A PRELIMINARY SYNOPSIS OF THE ANT FAUNA
(HYMENOPTERA: FORMICIDAE) OF QATAR WITH
REMARKS ON THE ZOOGEOGRAPHY

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Abstract.—The ant fauna of the State of Qatar is reviewed based on collected material and
literature. In total, 23 species, belonging to 12 genera and four subfamilies, were reported
from the country. Given that Messor arenarius diabolus Santschi, 1938 is endemic in
Egypt, and it was recorded by mistake in Qatar, we excluded it from the country faunal list.
Six genera are recorded for the first time from the world, Cardiocondyla Emery, 1896,
Crematogaster Lund, 1831, Lepisiota Santschi, 1926, Monomorium Mayr, 1855,
Paratrechina Motschoulsky, 1863, and Pheidole Westwood, 1839. Fourteen species are
recorded for the first time from Qatar, namely, Camponotus oasium Forel, 1890,
Cardiocondyla emeryi Forel, 1881, Cataglyphis livida (André, 1881), Cataglyphis
arenaria Finzi, 1940, Cataglyphis nigra (André, 1881), Lepisiota bipartita (Smith,
1861), Lepisiota gracilicornis (Forel, 1892), Monomorium abeillei André, 1881,
Monomorium arenophilum Santschi, 1911, Monomorium subopacum (Smith, 1858),
Monomorium venustum (Smith, 1858), Pheidole sinaitica Mayr, 1862, Tapinoma
melanocephalum (Fabricius, 1793), and Tapinoma sirothi Krausse, 1911. Preliminary
analysis of the zoogeography of Qatar’s ants reveals the remarkable predominance of
Palaearctic faunal elements (13 species/ ~57%), followed by minor proportions of
Afrotropical (4 species/ ~17%) and Indomalayan (1 species/ ~4%) species, while the five
invasive species (~22%) reflect human impacts on the country. Monomorium tumaire
Collingwood & Agosti, 1996 is known as endemic in the Arabian Peninsula. No species are
considered endemic to Qatar. Ecological and biological notes on species are provided when
available.

Key words.—Arabian Peninsula, Biodiversity, Middle East, Qatar, invasive, faunal list,
new records, Palaearctic region
INTRODUCTION

The State of Qatar is a small and peninsular country located in southwest Asia on the northeastern coast of the Arabian Peninsula. This Middle Eastern nation lies between 25°30’N and 51°15’E, covers an area of about 11,586 km², and features 900 km of coastline of the Arabian Peninsula. This Middle Eastern nation located in southwest Asia on the northeastern coast and pinioma sp. 1904; fragmented environments on earth (Brook.

Hence, Qatar’s habitats are among the most threatened systems in the region recover only slowly from disturbance. Therefore, Qatar’s terrestrial ecosystems are among the most fragile environments on earth (Brook et al. 2006). Qatar’s terrestrial biodiversity includes ca. 1955 known species, but these lack sufficient data regarding their habitats, population estimates, and species distribution (Kamel 2008, Richer 2008). This lack of knowledge limits conservation efforts in Qatar. While some forms of environmental degradation can be remediated, biodiversity loss is considered irreversible (Michalski et al. 2010).

About 250 species of Formicidae belonging to 38 genera and 7 subfamilies are known from the Arabian Peninsula, a region including Kuwait, Oman, KSA, United Arab Emirates (UAE), Yemen, and adjacent islands (Tigar and Collingwood 1993, Collingwood and Agosti 1996, Collingwood et al. 1997, Collingwood et al. 2011, Sharaf et al. 2013, 2014, 2015, 2016 a, b, 2017, 2018, 2019, 2020 a, b, c) and more than 250 from Iran (Khallili-Moghadam et al. 2019). However, the ant fauna of Qatar is rather poorly studied and knowledge is based on fragmentary records scattered throughout scarce available literature. This includes the following records: Camponotus aegyptiacus Emery, 1915; C. xerxes Forel, 1904; Cataglyphis savignyi (Dufour, 1862); Messor sp.; Monomorium salomonis (Linnaeus, 1758); Tapinoma sp.; Tetramorium sp. (Abdel-Dayem 2007); and Messor arenarius diabolus Santachi, 1938 (misidentified as Camponotus arenarius var. diabolus) (Abdu and Shaumar 1985); Cataglyphis nigra (André, 1881), Monomorium pharaonis (Linnaeus, 1758) (Abushama 1997, 1998); Monomorium tumaire Collingwood and Agosti, 1996 (Lush 2009).

