same locality on March 30, 1933, during the 11 months the colony was maintained. Infested pods collected April 4, 1933, at Silver Springs also produced quantities of the bruchid.

Bruchid eggs were found very sparsely on seeds collected from old plants of *Cassia occidentalis* at Fort Valley, Georgia, on February 10-18, 1931. No normal emergence of insects took place, but later one dead bruchid was extracted from a seed. It had been able nearly to complete cutting its way through the seed coat. This is the first example of *xanthopus* seen from Georgia. Old pods of both *C. obtusifolia* and *C. occidentalis* were collected May 10, 1954, at roadside near Arlington, Georgia. The seeds proved to be infested by this bruchid, and a few adults were reared from each lot.

S. xanthopus taken by the writer in general collecting were all from Florida: Silver Springs and Ocala, 4/4/33; Gainesville, 4/29/37; and Bradenton, 3/19/41.

Callosobruchus ademptus (Sharp)

Bruchus ademptus Sharp 1886: 36.
Callosobruchus ademptus (Sharp) Chujo 1937: 190.

Sharp described this Japanese species as a *Bruchus*, but it was transferred later to its proper genus, *Callosobruchus*, by Chujo.

Bridwell (1938: 75) stated that "*C. ademptus* (Sharp 1886) extends out of the tropics into temperate northeastern Asia affecting the kudzu, *Puera-*

ria thunbergiana Bentham." According to the "Review of Applied Entomology," 30(1): 13, Suzuki (1940: 107-108) reported that this bruchid infested up to six percent of the seeds of kudzu in Japan.

The first *Callosobruchus ademptus* to be found in kudzu seed grown in this country evidently were taken in 1941. U. S. National Museum material includes two examples labeled "In *Pueraria thun.* seed Alabama 12.VI.41" and two specimens "In *Pueraria thunbergiana* Soil Cons. Nursery, Ala. 17.IX-41." Associated with both of these lots are injured seeds. Six specimens and injured seeds bear the label "Statesville, N. C. Rec'd XI-6-43 R E Stitt Ex Kudzu seed," and one mounted adult and a gelatin capsule with numerous injured seeds (some containing bruchids) are labeled "In *Pueraria thunbergiana* seed North Carolina 26-V-44."

The writer has one adult *ademptus* extracted from one of a small lot of Alabama-grown seeds kindly sent to him by the Thorsby Soils Conservation Nursery for examination in February 1949. Infested kudzu seed imported from Japan were found by the writer in seed stores in Sewell, New Jersey, and Washington, D. C., in May 1938. In these cases the insects were dead, but evidently bruchids of other importations of Japanese kudzu seed came through alive and were able to establish themselves.

Pueraria thunbergiana (S. & Z.) Benth. is considered a synonym of *P. lobata* (Willd.) Ohwi. This is an Asiatic plant now well established in the southeastern United States.

Callosobruchus phaseoli (Gyllenhal)

Bruchus phascoli Gyllenhal 1833: 37.
Callosobruchus phascoli (Gyllenhal) Bridwell 1938: 75.

Bridwell (1918: 471) referred to this bruchid as the dolichos weevil in a paper on Bruchidae in the Hawaiian Islands, where it was reared from the seeds of *Dolichos lablab*. He found the eggs also on pods of the lima bean (*Phascolus lunatus*) in nature, and succeeded in rearing one small individual from an apparently naturally infested lima bean. Later (1919: 17) he reported that the insect had been determined by Schwarz as *Pachymerus phascoli* (Gyllenhal). The same author (1938: 75) placed *phaseoli* in the genus *Callosobruchus* and stated that the species was widely distributed in commerce, affecting food legumes of Old-World origin.

In their treatment of some Bruchidae of India and Ceylon, Mukerji and Chatterjee (1951: 8, 27) discussed the genitalia of this species as *Bruchus (Laria) phaseoli* Gyll., and listed under host plants "*Dolichos lablab*; seeds of Bean."

These records are the only ones at hand indicating that the bruchid's natural host or hosts include legumes other than species of *Dolichos*. The insect is in the writer's collection from Hawaii (F. C. Haddon), Mysore State, India (P. S. Nathan), and from Cuba, all reared from *Dolichos lablab*. Four examples of this cosmopolitan bruchid in the U. S. National Museum labeled "Bueno Vista pea [Bonavist] Homestead Fla 26.4 44-11147" were determined by Bridwell as the first material from the United States. These were taken during a special survey by the U. S. Department of Agriculture, and the discovery was recorded by Myers (1947:4) as follows:

> "Taken in Dade County, Fla., where severe infestation was found in the dry seed pods of *Dolichos lablab* in the spring of 1944.
> "This species is generally distributed throughout the tropical regions of the world and attacks several species of leguminous plants."

