

A RECORD OF *MICROMALTHUS DEBILIS*
(COLEOPTERA: MICROMALTHIDAE) FROM CENTRAL AMERICA AND A
DISCUSSION OF ITS DISTRIBUTION

T. KEITH PHILIPS

Department of Entomology, Museum of Biological Diversity The Ohio State University, 1315 Kinnear Road,
Columbus, OH 43212

Current Address: Biology, Western Kentucky University, Bowling Green, KY 42101

While going through a sample from a flight intercept trap set in Belize, I came across a specimen of *Micromalthus debilis* LeConte, apparently the first record from Central America. This species, belonging to the monotypic family Micromalthidae, is recorded as native to eastern North America. While *M. debilis* might be common and is known from several states (Downie & Arnett 1996), individual collecting events appear rare.

In addition to being classified in a monotypic family, this species has an intriguing biology. Larvae develop in moist decaying hardwoods and can go through several stages and shapes in their development, appearing as caraboid, cerambycoid, and curculionoid larval types. The complicated lifecycle involves paedogenesis and several types of parthenogenesis (thelytoky, amphitoky, and arrhenotoky) (for details see Barber 1913a, b; Pringle 1938; Scott 1936, 1938, 1941).

The classification of this species has undergone much discussion and controversy. Although Downie & Arnett (1996) place the family within the Polyphaga based on several shared adult features with the Cantharoidea (or Elateroidea sensu Lawrence & Newton [1995]), overwhelming evidence from larval, wing, and male genitalic characters indicates that placement of the family within the Archostemata is correct (Lawrence & Newton 1995).

It is apparent that *M. debilis* was once much more widespread. Fossil larval records from amber are known from Lebanon (Cretaceous), the Baltic (Oligocene), the Dominican Republic (M. Lviae, pers. comm.) and Chiapas, Mexico (late Oligocene or early Miocene) (Lawrence & Newton 1995; Rozen 1971). Currently, *Micromalthus debilis* is considered native only to the eastern United States. Other North American records are British Columbia and New Mexico (Borror et al. 1986). More distant and overseas localities are South Africa (Scholtz & Holm 1985), Cuba, Brazil, Hong Kong, and Hawaii (Lawrence 1982). Arnett's (1968) record from Europe, based on Silvestri (1941), is in error, as Silvestri only stated that *M. debilis* should be found in Europe due to the import of large amounts of timber from the New World.

Most of these records (outside the eastern U.S.) undoubtedly are the result of introductions via the spread of larvae in dead wood (Lawrence &

Newton 1995). But it can sometimes be difficult to ascertain whether a species is native or introduced, as Whitehead and Wheeler (1990) pointed out.

The Belize specimen was collected in an area of relatively pristine forest (Orange Walk District, Rio Bravo Conservation Area, Well Trail near Research Station, 16-18.IV.1995, flight intercept trap, P. W. Kovarik), distant from any commercial center. This record appears to represent a disjunction, but the fossil record shows that the species was once present in nearby southern Mexico. Individuals are only rarely collected, and the sampling effort for small beetles in southern Mexico and Belize has been minimal, especially compared to that in eastern North America. Also, one of the known hosts, *Quercus*, is present in the Rio Bravo Conservation Area (P. Kovarik, personal communication). Hence, *M. debilis* might have a much more widespread native distribution than previously thought, and this Belize record might not be the result of an introduction. It is even possible, though perhaps less likely, that the Cuban record represents a natural distribution in the West Indies. Regardless of the factors resulting in the present distribution, it remains to be discovered how widespread this beetle family may actually be. I thank Alfred Wheeler and one anonymous reviewer for their comments.

SUMMARY

Micromalthus debilis LeConte is recorded from Central America for the first time. The possibility that it is native, and not introduced, is discussed.

REFERENCES CITED

- ARNETT, R. H., Jr. 1968. The beetles of the United States. The American Entomological Institute, Ann Arbor, Michigan, 1112 pp.
- BARBER, H. S. 1913a. The remarkable life-history of a new family (Micromalthidae) of beetles. Proc. Biol. Soc. Washington, 26: 185-190, pl. 4.
- BARBER, H. S. 1913b. Observations on the life history of *Micromalthus debilis* Lec. (Coleoptera). Proc. Entomol. Soc. Washington, 15: 31-38.
- BORROR, D. J., TRIPLEHORN, C. A., AND N. F. JOHNSON. 1986. An introduction to the study of insects, Sixth Edition, Sanders College Publishing, Philadelphia, 875 pp.

- DOWNIE, N. M., AND R. H. ARNETT, JR. 1996. The beetles of Northeastern North America, Vol. 1. The Sandhill Crane Press, Gainesville, FL, 880 pp.
- LAWRENCE, J. F. 1982. Coleoptera, pp. 482-553. In S. P. Parker (ed.), Synopsis and Classification of Living Organisms. Vol 2. McGraw-Hill, New York.
- LAWRENCE J. F., AND A. F. NEWTON, JR. 1995. Families and subfamilies of Coleoptera (with selected genera, notes, references and data on family-group names). pp. 779-1006. In J. Pakaluk and S. A. Slipinski, (eds.), Biology, Phylogeny, and Classification of Coleoptera: Papers celebrating the 80th birthday of Roy A. Crowson. Muzeum I Instytut Zoologii PAN, Waszawa.
- PRINGLE, J. A. 1938. A contribution to the knowledge of *Micromalthus debilis* LeC. (Coleoptera). Trans. R. Entomol. Soc. London, 87: 271-286.
- ROZEN, J. G. 1971. *Micromalthus debilis* LeConte from amber of Chiapas, Mexico (Coleoptera: Micromalthidae). Univ. California Publi. Entomol., 63: 75-76.
- SCHOLTZ, C. H., AND E. HOLM. 1985. Coleoptera. pp. 188-280. In C. H. Scholtz and E. Holm, (eds.), Insects of Southern Africa, Butterworth Publishers (Pty) Ltd., Durban.
- SCOTT, A. C. 1936. Haploidy and aberrant spermatogenesis in a coleopteran, *Micromalthus debilis* LeConte. J. Morphol., 59: 485-515.
- SCOTT, A. C. 1938. Paedogenesis in the Coleoptera. Z. Morphol. Ökol. Tiere, 3: 633-653.
- SCOTT, A. C. 1941. Reversal of sex production in *Micromalthus*. Biol. Bull., 81: 420-231.
- SILVESTRI, F. 1941. Distribuzione Geografica del *Micromalthus debilis* LeConte (Coleoptera: Micromalthidae). Boll. Soc. Entomol. Italiana 73: 1-2.
- WHITEHEAD, D. R., AND WHEELER, A. G., Jr. 1990. What is an immigrant arthropod? Ann. Entomol. Soc. America 83: 9-14.