A review of the Nearctic Odontomachus (Hymenoptera: Formicidae: Ponerinae) with a treatment of the males

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Abstract

The ant genus Odontomachus Latreille in the United States is reviewed. Six species are treated: O. brunneus (Patton), O. clarus Roger, O. desertorum Wheeler stat. nov., O. relictus Deyrup and Cover, O. ruginodis M.R. Smith, and O. haematodus (Linnaeus), a new record for North America. The spread of O. haematodus is documented, and its identity is clarified. The genus is diagnosed for species in the Nearctic region for all castes, and worker- and male-based keys are presented. The workers and males of all six species are described and figured, including the first male descriptions for O. haematodus and O. desertorum. This represents the first study of species-level variation in Odontomachus male genitalia, and one of the first of such studies of the Ponerinae for any biogeographic region. A discussion of the utility of the male sex for Odontomachus taxonomy is provided.

Key words: taxonomy, trap-jaw ants, alien species, invasive, identification, keys, genitalia

Introduction

Trap-jaw ants in the genus Odontomachus Latreille (Hymenoptera: Formicidae: Ponerinae) are large, conspicuous ants that can be recognized by the peculiar shape of the head, long linear mandibles, large tapering petiole, and obvious sting. The highly specialized head morphology constitutes a trap-jaw mechanism that the ants use primarily for catching prey (Patek et al. 2006). Males are more generalized and may be recognized in the Nearctic
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References


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http://dx.doi.org/10.11646/zootaxa.3635.4.1


http://dx.doi.org/10.11646/zootaxa.3732.1.1


http://dx.doi.org/10.1673/031.010.6401


http://dx.doi.org/10.1080/00222931608693799


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**APPENDIX 1.** Specimen records of *O. desertorum* and *O. haematodus* examined.


