



## RESEARCH ARTICLE - ANTS

## First occurrence of the ant genus *Brachymyrmex* Mayr, 1868 (Hymenoptera: Formicidae) from the Kingdom of Saudi Arabia

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### Introduction

The ant genus *Brachymyrmex* was established by Mayr in 1868 for the type species *B. patagonicus* from Argentina. The genus is included in the Formicinae and the Myrmelachistini (Blaimer et al., 2015; Ward et al., 2016). Currently 61 species and subspecies are recognized (Bolton, 2015). The genus is distributed in the Nearctic (Creighton, 1950) and primarily in the Neotropical regions (Brown, 2000; Wild, 2007; Ortiz & Fernández, 2014). There are records from the Afrotropical Region as introductions including *B. cordemoyi* Forel, 1895 from Tanzania, and an unidentified species from Gabon, South Africa, São Tome and Príncipe, and the Malagasy Region (<http://www.antweb.org/>, accessed 20 September 2015).

Few treatments of the genus are presently available. Santschi (1923) published the last revision of the genus. Creighton (1950) reviewed the species for North America.

### Abstract

The formicine ant genus *Brachymyrmex* Mayr, 1868 is recorded for the first time from the Kingdom of Saudi Arabia and from the Arabian Peninsula by the species *Brachymyrmex cordemoyi* Forel, 1895. A brief description and automontage images of the species are presented including ecological observations.

Quirán et al. (2004) and Quiran (2005, 2007) have provided limited synopses of this genus for Argentina, but much additional revisionary work is required for the Neotropical Region. Recently, *Brachymyrmex* and *Myrmelachista* Roger, 1863 were transferred from the Plagiolenini and placed into the resurrected tribe Myrmelachistini by Ward et al. (2016). The majority of species of *Brachymyrmex* are considered generalized foragers with a broad range of nesting habitats including the soil, decaying wood, leaf litter, under loose bark at the base of tree trunks (MacGown et al., 2007), in seeds, and trees or fallen fruits (Brown, 2000).

The genus includes species that are known as successful invasive such as *B. patagonicus* having successfully established in many areas of the United States and has become a serious pest in both natural and disturbed habitats (MacGown et al., 2007).

Two key morphological features distinguish workers of *Brachymyrmex* from other formicine genera, a 9-segmented



antennae and lacking a differentiated antennal club (Bolton, 1994). Herein, the ant genus *Brachymyrmex* is recorded from the first time from the Kingdom of Saudi Arabia (KSA) and from the Arabian Peninsula by the species *B. cordemoyi*.

### Materials and methods

A sifting tray was used to collect the specimens. Digital color images of lateral and dorsal views of the entire body and full-face views of the head of each species were made at the California Academy of Sciences and were created using a Leica DFC450 digital camera with a Leica Z16 APO microscope and LAS (v3.8) software. These images are also available online on AntWeb ([www.antweb.org](http://www.antweb.org), Accessed 29 December 2015) and are accessible using the unique identifying specimen code.

### Measurements and Indices:

**Measurements:** All measurements are in millimeters.

**Eye length (EL):** Maximum diameter of eye.

**Head length (HL):** Length of head, excluding mandibles, measured from mid-point of anterior clypeal margin to mid-point of posterior head margin, in full-face view.

**Head width (HW):** Maximum width of head in full-face view, measured behind eyes.

**Interocular distance (IOD):** Measured on the straight line between inner margins of eyes.

**Mesosomal length (ML):** Diagonal length of mesosoma in profile from point at which pronotum meets the cervical shield to posterior base of metapleuron.

**Pronotal width (PW):** Maximum width of pronotum measured in dorsal view.

**Scape length (SL):** Maximum straight line length of antennal scape excluding basal constriction or neck to condylar bulb.

**Total length (TL):** Outstretched body length from mandibular apex to gastral apex.

### Indices:

**Cephalic index (CI):**  $HW \times 100/HL$ .

**Ocular index (EI):**  $EL \times 100/HW$ .

**Scape index (SI):**  $SL \times 100/HW$ .

### Museum abbreviations.

**CASC:** California Academy of Sciences Collection, San Francisco, California, USA.

**KSMA:** King Saud University Museum of Arthropods, King Saud University, Riyadh, Kingdom of Saudi Arabia.

### Results and discussion

*Brachymyrmex cordemoyi* Forel, 1895 (Figs 1-3)

*Brachymyrmex patagonicus* var. *cordemoyi* Forel, 1895: 49 (w.) Reunion, Malagasy.