The material studied herein was collected more than 15 years ago by the second author. During that long period, little significant additional or published material from Qatar has been reported. The handful of species records scattered in recent literature include Crematogaster antar is Forel, 1894 (Sharaf et al. 2019), Strumigenys membranifera Emery, 1869 (Sharaf et al. 2015), and Trichomyrmex mayri (Forel, 1902) (Sharaf et al. 2016 b), in addition to Braehypponera asenaaensis (Mayr, 1862) (Wetterer 2013, Bertelsmeier et al. 2017), bringing the total number of ant species known from this country to 13. Therefore, Qatar, in addition to Bahrain and Kuwait, represent gaps in our knowledge of the ants of the Arabian Peninsula and on the global ant map as well. These omissions make it difficult to complete the ongoing study of the diversity and zoogeography of ants in the Arabian Peninsula.

Additional invasive ants are expected to be reported from Qatar due to increased international trade, urbanization, and globalization (Seebens et al. 2018). For instance, Collingwood et al. (1997) listed 15 introduced ant species in the UAE. Among these are five species recorded for the first time in the Arabian Peninsula, including the widely distributed Camponotus compressus (Fabricius, 1787), Iridomyrmex anceps (Roger, 1863), Linepithema humile (Mayr, 1868), Solenopsis geminata (Fabricius, 1804), and Tetramorium bicornatum (Nylander, 1846). Further, Collingwood et al. (2011) extensively studied the ant fauna of the UAE reporting few invasive species such as Anoplolepis gracilipes (Smith, 1857), B. asenaaensis, L. humile, and S. geminata.

We addressed this gap by investigating additional material collected by the second author from Qatar in 2005. Since the faunal diversity of this country has not been well-sampled in recent years, we wish to carry out an inventory of Qatar’s Formicidae as soon as possible. Although representatives of genera such as Camponotus and Cataglyphis include several larger-sized ants, many more cryptic species probably remain to be discovered.

Below we list all species hitherto known from Qatar. The checklist was compiled based on new material and literature records. Species new to Qatar are listed synoptically. Native and invasive ant species are also denoted.

MATERIAL AND METHODS

The studied material was collected by the second author in 2005, while he was working at the Department of Biological and Environmental Science, College of Art and Science, Qatar University, Qatar (2004–2005). The names and zoogeography of the treated
Figure 1. Map of Qatar with sample sites and species distribution.
species follow the online catalogue (Bolton 2020), and identification is carried out using keys from Collingwood (1985), Collingwood and Agosti (1996), Sharaf et al. (2014), Sharaf et al. (2016 a, b), Sharaf et al. (2020 a, b), and studying material from the following museums:

BMNH – The Natural History Museum (British Museum, Natural History), London, U.K.;
CASC – California Academy of Sciences, San Francisco, California, U.S.A.;
KSMA – King Saud University Museum of Arthropods, Plant Protection Department, College of Food and Agriculture Sciences, King Saud University, Riyadh, Kingdom of Saudi Arabia;
NHMB – the Naturhistorisches Museum, Basel, Switzerland;
OUMC – Oxford University Museum, Oxford, U.K.;
WMLC – World Museum Liverpool, Liverpool, U.K.

Museum abbreviations listed below follow Brandão (2000), Evenhuis (2020).