*Odontomachus haematodus. United States: Alabama: Baldwin Co.: Bay Minette, 14 June 2003, J. Forster (2 workers) [AUEM]; Blakely Park, 30°43'55"N 87°55'08"W, 7 Aug. 2013, J.A. MacGown, nest in oak-magnolia litter (1 worker) [MEM]; same date except, 30°43'57"N 87°54'46"W, 7 Aug. 2013. J.A. MacGown, nest in litter at base of pine tree in mixed pine hardwood forest (1 dealate queen, 39 workers) [MEM], same data except, 30°44'50"N 87°55'23"W, 8 Aug. 2013, at peanut butter bait on Quercus sp. in bottomland forest (1 worker) [MEM]; Bon Secour NWR, H. Richter (1 worker) [MEM], same data except, 30°13'43"N 87°49'51"W, 21 June 2001, J.A. MacGown, blacklight and MV lamp in foredunes (1 male) [MEM], same data except, 30°13'43"N 87°49'51"W, 29 March 2007, J.A. MacGown, J.G. Hill, in foredunes (12 workers) [MEM], same data except, 30°13'43"N 87°49'51"W, 3 April 2005, J.A. MacGown, under rotting log under scrub oak tree in foredunes (1 worker) [MEM], same data except, 30°14'10"N 87°49'49"W, J.A. MacGown, J.G. Hill, in hind dunes (1 worker) [MEM], same data except, 30°14'48"N 87°49'45"W, 3 April 2005, J.A. MacGown (8 workers) [MEM]; Byrnes Lake, 11 Oct. 2001, J.McCredie (1 worker) [MEM]; Daphne, Village Point Park, 12 June 2012, H. Richter (4 workers) [MEM]; Weeks Bay NERR, 30°24'58"N 87°49'10'W, 4 Aug. 2000, R.L. Brown, blacklight/boxtrap in pitcher plant bog, William H. Cross Expedition (2 males) [MEM], same data except, 3 Aug. 2000, T.L. Schiefer, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (5 males) [MEM]; Weeks Bay NERR, 30°25'03"N 87°49'50"W, 1 Aug. 2000, D.M. Pollock, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (1 male) [MEM], same data except, 1 Aug. 2000, J.A. MacGown, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (1 male) [MEM], same data except, 1 Aug. 2000, T.L. Schiefer, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (5 males) [MEM], same data except, 4 Aug. 2000, 4 Aug. 2000, J.A. MacGown, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (1 male) [MEM], same data except, 4 Aug. 2000, R.L. Brown, at tree seep in mixed forest near estuary, W.H. Cross Expedition (4 workers) [MEM], same data except, 4 Aug. 2000, T.L. Schiefer, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (1 male) [MEM], same data except, 5 Aug. 2000, T.L. Schiefer, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (3 males) [MEM], same data except, 6 Aug. 2000, T.L. Schiefer, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (1 male) [MEM], same data except, 1-8 Aug. 2000, J.A. MacGown, B. Smith, pitfall traps in mixed forest near estuary, W.H. Cross Expedition, (54 workers) [MEM], same data except, 20 June 2001, J.A. MacGown, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (3 males) [MEM], same data except, 20 June 2001, T.L. Schiefer blacklight & M.V. lamp in mixed forest near estuary, W.H. Cross Expedition (6 males) [MEM], same data except, 23 June 2001, J.A. MacGown, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (3 males) [MEM], same data except, 23 June 2001, J.A. MacGown, on mushroom on tree in mixed forest near estuary, W.H. Cross Expedition (2 workers) [MEM], same data except, 25 June 2001, T.L. Schiefer, blacklight trap in mixed forest near estuary, W.H. Cross Expedition (1 male) [MEM], same data except, 21-25 June 2001, J.A. MacGown, pitfall traps in mixed forest near estuary, W.H. Cross Expedition, (2 workers) [MEM], same data except, 6 April 2003, R.L. Brown, bottomland marsh (7 workers) [MEM], same data except, 2 April 2005, J.A. MacGown, under rotting log in mixed forest near estuary (1 dealate queen, 43 workers) [MEM], same data except, 2 April 2005 (25 workers) [MEM], J.A. MacGown, under rotting log in mixed forest near estuary (1 dealate queen, 43 workers) [MEM], same data except, 3 April 2005, R.L. Brown, under bark of Pinus. sp. stump in mixed forest near estuary (2 workers) [MEM]; Weeks Bay NERR, 30°25'08"N 87°49'50"W, 13 April 2013, Jaeger, colony in tree hole at edge of parking log and pitcher plant bog (4 workers) [MEM]; Weeks Bay NERR, 30°25'08"N 87°49'50"W, 13 April 2013, C. Jaeger, colony under PVC piping at dormitory at edge of mixed estuarine forest (3 workers) [MEM]; no locality data, May, R. Wingard, ex lawn (1worker) [AUEM], no locality data, June, R. Wingard, ex lawn (1worker) [AUEM], no locality data, summer, E. Benson (1 worker) [AUEM]; *Escambia Co.:* 1.25 mi NW of Atmore, 31°01'52"N 87°30'42"W, 1-22 July 2013, A. Van Hoogmoed, Lindgren Funnel trap with ethanol/Alpha pinene UHR Lure (1 dealate queen, 1 alate

**ODONTOMACHUS OF THE UNITED STATES**

*Zootaxa* 3802 (4) © 2014 Magnolia Press
Mobile Co.: Mobile, 1 June 1956 [no collector information] (3 workers) [USNM]; Mobile, 22 March 2003, T. Tolvier (2 workers) [AUEM]; Mobile, 20 May 1974, E.C. Ward, (2 workers) [AUEM]; Mobile, July 2007, C. Hesselein, (2 workers) [AUEM]; Mobile, 13 June 2003, J. Forster (4 workers) [AUEM]; Mobile, 30°34'39"N 88°12'09"W, 9 July 2013, G. Kalb, colony in rotted pecan stump in yard in residential neighborhood (3 workers) [MEM]; Mobile, 30°42'43"N 88°07'44"W, 12 June-2 July 2013, A. Van Hoogmoed, Lindgren funnel trap (1 alate queen) [MEM]; Prichard, Chickasobogue Park, 28 June 2012, H. Richter, base of dead pine tree (2 workers) [MEM]; Theodore, 20 June 2012, Richter, nest at base of tree (1 worker) [MEM].

Florida:

Florida: Escambia Co.: Perdido Bay Golf Club, N30 19.553° W087 25.584, 11 Nov. 2005, L.R. Davis, Jr., in litter at base of pine tree (1 worker, 1 male) [Lloyd Davis private collection].

Mississippi: