The ants (Hymenoptera:formicidae) of Rawdhat Khorim Nature Preserve, Saudi Arabia, with description of a new species of the genus Tetramorium Mayr

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Abstract

Rawdhat Khorim, a densely vegetated alluvial basin supporting a distinctive floral community in the hyper-arid desert of central Saudi Arabia, is one of the most important protected nature sanctuaries of the country. The ant fauna (Formicidae) of Rawdhat Khorim was sampled and 14 species, including one new species were collected using a variety of sampling methods. The new species, Tetramorium saudicum sp. n., a member of the T. caespitum-group, is described based on the worker caste. Cataglyphis viaticoides (André) is recorded for the first time from Saudi Arabia. The information in this paper will allow natural resource managers to establish long-term ecological studies, using sentinel taxa such as ants to evaluate present and future impacts on Rawdhats.

Key words: Saudi Arabia, Formicidae, ant communities, Tetramorium, new species, new records

Introduction

In many regions of the world nature reserves, sanctuaries, and wildlife parks are often the last refuges of biological diversity. Increasing human populations and associated impacts are usually at the expense of natural ecosystems and biological resources. These perturbations often impact even protected or managed landscapes (Likens, 1991; Hobbs and Huenneke, 1992; NCWDC, 2005).

The Arabian Peninsula, a region of a unique mixture of Palaearctic, Afrotropical, and Oriental faunal elements is being impacted by rapid population growth and development (Roudi-Fahimi and Kent 2007). As Al Omari (2011) pointed out, protected areas of the Peninsula do not fully reflect the diversity of habitats and species. In the largest country of the Arabian Peninsula, the Kingdom of Saudi Arabia, the central region comprising Riyadh Province includes remarkable ecosystems such as the Al-Dahna Desert and the Towaik Mountains (Zoghet and Al Alsheikh, 1999). Another unique ecosystem of Riyadh Province and environs is known as Rawdhats, the Arabic word for “gardens”. About 130 Rawdhats have been identified in Riyadh Province (Al Mobdel, 2001). These “gardens” are usually densely vegetated alluvial basins or plains that often include vernal ponds and lakes, supporting a distinctive floral community in the hyper-arid deserts of the region (Vesey-Fitzgerald 1957, Tag El-Din et al. 1994, Shaltout and Mady 1993, Al-Farraj et al. 1997, Alfarhan 2001). However, cities of the region—Riyadh, Buraida, and Al Kharij are rapidly expanding into vast surrounding areas. Overgrazing, woodcutting, motorized vehicle traffic, and even day use activities such as picnicking have recently threatened these Rawdhats (Al-Farraj et al. 1997). One of the largest of these Rawdhats, approximately 95 km northeast of Riyadh, is Rawdhat Khorim (Alfarhan 2001).

The insect fauna of these Rawdhats is poorly studied. Usually the dominant insects of these areas are ants. No large-scale ant study has been conducted in any of the Rawdhat areas in Saudi Arabia. The purpose of this paper is to report on the ants of Rawdhat Khorim including the description of a new species.
The taxonomy of ants known to occur in Saudi Arabia is the result of studies over the last 27 years. The first paper was published by Collingwood (1985), who provided a list and keys to 164 species, 156 of which were recorded for the first time from Saudi Arabia. In addition, this paper provided 146 new ant species records for the Arabian Peninsula. Collingwood (1985) also described ten new species of ants. A more comprehensive treatment of the Formicidae of the Arabian Peninsula is by Collingwood and Agosti (1996) treating 265 species, of which 56 were described as new.

In Riyadh Province of central Saudi Arabia, a hyper-arid region where Rawdhat Khorim is situated, 38 ant species have been reported, of which eight were described as new (Collingwood, 1985; Collingwood and Agosti, 1996). Recently, two additional new species were described from this region, Solenopsis saudiensis (Sharaf and Aldawood, 2011) and Plagiolepis boltoni (Sharaf et al. 2011).

We report here the results of a new biodiversity survey of the ants of Rawdhat Khorim, contributing to the knowledge of the ants of Saudi Arabia and the Arabian Peninsula. Among the ants collected during the survey a new species of Tetramorium was discovered.