Raised to species: Emery, 1906: 179. Subspecies of *Brachymyrmex patagonicus*: Forel, 1908: 399; Forel, 1912: 165; Santschi, 1912: 533. Revived status as species: Wheeler, 1922: 1036; Emery, 1925: 41. Current subspecies: nominal plus *Brachymyrmex cordemoyi distinctus*.



**Fig 1.** *Brachymyrmex cordemoyi*, Habitus. casent 0922067, Photographer: Michele Esposito, available from <http://www.antweb.org>. Accessed 01 December 2015.



**Fig 2.** *Brachymyrmex cordemoyi*, Lateral view, casent 0922067, Photographer: Michele Esposito, available from <http://www.antweb.org>. Accessed 01 December 2015.



**Fig 3.** *Brachymyrmex cordemoyi*, Frontal view, casent 0922067, Photographer: Michele Esposito, available from <http://www.antweb.org>. Accessed 01 December 2015.

**Material examined.** Saudi Arabia, 8 workers, Riyadh, King Saud University campus, 24.71383°N, 46.62557°E, 02.ii.2014, 660 m (S. Salman leg.); 6 workers, 20.ix.2014; 6 workers, 15.iii.2015, KSMA; 1 workers, 14.iii.2015, CASC, (casent0922067). All the above material has identical locality and collector information.

**Diagnosis. Worker.** Head distinctly longer than broad with a straight posterior margin and clearly convex lateral sides; eyes with nine ommatidia in the longest row; scapes when laid back from their insertions just reach posterior margin of head. **Mesosoma.** Metanotal groove impressed; propodeal dorsum short descending abruptly into long declivity; propodeal spiracle small, circular, situated at middle of propodeal declivity. **Sculpture.** Body smooth and shining. **Pilosity.** Cephalic dorsum with abundant appressed pubescence; two pairs of long setae on anterior and posterior clypeal margins; one pairs of setae on frontal carinae, one pair on posterior margin of head; mesosoma with one pair of long setae on pronotal and promesonotal dorsum; gaster with many scattered long setae and some appressed pubescence. **Color.** Head and body uniform brown with the antennae and legs yellowish.

**Measurements:** EL 0.08–0.11, HL 0.40–0.55, HW 0.35–0.51, IOD 0.30–0.41, ML 0.34–0.51, PW 0.25–0.35, SL 0.34–0.45, TL 1.16–1.92, **Indices:** CI 84–94, OI 20–28, SI 87–100 (n=19).

**Diagnostic notes:** The short scapes of *B. cordemoyi* separate it from *B. patagonicus*. *Brachymyrmex obscurior* Forel, 1893 has short scapes and appressed pubescence on the gaster, but the appressed hairs are distinctly denser.

**Ecological notes:** This species was found nesting in soil at the base of a date palm tree (*Phoenix dactylifera* L.) in King Saud University campus (Fig 4), Riyadh. Specimens were collected by sifting the soil which was a mixture of sandy clay, with much decaying organic material. Workers were found about 8 cm deep in the soil. Other ant species collected with *B. cordemoyi* included: *Solenopsis saudiensis* Sharaf & Aldawood 2011, *Nylanderia jaegerskioeldi* (Mayr, 1904), *Tapinoma simrothi* Krausse, 1911, and *Cardiocondyla mauritanica* Forel, 1890.

**Geographic range.** Neotropical (Wild, 2007), and Afrotropical (Mauritius) (Forel, 1907) regions.

*Brachymyrmex patagonicus* is an example of a successful invasive ant species. This species has the ability to survive in a wide range of habitats and the capacity to coexist with various dominant ant species (MacGown et al., 2007). Colonies of this species can be established in relatively small areas and are apparently transported easily by human activities from site to site. King Saud University is the home for many students from different countries in Africa (Sudan, Somalia, Nigeria, Mali, Senegal and Guinea), and perhaps *B. cordemoyi* was incidentally introduced by students with their belongings. Another possibility is by the numerous imported cosmopolitan horticultural plants and irrigated lawns that are planted throughout the campus. This introduction may have recently occurred. The senior author has been collecting ants



**Fig 4.** Habitat of *Brachymyrmex cordemoyi*, King Saud University Campus, Riyadh, Kingdom of Saudi Arabia. (Photo: S. Salman).

for ten years on the campus and in many other regions of KSA and this species has not been observed. Additional studies will indicate the extent of the distribution of this ant species in KSA and the impact on native fauna.

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