This record was not included in the Fifth Supplement to the Leng Catalogue. Since the insect is known from Cuba, its occurrence in southern Florida is not unexpected.

During the fall of 1959 the writer determined as *Callosobruchus phascoli* (Gyllenhal) one female example in the Canadian National Collection labeled "Ottawa, Ont. III.17.1949 S. D. Hicks ex Cal. Lima beans." Mr. Hicks reported that this specimen was found alive in a sealed sack of lima beans purchased in a local grocery store. The beans were labeled as having been grown and packed in California. The specimen is in excellent condition, practically all of the pubescence being intact, thus indicating a possible emergence not long before its discovery. However, in the absence of positive evidence, such as an injured seed in this case, the writer is not recording here that this specimen actually emerged from one of the lima beans. This very interesting association of the insect with a possible host plant is being presented to economic entomologists, who in turn can determine whether or not we may have *C. phaseoli* established in California.

Megacerus leucosomus (Sharp)

Bruchus leucosomus Sharp 1885: 488.
Megacerus leucosomus (Sharp) Blackwelder 1946: 762.

This species was described from Mexico, Guatemala, and Panama. Blackwelder was the first to list it under *Megacerus*.

Four recently determined Mexican examples received from H. B. Leech are labeled: "9 mi. south Cuernavaca, Mex. XII-9-48 H. B. Leech Collector," "15 mi. S. Cuernavaca Mex. XI-15-46 E. C. Van-Dyke Collector," "Maria Madre Id village May 21, 1925 Tres Marias Islands H. H. Keifer Collector," and "Matamoros, Mex. May." The last specimen is from the Fenyes collection, and as noted under *mundulus*, the locality is quite certain to be in the state of Puebla. The writer took two examples near Chapala, Jalisco, August 17, 1949.

The species is included in the Leng Catalogue, based on Baja California records, but it has not been recorded from within our borders until the present time. A total of seven Texas examples has been seen thus far. In March 1921 J. C. Bridwell obtained three examples of this morning-glory bruchid in the Brownsville area. These were said to have been reared, but no such data accompany the specimens. H. J. Reinhard sent one specimen labeled

"Hidalgo County Tx" to the writer for determination. Three males labeled "SEHidalgo Co Tex 7/1/47" in the G. B. Vogt collection also have been so named.

Ivan Shiller secured a series of *M. leucosomus* (along with *M. leucospilus*) from the seeds of the bush morning-glory, *Ipomoea crassicaulis* (Benth.), growing in Matamoros, Tamaulipas, Mexico, the date on the U. S. National Museum specimens being Feb. 28, 1947.

This plant, formerly known as *Ipomoea fistulosa* Mart., is a native of South America, its range extending northward into southern Texas. Small (1933: 1087) also recorded isolated colonies at Pensacola, Florida, and on St. James Island, South Carolina. It is widely cultivated as an ornamental.

Megacerus leucospilus (Sharp)

Bruchus leucospilus Sharp 1885: 489, tab. XXVI, fig. 19. *Megacerus leucorpilus* (sic) (Sharp) Bridwell 1929: 113.

Originally described from three examples from Vera Cruz, Mexico. Bridwell was the first to place the species in *Megacerus*.

Ivan Shiller reared a short series of this species, together with *M. leucosomus*, from the same collection of seed capsules of *Ipomoea crassicaulis* from the Matamoros area, the emergence date on this U. S. National Museum material also being February 28, 1947.

O. L. Cartwright and R. B. Lattimore collected ripened capsules of this plant in Matamoros on October 5, 1951, and gave them to the writer for possible rearings. The seeds proved to be heavily infested, and hundreds of *M. leucospilus* were reared during the following two months.

On February 6, 1948, Ivan Shiller and the writer located a few large specimens of this bush morning-glory growing at roadside in Brownsville, Texas. A very large crop of mature seed capsules was present, and some were collected. On March 6, one male *leucospilus* emerged normally from one seed, and later one dead male was extracted from its seed. These were the first examples seen by the writer from our area. Recently, a series of one dozen specimens of this bruchid was seen in the Texas A. & M. College collection labeled "Hidalgo County 6-3 1957 Tex." Professor Reinhard advised that this lot was received with a report that the insects had been reared from bush morning-glory seed, and one specimen is so labeled. This host plant could be only *Ipomoea crassicaulis*.

ACKNOWLEDGEMENTS

The writer wishes to express his appreciation to the entomologists mentioned as having collected or loaned material referred to in the present paper, and especially to J. F. G. Clarke, W. H. Anderson, O. L. Cartwright, and P. J. Spangler for making available data on specimens in the U. S. National Museum and for numerous other favors. Thanks are also due H. A. Denmark and H. V. Weems, Jr., of the State Plant Board of Florida, for their assistance in the publication of the paper.

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