Material and methods

Study area. Rawdhat Khorim is a relatively pristine Rawdhat and is one of the more important protected nature preserves in Saudi Arabia primarily because of the distinctive floral diversity (Al- Farraj et al., 1997; Alfarhan, 2001). Rawdhat Khorim (Fig. 1b) is a rectangular alluvial basin (Vesey-Fitzgerald, 1957), comprising an area of 24 km², located about 95 km northeast of Riyadh (25°23'N, 47°17'E, 560 m.a.s.l.) (Fig. 1a). Moisture in this area comes from direct rainfall and from drainage supplied by the adjacent highlands. There is no permanent standing water but temporary pools may occur. Plant growth is higher during spring than in other seasons (Al- Farraj et al., 1997) (Fig. 2a, b). At least 17 different plant communities have been identified in Rawdhat Khorim associated with distinct soil types (Tag El-Din et al., 1994). Alfarhan (2001) listed 153 plant species belonging to 32 families. He stated that the vegetation is largely seasonal, comprised of mostly annual species (82%), with the Asteraceae most abundant. One of the most abundant and widespread species is Matricaria aurea (Loefl.) Sch. Bip. (Asteraceae). Two HOBO Data Loggers (HOBO H8 Family, RH/Temp/Light/External, Therma-Stor LLC, Madison, Wisconsin, USA) were attached to Acacia trees to record temperatures and relative humidity each two hours from October 2011 to January 2013. Rainfall data were obtained from the Worldclim database (http://www.worldclim.org). Hot summers and mild winters characterize the climate of Rawdhat Khorim. The Hobo sensors recorded an average annual temperature of 26 °C and average relative humidity of 33%; Worldclim average annual rainfall was 122 mm (Fig. 3). The hottest months were June to August (35.0–36.3°C) and the coldest months were December to February (14.6–15.7°C). March and April are the wettest months (30 and 28 mm precipitation, respectively), while no precipitation falls from June to September.

Sampling procedures. Thirty-four sampling periods (2 trips/month) were carried out from October 2011 to January 2013. A total of 56,326 ants in 14 species were collected by eight techniques (baits, light traps, Malaise traps, pitfall traps, beating, sweeping, hand picking, and using aspirators). Specimens are deposited in the King Saud University Museum of Arthropods, King Saud University, Riyadh, Saudi Arabia.

The following abbreviations are used for morphological features and metrics and follow the standard measurements (Csősz et al. 2007, Hita Garcia et al. 2010, Hita Garcia and Fisher 2011):

| TL | Total length; outstretched body length from mandibular apex to gastral apex. |
| HL | Head length; maximum head length, excluding mandibles. |
| HW | Head width; maximum head width in full-face view. |
| SL | Scape length, excluding condylar bulb. |
| EL | Eye Length; maximum diameter of an eye. |
| PRW | Pronotal width; maximum pronotal width in dorsal view. |
| ML | Mesosoma length; length of mesosoma in lateral view, from the point where the pronotal dorsum meets the cervical shield to the posterior margin of propodeal lobes or teeth. |
| PL | Petiole length; maximum petiolar length in dorsal view, from anterior margin to posterior margin. |
| PW | Petiole width; maximum petiolar width in dorsal view. |
| PPL | Postpetiole length; maximum postpetiolar length in dorsal view. |
FIGURE 1. a: Map of Saudi Arabia and its regions. b: Satellite photo of Rawdhat Khorim
FIGURE 2. a, one of the water bodies formed after the rainfall inside Rawdhat Khorim. b, general view of the plant cover during the flowering season. (M. S. Abdel-Dayem photos)

PPW Postpetiole width; maximum postpetiolar width in dorsal view.

Indices:
SI Scape index (SL 100/HW).
CI Cephalic index (HW 100/HL).

All measurements are in millimeters. For figures of species, images of representative specimens (not from Rawdhat Khourim) were obtained from AntWeb (www.antweb.org).

Depositories

BMNH The Natural History Museum, London, United Kingdom.
CASC California Academy of Science Collection, San Francisco, California, USA.
KSMA King Saud University Museum of Arthropods, King Saud University, Riyadh, Kingdom of Saudi Arabia (Holotype depository).
MCZC Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA.
MHNG Muséum Histoire Naturelle, Geneva, Switzerland.
NHMB Naturhistorisches Museum, Basel, Switzerland.
SEMC Division of Entomology (Snow Entomological Collections), University of Kansas Natural History Museum, Lawrence, Kansas, USA.
WMLC World Museum Liverpool, Liverpool, United Kingdom.

