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THE PASSALIDAE OF THE GALAPAGOS ISLANDS

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ABSTRACT

The single specimen of Passalidae known from the Galapagos Is. (Chatham Is.), formerly identified as *Passalus interruptus* (L.), is really *P. punctiger* Lepeletier and Serville. It is a slightly teneral female. Its length is closer to that of Guatemalan Pacific coast specimens of *P. punctiger* than to that of *P. punctiger* specimens from South American countries bordering the Pacific.

RESUMEN

El único espécimen de Passalidae conocido de las Islas Galápagos (Chatham Is.), anteriormente determinado como *Passalus interruptus* (L.), en verdad es *P. punctiger* Lepeletier y Serville. Es una hembra y es un poco teneral. Su largo corporal es más parecido a el de especímenes de *P. punctiger* de la costa pacífica de Guatemala que a el de especímenes de *P. punctiger* de países sudamericanas de la costa pacífica.

During the voyage of the Albatross to the Galapagos Islands in 1891, a single specimen of Passalidae (Coleoptera) was collected. Linell (1898) reported this specimen as collected on Chatham Is. and called it *Neleus tlascala* Percheron. Subsequently Van Dyke (1953) and Linsley and Usinger (1966) mention the specimen, but cite it from Charles Is. I have examined several collections (including those of the California Academy of Sciences, American Museum of Natural History, Philadelphia Academy of Sciences, and the National Museum of Natural History) and, to my knowledge, no other specimen of Passalidae has been collected in the Galapagos. According to the resident entomologist there, no passalid is present in the limited collection of the Darwin Scientific Station of the Galapagos (Y. Lubin, pers. comm. 1981); however, it is possible that passalids haven't been collected because their restricted microhabitat (rotting logs) may not have coincided with the interests of entomologists that have collected there. Van Dyke (1953) states that the beetle fauna of the Galapagos "... is probably very much richer than indicated by the collections so far made." Robert Silberglied (pers. comm. 1981) collected in many localities on various Galapago islands during 6 months in 1970 and never saw a passalid. He used UV black light traps as well as other collecting techniques. The species of the Galapagos specimen is known to come to lights.

I chanced across the Albatross specimen in the collection of the NMNH. The label data, "Galapagos Chatham Isle Mar 29, 1891 *Neleus tlascala* Perch.," confirms Linell's original citation. The publications after Linell cite the specimen as *Passalus interruptus* (L.), a synonym of *N. tlascala*. Actually, the

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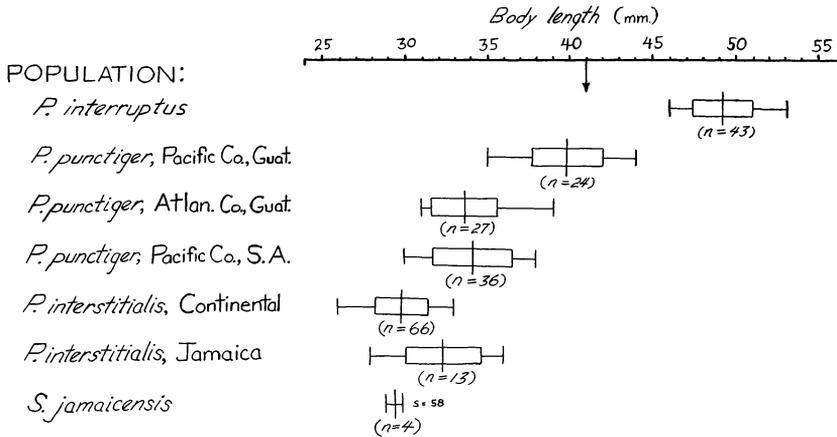


Fig. 1. Body lengths, with mean, standard deviation, and range, of various populations of Passalidae. Arrow indicates length of Galapagos specimen. Lengths are from tip of mandible to tip of elytra (Data on *P. punctiger* and *P. interstitialis* from Montenegro, 1978 unpubl.)

Galapagos specimen is *Passalus punctiger* Lepeletier and Serville. In fact, *N. tlascala* probably should be synonymized with *P. punctiger* instead of *P. interruptus* (Reyes-Castillo 1973), though it would be prudent to see the types before doing so. *N. tlascala* was originally described from Mexico in 1835. *P. interruptus* is primarily a South American species (Schuster 1978), apparently occurring only as far north as Panama. Its citation from Central America (e.g., Hincks 1953), Mexico and even Texas (Gravely 1918) is probably based on erroneous identifications. I recently examined some specimens in the collection of the Centro Nacional de Tecnologia Agropecuaria in El Salvador which were identified as *P. interruptus*. These were typical Central American Pacific coast *P. punctiger*.

Problems in the differentiation of these 2 species have occurred in the past, to such an extreme that at 1 point Hincks synonymized them (Hincks 1934, Reyes-Castillo 1973). Reyes-Castillo (1973) provides a list of characteristics that separate these species and cites previous good descriptions. Schuster (1978) separates them on aedeagal structure. In areas where I have collected both species (e.g., Tobago and Peru) the body size differences are extreme (compare *P. punctiger* Pacific S.A., which includes eastern Peru, and *P. interruptus* in Fig. 1). I never found small and large beetles in the same log tunnel system. This suggests a lack of gene flow between sympatric populations and reinforces their status as separate species.

Van Dyke (1953) stated that the Galapagos fauna as a whole is related to that of western South America. The *P. punctiger* of the Galapagos is more similar in body length (41 mm) to Guatemala Pacific coast *P. punctiger* (39.8 ± 0.95 mm, 95% confidence limits) than to South American Pacific coast *P. punctiger* (Fig. 1). This suggests a Central American origin, either as a recent isolated introduction or as a member of a long-established population. A South American origin would be possible if a population had become established on the island and the evolution of a distinct population size had occurred. This

has happened with other insular passalids. For example, *Passalus interstitialis* Esch. is longer on Jamaica (32.5 ± 1.43 mm, 95% c.l.) than on the mainland (29.8 ± 0.4 mm). The difference in length between the 2 types is significant at the 99.9% level ($t = 4.72$, $df = 77$) (Montenegro 1978 unpubl.). This difference may be due to competition with an endemic species on Jamaica, *Spasalus jamaicensis* (Hincks), which has a length (29.5 ± 0.92 mm) similar to the mainland *P. interstitialis*.

Passalids certainly have the ability to establish populations across large sea barriers (Reyes-Castillo and Halffter 1978) as evidenced by the presence of *Popilius lenzi* Kuwert on Costa Rica's Isla del Coco (Van Doesburg 1953). The Galapagos passalid could have been a member of such a population (now extinct?) or simply a recent introduction from the Pacific coast of Central America.

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