The distribution map of the encountered species was developed with ArcGis v10.3 (Fig. 1). Digital color images of the profile, dorsal views of the entire body, and full-face views of the head of each species were created using a Leica DFC450 digital camera with a Leica Z16 APO microscope and LAS (v3.8) software. Images of the studied species are available online on AntWeb (https://www.antweb.org/) and accessible through unique specimen identifiers attached to each pin (e.g., CASENT0922868). Subfamilies, genera, and species are arranged in alphabetical order with diagnoses, material examined, geographic distribution and ecological and biological information when available. Measurements and indices of Lepisiota species follow standards of Sharaf et al. 2020a. Type material in the following museums were examined for species confirmation.

**RESULTS**

Subfamily **Dolichoderinae**

Genus **Tapinoma** Foerster, 1850

**Tapinoma melanocephalum** (Fabricius, 1793)

(Fig. 2 A–C)

*Formica melanocephala* Fabricius, 1793: 353 (w.) French Guiana. Neotropical.

**Diagnosis. Worker.** This species is easily recognized among the members of the genus by its small size (1.20–1.90 mm) and bicolored body. Head and mesosoma brown to dark brown, antennae, maxillary palps and mandibles pale brown to yellow, gaster and legs pale yellow; prothorax laterally compressed, broadening anteriorly; mesosoma without erect hairs.

**Material examined.** Qatar, Rawdet Rashed, 12.iii.2005, (M.S. Abdel-Dayem leg.), 25°14.006’N, 51°12.286’E, 1 w, (KSMA).

**Geographic distribution.** This successful invasive species has a remarkable worldwide spread (Wetterer 2009). On the Arabian Peninsula it was collected from KSA and Oman (Collingwood 1985), Yemen (Colling-

![Figure 2. Tapinoma melanocephalum, worker. A, body in profile. B, body in dorsal view. C, head in full-face view. CASENT0746621 (Zach Lieberman), www.AntWeb.org.](image-url)
Wood and Agosti 1996) including the Socotra Archipelago (Sharaf et al. 2017), and UAE (Collingwood et al. 1997). The present collection represents the first record for Qatar.

Ecological and biological notes. This species has remarkably diverse habitat preferences (Wetterer 2009, Sharaf et al. 2017) that range from humid and dry soil of wild vegetation to urban sites rich in organic matter, under bark and stones, in leaf litter, and sometimes nests in walls and potted plants indoors (Ellison et al. 2012).

**Tapinoma simrothi** Krausse, 1911

(Fig. 3 A–C, 4 A–C)

*Tapinoma erraticum* var. *simrothi* Krausse, 1911: 18 (w.) Italy (Sardinia). Palearctic.

**Diagnosis. Worker.** Anterior clypeal margin with a slit-like median notch; scapes relatively long, when laid back from their insertions surpass posterior margin of head by about one third of scape length; funicular segments at least twice as long as broad; body surfaces covered with dense appressed pubescence; body color uniformly dark brown to black with legs including tarsi uniformly brownish.

**Material examined.** Qatar, Doha, Al-Rayyan, 12.iii.2005, (M.S. Abdel-Dayem leg.), 8w, (KSMA).

**Geographic distribution.** A Palearctic species, distributed across northern and southern Mediterranean Basin (Sharaf 2006) and eastwards to most of Arabian Peninsula (Collingwood 1985, Collingwood and Agosti 1996, Collingwood et al. 1997), Iran and Afghanistan. This material represents the first record for Qatar.

Ecological and biological notes. *Tapinoma simrothi* was observed in Riyadh Province (KSA) nesting among roots of graminaceae plants, attending unidentified mealybugs under a discarded carpet, and coexisting with *Solenopsis abdita* Thompson, 1989 (Senior synonym of *S. saudiensis* Sharaf and Aldawood, 2011 (Sharaf et al. 2020 c)). The species is also known to attend aphids, protecting these insects from predators (Karami-jamour et al. 2018).

Subfamily Formicinae

**Genus Camponotus** Mayr, 1861

**Camponotus aegyptiacus** Emery, 1915

(Fig. 5 A–C)

*Camponotus maculatus* subsp. *aegyptiacus* Emery, 1915: 79 (w.) Egypt. Palearctic.

