

**TWO INSECTS NEW TO PUERTO RICO: THE LYCID BEETLE,
THONALMUS CHEVROLATI BOURGEOIS, AND THE
EPHYDRID FLY, *EPHYDRA GRACILIS* PACKARD**

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Most of the insect pests attacking agricultural crops are not native to the country in which they do the most damage, but have been accidentally introduced from some other country. They do comparatively little damage in the country where they are native, and for the most part escape observation. But once accidentally introduced into some other country with a similar climate, where they are free from the attack of parasites, predators and other enemies which held them in check at home, they often become tremendously abundant and develop into serious economic pests. Of most of the insect pests we have detailed accounts of when and how they spread to other countries. It is the purpose of this paper to note comparable introductions into Puerto Rico of insects of minor or no economic importance.

It is not suggested that any of these insects are now, or are likely to become injurious pests, but the apparent ease with which they have overcome transportation difficulties and a very efficient and strict quarantine inspection, indicates that seriously injurious insect pests may find no greater difficulty in evading the barriers we raise against them.

The beautiful red and blue Lycid beetle, *Thonalmus chevrolati* Bourgeois, native of the Island of Hispaniola, was first recorded from Puerto Rico by Mr. R. H. Van Zwaluwenburg in his typewritten "Preliminary Check-List of Porto Rican Insects", in 1914, the determination of his specimens having been made either by Dr. Schwarz or Mr. Barber of the U. S. National Museum. Messrs. Leng & Mutchler, in their paper on "The Lycidae, Lampyridae and Cantharidae of the West Indies", published in 1922, noted that the species was "present in Porto Rico, by commercial introduction only,----- at Guánica, April in boat-load of cane from Higüeral", and in a recent letter, Mr. Van Zwaluwenburg states that in this note they were quite correct, but at this late date he can not remember whether the beetles were alive or dead when picked up in the hold of the

boat. Recent collections of considerable numbers of these beetles alive and active in cane fields, not only at Guánica, and in the nearby haciendas of María Antonia and Santa Rita, but also at Yauco, and more recently at Guayanilla, indicate that this insect is now unquestionably established in Puerto Rico. Guayanilla is over ten miles from Ensenada, the port of Guánica, at which cane boats from Higüeral, Dominican Republic, land their cane. It seems most unlikely that casual beetles would fly that distance from the cane boat against the wind in such numbers as to be repeatedly observed in cane fields and, at the time the observations were made, no cane boat was daily making the trip across the Mona Passage. It should be especially noted that the holds of all boats bringing cane from Santo Domingo to Guánica are fumigated with sulfur at the time the boat leaves La Romana, primarily to prevent the introduction from Santo Domingo of the cane butterfly, *Calisto pulchella* Lathy. This pest, of which the caterpillars often completely defoliate mature or nearly mature cane, occurs only in Hispaniola, and due to the fumigation of the cane brought from there, has not appeared in Puerto Rico. The effectiveness of burning sulfur in killing all stages of *Calisto* butterflies present on the cane is apparently not equalled in killing *Thonalmus* beetles accidentally and incidentally present on the cane, or the beetles may have used some other means of transportation to Puerto Rico.

The successful establishment of *Thonalmus chevrolati*, unanticipated and unpremeditated, in the southwestern corner of Puerto Rico is an interesting parallel to other introductions into Puerto Rico. A few miles to the west of Ensenada (towards Cabo Rojo lighthouse) is a series of salt lagoons where salt is evaporated from sea-water during the months of the year when there is no rainfall in this region. Great swarms of Ephydrid flies now occur at the margins of the lagoons, and the larvae and pupae are present in great numbers in the concentrated salt water. Material submitted to the U. S. National Museum has recently been identified by Mr. David G. Hall as *Ephydia gracilis* Packard. "This species was originally described from Salt Lake, Utah, and there are specimens in the collection from that locality, as well as from Yuma, Arizona, from San Carlos Bay, Gulf of California, and from Laguna Beach, California. Minor differences in color between the Puerto Rican specimens and those from the continent have been noted by Mr. Hall, but he found the male genitalia to match exactly and believes that only a single species is involved." (Latter of Mr. C. F. W. Muesebeck in charge Division of Insect Identification of the U. S. National Museum.)