Results

Subfamily Cerapachyinae
**Cerapachys longitarsus** (Mayr, 1879)  
(Fig. 4 a, b)


This is the second record of this species from Saudi Arabia and for the Arabian Peninsula. The first record of this species was from Abu Arish (southwestern Saudi Arabia) by Collingwood (1985). *Cerapachys longitarsus* was originally described from India and subsequently recorded from UAE (Collingwood *et al.*, 2011); Egypt (Sharaf, 2006); Philippines, North Australia, and Taiwan (Terayama *et al.*, 1988). At Rawdhat Khorim this species is considered rare, with only four specimens. All are alate males, three attracted to a light trap and one collected by a pitfall trap. They were collected in April, October and November.

**Subfamily Formicinae**

**Camponotus sericeus** (Fabricius, 1798)  
(Fig. 4 c, d)


*Camponotus sericeus* is one of the more common carpenter ants of the Arabian Peninsula (Collingwood, 1985; Collingwood and Agosti, 1996; Collingwood *et al*. 2011). It was originally described from Senegal, recorded from Algeria (Santschi 1929a) and has a broad distribution throughout the Afrotropical region (Wheeler 1922, Taylor 2010). Additional records are from Pakistan (Umair *et al.*, 2012), India, and Ceylon (Collingwood, 1962). This species has also been reported from the Oriental region, e.g. Thailand (Jaitrong and Nabhitabhata, 2005).

Workers are active throughout Rawdhat Khorim, being abundant from March through October, with a major peak in June. Workers of *C. sericeus* occur on *Acacia* trees and on the giant milkweed *Calotropis procera* (Aiton) W. T. Aiton (Apocynaceae). Several workers have been observed foraging on *C. procera* plants and attending aphids.

**Camponotus xerxes** Forel, 1904  
(Fig. 4 e, f)


This species was reported from Saudi Arabia, Kuwait, United Arab Emirates (UAE) and Oman (Collingwood 1985; Collingwood and Agosti 1996, Collingwood *et al*. 2011). Foragers are common from March to October with a peak in September. Workers were commonly found foraging on *C. procera*.

The high degree of polymorphism and the large intra- and interspecific variation among the species of *Camponotus* make determinations often difficult. *Camponotus xerxes* is closely related to *C. fellah* Dallah Torre, but can be distinguished by the absence of erect setae on the ventral head surface, whereas in *C. fellah* there are 1–10 setae (Ionescu-Hirsch, 2009).

**Cataglyphis livida** (André, 1881)


This species is widely distributed from Egypt to Afghanistan (Radchenko, 1997) and has been reported from all countries of the Arabian Peninsula (Collingwood, 1985; Tigar and Collingwood, 1993; Collingwood and Agosti, 1996; Tigar and Osborne, 1999; Collingwood *et al*. 2011). *Cataglyphis livida* is a common species at Rawdhat
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Khorim. Populations increase in spring and peak in June. This species was found abundantly foraging on *Acacia gerrardii* Benth.

**FIGURE 4.** a, b *Cerapachys longitarsus* (alate male, type) (CASENT0902740, India); c, d, *Camponotus sericeus* (CASENT0104896, Guinea); e, f, *Camponotus xerxes* (after Collingwood et al. 2011, UAE).
Cataglyphis minima Collingwood, 1985
(Fig. 5 a, b)

Cataglyphis minima Collingwood, 1985: 289.

Currently, C. minima appears to have a more restricted distribution in the Arabian Peninsula than other species of the genus. It was originally described from Saudi Arabia and recorded from UAE (Tigar and Collingwood, 1993). At Rawdhat Khorim, C. minima has an abundance and foraging behavior similar to C. niger.

Cataglyphis niger (André, 1881)
(Fig. 5 c, d)


This species was originally described from Israel and recorded from Saudi Arabia, Kuwait, Oman and Yemen (Collingwood, 1985; Collingwood and Agosti, 1996), UAE (Collingwood et al. 2011) and Syria (Santschi, 1929b). It is common at Rawdhat Khorim with peak abundance in June and decreasing during cooler months. Workers were collected from the following plants: *Acacia gerrardii* Benth (Fabaceae), *C. procera*, *Rhazya stricta* Decne (Apocynaceae) and *Ziziphus nummularia* (Burm. f) Wight & Arn. (Rhamnaceae).

Cataglyphis viaticoides (André, 1881)


The collection of this species at Rawdhat Khorim represents the first record known for Saudi Arabia and the second record for the Arabian Peninsula. Collingwood et al. (2011) reported it from UAE. At Rawdhat Khorim, C. viaticoides is a common species found throughout the year and abundant from June to October, with a peak in September. Cataglyphis viaticoides was often observed foraging on *C. procera*.

Lepisiota simplex (Forel, 1892)


This widespread species was described from Somalia (Forel, 1892) and recorded from Zimbabwe (Forel, 1913) and India (Bingham, 1903). Within the Arabian Peninsula it is apparently restricted to Saudi Arabia (Collingwood, 1985). It is a common species at Rawdhat Khorim, abundant from April to September and declining in numbers from October to March.

Subfamily Myrmicinae

Messur ebeninus Santschi, 1927
(Fig. 5 e, f)


This species is widely distributed throughout the Arabian Peninsula (Collingwood, 1985, Collingwood and Agosti, 1996). At Rawdhat Khorim, worker activity has two peaks of abundance, in April and December, decreasing from July through October.
FIGURE 5. a, b *Cataglyphis minima* (CASENT0249862, Saudi Arabia), c, d *Cataglyphis niger* (CASENT0280330, Yemen); e, f *Messor ebeninus* (CASENT0249861, Saudi Arabia); g, h *Monomorium mayri* (CASENT0249904, India).
**Monomorium mayri** Forel, 1902  
(Fig. 5 g, h)


*Monomorium mayri* is considered one of the most common ant species of the Arabian Peninsula. It has been reported from Saudi Arabia, Oman and Yemen (Collingwood, 1985; Collingwood and Agosti, 1996), and UAE (Tigar and Collingwood, 1993). *Monomorium mayri*, a common species at Rawdhat Khorim, exhibits high abundances from April to October, peaking in June and slowly declining from November to March.

**Solenopsis saudiensis** Sharaf & Aldawood, 2011  
(Fig.6 a, b)


This species was recently described from Riyadh, Saudi Arabia (Sharaf and Aldawood, 2011) and was the first record of the genus from the country. Recently, the *Solenopsis* of the Arabian Peninsula were revised by Sharaf and Aldwood (2012). At Rawdhat Khorim this species is rare, with only a single specimen collected by a pitfall trap in February.

**Genus Tetramorium** Mayr, 1855

*Tetramorium* is one of the most diverse ant genera in the subfamily Myrmicininae, with 518 described taxa (Bolton, 1995; Bolton *et al.*, 2007; Bolton 2013), distributed worldwide in the tropics and temperate regions (Brown, 2000). The genus has been comprehensively revised for the majority of the zoogeographic regions (Bolton 1976, 1977, 1979, 1980, 1985; Hita Garcia *et al.*, 2010; Hita Garcia & Fisher 2011, 2012a, 2012b). For many years, the Palaearctic region was lacking revisions but recently several important contributions have been published (Steiner *et al.*, 2005; Schlick-Steiner *et al.*, 2006; Csősz *et al.*, 2007; Csősz & Schulz, 2010; Steiner *et al.*, 2010).

**Tetramorium chefketi** Forel, 1911  
(Fig.6 c, d)


This species was recorded from Saudi Arabia (Collingwood, 1985), Oman and Yemen (Collingwood and Agosti, 1996). Outside Arabia, it has been reported from several parts of the Palaearctic region including southern Europe (Greece, Bulgaria, Macedonia, Romania), southern Ukraine, south of western Russia, northwestern Caucasus, Turkey, Turkmenistan, northern Kazakhstan, southeastern Siberia, to the east to Kyrgyzstan and Altai Mountains (Csősz *et al.*, 2007). At Rawdhat Khorim this species is relatively common and observed foraging on *Ziziphus nummularia* (Burm. f) Wight & Arn. (Rhamnaceae). The species has two abundance peaks, in June and November. It was collected using pitfall traps and beating vegetation.

**Tetramorium saudicum** Sharaf sp. n.  
(Fig.6 e, f, g)

*Holotype worker.* Saudi Arabia, Riyadh, Rawdhat Khorim, 24.III.2012, 25.23°N, 47.17°E, 559 m (*M. R. Sharaf*); unique specimen identifier CASENT0281582, deposited at KSMA.
FIGURE 6. a, b, Solenopsis saudiensis (CASENT0249866, Saudi Arabia); c, d, Tetramorium chefketi (CASENT0906711, Bulgaria); e, f, g, Tetramorium saudicum sp. n. (CASENT0281582, Saudi Arabia); h, i, Tetramorium sericeiventre (CASENT0102388, Madagascar).
**Paratypes:** 21 workers, same data as the holotype; 2 workers, Saudi Arabia, Jazan, Al Zabia 9.IV.2012, 17.06°N, 42.39°E, 43 m (M. R. Sharaf); 2 workers, Shqiq Shamran, IV.1983 (C. A. Collingwood); 2 workers, Riyadh, III.1989 (soil fauna); 15 workers, Riyadh, Rawdat Khorim, [multiple dates]; one paratype deposited in each of the following museums: **MHNG, NHMB, CASC, MCZC, SEMC, WMLC, BMNH**, and the remaining specimens at **KSMA**.

**Holotype worker:** TL 3.12; HL 0.80; HW 0.80; SL 0.55; EL 0.22; PRW 0.52; ML 0.87; PL 0.22; PW 0.25; PPL 0.22; PPW 0.30; Indices: SI 69; CI 100.

**Paratype workers:** TL 3.12–3.25; HL 0.75–0.85; HW 0.75–0.80; SL 0.50–0.55; EL 0.20–0.25; PRW 0.50–0.55; ML 0.85–0.92; PL 0.17–0.22; PW 0.25–0.27; PPL 0.17–0.22; PPW 0.25–0.30; Indices: SI 63–71; CI 91–100 (11 measured).

**Diagnosis.** *Tetramorium saudicum* is a member of the caespitum-group. It can be readily separated from its closest congener, the Palaearctic *T. striativentre* Mayr, 1877 from Kazakhstan by the bicoloured body, head, mesosoma, waist and appendages reddish brown, gaster brownish or blackish brown; whereas *T. striativentre* is unicolorous brownish and the appendages are pale brown. Both species are similar in body size, mesosomal and gasteral sculpture, and the frontal carina that extend back to the posterior margins of eyes. *Tetramorium saudicum* also differs from *T. striativentre* by the following: the head dorsum is polished with few (nearly 10) fine longitudinal rugulae superimposed upon irregularly punctulate ground-sculpture while in *T. striativentre*, the head dorsum is dull with numerous (nearly 20) very fine longitudinal rugulae superimposed upon a finely and densely punctulate or granular ground-sculpture. In addition, the petiolar node of *T. saudicum* in dorsal view is clearly irregularly rugulose, whereas in *T. striativentre* the petiolar node in dorsal view is clearly regularly longitudinally rugulose. *Tetramorium saudicum* can be distinguished from the remaining Arabian species of the genus (except *T. sericeiventre* and *T. khyarum*) by the sculptured first gastral tergite. It can be separated from *T. sericeiventre* and *T. khyarum* by the following characters: the scape index is much smaller, SI 63–71 (versus SI 113–118 for *khyarum* and SI 101–118 for *sericeiventre*); the head length is smaller, HL 0.75–0.85 (Versus HL 0.96–1.00 for *khyarum* and HL 0.80–1.00 for *sericeiventre*) and eyes relatively larger, EL 0.20–0.25 (versus EL 0.20 for *khyarum* and EL 0.16–0.22 for *sericeiventre*).

**Description of worker.** **Head:** Head as long as wide or subequal, with convex sides and nearly straight posterior margin; anterior clypeal margin entire; ventral surface of head with few ammochaete setae; frontal carinae present, running back beyond level of posterior margin of eyes but feebly developed throughout their length and weaker behind eyes than in front; eyes large (EL about 0.29 x HW) with about 15 ommatidia in longest row; ventral margin of eyes more or less flat, anterior, dorsal and posterior margins curved so that eyes in profile resembling reclinate letter D; mandibles longitudinally rugose; antennae 12-segmented; antennal scrobes absent; entire dorsum and profile of head very finely and very densely longitudinally costulate, spaces between costulae finely, irregularly and densely punctulate; dorsum of head with many paired hairs. **Mesosoma:** Outline of dorsal mesosoma unbroken in profile; pronotal humeri sharply angulate; metanotal groove not impressed; propodeal spines acute and strongly developed; dorsal (outer) surface of hind tibiae with appressed pubescence; propodeal dorsum with a single pair of short hairs; mesosoma strongly longitudinally rugulose, space between rugulae smooth and shining. **Waist:** Petiolar cuboid; petiolar and postpetiolar nodes in dorsal view distinctly broader than long; petiolar with one pair of hairs, postpetiolar with three pairs of hairs; petiolar node in dorsal view clearly irregularly rugulose; postpetiolar node distinctly strongly longitudinally rugulose. **Gaster:** First gastral tergite longitudinally, very finely and very densely striated, appearing dull; gaster with scarce scattered erect hairs and moderately dense appressed pubescence. Bicoloured species, head, mesosoma, petiole, postpetiolar and appendages reddish brown, gaster brownish or blackish brown.

**Etymology.** The name of this species, *saudicum*, refers to the type locality, the Kingdom of Saudi Arabia.

**Habitat.** *Tetramorium saudicum* was observed nesting directly in the ground and many workers were observed carrying dry plant seeds.

*Tetramorium sericeiventre* Emery, 1877
(Fig.6 h, i)

*Tetramorium sericeiventre* Emery, 1877:370.
This is the most common *Tetramorium* species found in the Arabian Peninsula (Collingwood, 1985; Collingwood and Agosti, 1996; Collingwood et al. 2011) and is also broadly distributed in the savannah of tropical Africa. In Rawdhat Khorim, this species is very common and occurs during all months of the year, with a peak in December. It was observed foraging on *C. procera*.

In the key to Arabian species (Sharaf et al. 2012:7) *T. saudicum* will key to couplet 16 along with *chefketi* and *syriacum*. Couplet 16 is modified here to separate the three species.

16. Mesosomal pilosity restricted to pronotum and first half of mesonotum, propodeum bare; SL 0.78–0.87; petiolar and postpetiolar nodes coarsely sulcate (Russia & Arabia) ................................................................. **chefketi**
- Mesosoma with abundant, stout and relatively long suberect hairs; SL 0.70–0.77; petiolar and postpetiolar nodes irregularly sculptured (Middle East). ................................................................. **syriacum**
- Mesosomal pilosity fine and acute apically and restricted to mesonotum, propodeal dorsum with a single pair; SL 0.50–0.55; petiolar node clearly irregularly rugulose; postpetiolar node distinctly strongly longitudinally rugulose (Saudi Arabia). ................................................................. **saudicum** sp. n.

**Discussion**

Saudi Arabia occupies an important biogeographical position at the junction of Palaearctic, Afrotropical, and Oriental zoogeographical regions (Buttiker, 1979; Larsen, 1984a; Mordan, 1984). The desert region between Palaearctic and Afrotropical regions is known as the Eremic zone (Uvarov, 1938; Greathead, 1980; Larsen, 1984b), the Saharo-Arabian subregion (Takhtajan, 1986), or the Afroeremic zone (De Lattin, 1967).

Like other regions of Saudi Arabia and the Arabian Peninsula, in the Riyadh Region, including Rawdhat Khorim, few comprehensive faunal surveys have been carried out to document the myrmecofauna. Only ten ant species have been previously described from this region: *Tetramorium juba* and *Camponotus arabis* (Collingwood, 1985); *Monomorium harithe*, *M. hemame*, *M. suleyile*, *M. riyadh*, *Lepisiota riyadha*, and *Cataglyphis holgerseni* (Collingwood and Agosti 1996); *Solenopsis saudiensis* (Sharaf and Aldawood, 2011); and *Plagiolepis boltoni* (Sharaf et al., 2011). From the present study, it is obvious that most ant species recorded from Rawdhat Khorim are taxa with Palaearctic affinities. This is also true for the entire Riyadh Region based on recent collections by the senior author. From the 14 recorded species, eleven have a Palaearctic eremic origin (> 71%), whereas only three are shared between Palaearctic and Afrotropical regions: *Camponotus sericeus*, *Lepisiota simplex*, and *Tetramorium sericeiventre*.

This paper provides the first taxonomic survey of the ants of a unique seasonal mesic habitat, a Rawdhat, in the hyper-arid deserts of central Saudi Arabia. Fourteen ant species, including one new species, were collected from Rawdhat Khorim. Ants are considered excellent indicators of habitat quality and disturbance (Alonso and Agosti 2000). This study is a contribution that provides the taxonomic basis for one of the most abundant and important faunal components of Rawdhs. Hopefully, this information will allow natural resource managers to establish long-term ecological studies, using sentinel taxa, such as ants, to evaluate present and future impacts on these remarkable “gardens” found in deserts of the region.

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