Specimens of what is presumably the same species had been collected in this region, at Ensenada and Faro de Cabo Rojo, as far as back as 1926 by Dr. Stuart T. Danforth, but Dr. Aldrich and Mr. Curran had identified his material only to the genus. When *Ephydra gracilis* appeared here is uncertain, but Mr. Van Zwaluwenburg did not collect it at the time he was in Puerto Rico, and the great swarms of flies are so noticeable that it is hardly likely that it would not have been noted if present at that time. That any stage of this Ephydrid fly could be carried from California to Puerto Rico accidentally in such numbers as to ensure its establishment seems most improbable, yet Dr. Aldrich notes that it originally occurred in Salt Lake, Utah, and arrived in the San Francisco Bay region only after the construction of the railroad from Utah.

The traffic in insects between California and Puerto Rico is not all in one direction, however. The corn leafhopper, *Cicadula maidis* DeLong & Wolcott, described originally from Puerto Rican material collected as far as back in 1912, and from Haina, Santo Domingo in 1920, was noted in "Insect Pest Survey", p. 284, 1934, by Mr. D. B. Mackie from California as "first taken in 1933 in San Bernardino, and in 1934 attacking corn in Los Angeles County. These constitute the first record for the United States. A survey of California shows that the species is present in the eight southern counties from Kern and Santa Barbara to the Mexican border".

The turkey vulture was an intentional introduction in the Guánica region and Dr. Alex. Wetmore writes in "Birds of Porto Rico", "In the dry limestone hills above Guánica, the turkey vulture, *Cathartes aura aura* (Linnaeus), was fairly common. It appeared to range casually from Añasco to Yauco, keeping near the coast, though once reported from the summit of "Mata de Plátano" above Adjuntas. The species is said to have been introduced from Cuba into the southeastern part of the Island by the Spanish Government (some say, incorrectly, by Guánica Central), the exact date not being known. An old man near Yauco who had known them since boyhood stated that their numbers had neither increased nor decreased in that time. There is no apparent reason for their not having increased and spread at least the entire length of the dry south coast, as the conditions there are apparently as favorable as in this region."

The southwestern corner of Puerto Rico may present unique climatic conditions, altho they would appear to be quite similar to those of comparative sections of the larger of the Greater Antilles, and most nearly like those of southern Hispaniola. Yet for each

organism which may be introduced, some special factor or factors, specific for that particular organism, apparently determines its survival. In an attempt to lessen the numbers of horn-fly in the Guánica region, Mr. G. B. Merrill brought about a hundred specimens of the common dung-rolling beetle, *Canthon violaceas* Olivier, from La Romana, R. D. in 1913, and successfully reared many times that number in captivity at Hacienda Santa Rita, Guánica, releasing a hundred or more at a time when they appeared crowded in the rearing cages. Since that time, not a single individual has ever been recovered in the field. One can only wonder why, for all essential conditions appeared to be suitable for the establishment of this scarab beetle.

Of the instances cited, no two are exactly parallel, but they furnish pertinent examples of how little it is possible to predict in advance whether any particular species will become established in a new environment, even tho to us it seems very similar to that in which the species is endemic. Altho all of the species mentioned are of but minor economic importance, they also indicate the value of the most rigorous enforcement against injurious insects of plant quarantine regulations, even those which may seem at times most tiresome and oppressive. The recent appearance and rapid and destructive spread of the cotton boll weevil, *Anthonomus grandis* Boheman, in Haiti, (see this Journal 21:69-76, 1937) apparently accidentally introduced in cargo from the southern United States, is only the most recent example in the West Indies of how easily the the most dangerous insect pests become widely dispersed under present conditions of commerce.

If it is possible for the two insects here noted to be introduced into Puerto Rico, it is possible for others to be introduced and the next insects that come to the island may be very destructive. The Santo Domingo cane butterfly (*Calisto pulchella*) in all probability, would be, a very injurious pest on our most important crop, and the introduction of the cotton boll weevil (*Anthonomus grandis*) would be a great blow to our cotton industry. Both of these very destructive insects are in Hispaniola and every possible precaution should be taken to prevent their introduction into Puerto Rico.