**Diagnosis. Worker.** Like many species of the genus, *C. aegyptiacus* is a strongly polymorphic species; small workers are clear yellow; large workers are dark brown to black-brown. The species can be

![Figure 3. Tapinoma simrothi, worker. A, body in profile B, body in dorsal view C, head in full-face view, CASENT0263927 (Estella Ortega), www.AntWeb.org.](image-url)
separated from other Arabian species and specifically from its congener *C. maculatus* (Fabricius, 1782) by the presence of three yellow blotches on each side of the gaster that merge laterally; underside of head with few gular setae (6–10), whereas *C. maculatus* has two to three discrete gastral blotches on each side and underside of head with numerous setae (more than 10).
Previous records. Doha, 25°17.124′N, 51°31.86′E, 05.x.1982, 8 w; Doha, 25°17.124′N, 51°31.86′E, 03.iv. 1983, 6 w; Al Zubarah, 25°58.794′N, 51°1.602′E, 11.iii. 1984, 15 w; Al Khor, 25°40.824′N, 51°29.814′E, 02.iv. 1985, 7 w, (Abdo and Shaumer 1985).

Geographic distribution. This species was originally described from Egypt and is known from West, East and Northeast Africa (Sharaf 2006) and the Arabian Peninsula, including KSA, Kuwait, Oman, Yemen (Collingwood and Agosti 1996), and Qatar (Abdo and Shaumer 1985, Abdel-Dayem 2007).

Ecological and biological notes. This species is omnivorous (Sharaf 2006), frequently foraging at night (Collingwood 1985).

Camponotus oasium Forel, 1890
(Fig. 6 A–C)

Camponotus rubripes r. oasium Forel, 1890: lxv (s.w.q.) Algeria.

Palearctic.

Diagnosis. Worker. Underside of head with one or two setae; mesosomal dorsum with about ten erect setae; dorsum of petiole steeply rounded; first gaster tergite with basal two thirds testaceous; large workers with head, mesosoma, and dorsum dark brown to black, head brown, lower half of mesosoma usually yellow and distinctly paler than mesosomal dorsum, gaster and appendages yellow; small workers uniform yellow with end of gaster brown.

Material examined. Qatar, Doha, Al-Dohuil, 14.iii.2005, 25°22′N, 51°29′E, (M.S. Abdel-Dayem leg.), 4w (KSMA).

Geographic distribution. A species described from Algeria and distributed in the west Africa (Benin, Mali, Niger, Senegal), Horn of Africa (Ethiopia), and North Africa [Algeria, Egypt (Sharaf 2006)]; eastwardly from Arabian Peninsula to Afghanistan and north to Turkey (Karaman and Aktaç 2013) and Central Asia [Kazakhstan, Turkmenistan (Radchenko 1997a)]. In the Arabian Peninsula, it is recorded from the UAE (Collingwood et al. 2011), KSA, Oman (Collingwood 1985). It is recorded for the first time from Qatar.

Ecological and biological notes. This species was collected from a tamarisk tree, Tamarix nilotica (Ehrenb.) Bunge, in the Nile Delta (Egypt) and was observed attending the membracids (Sharaf 2006).

Camponotus xerxes Forel, 1904
(Fig. 7 A–C)

Camponotus maculatus r. xerxes Forel, 1904g: 424 (w.q.) Iran.

Palearctic.

Diagnosis. Worker. A species with a high degree of polymorphism (Collingwood 1985, Collingwood and Agosti 1996, Sharaf et al. 2013). Large workers entirely dark brown to black except for the paler legs;
propodeum unicolorous dark with rest of mesosoma; underside of head without setae. *Camponotus xerxes* is closely related to *C. fellah* Emery, 1908 but can be distinguished by the absence of erect setae on the underside of head, whereas *C. fellah* has 1–10 setae (Ionescu-Hirsch, 2009).

**Material examined.** Qatar, Msaid Road, 09.iv.2005, 24°59’N, 51°33’E, (M.S. Abdel-Dayem leg.) 7w, (KSMA).

**Geographic distribution.** A Palearctic species originally described from Iran and widely spread in several countries in the Arabian Peninsula including the KSA (Collingwood 1985), Kuwait, Oman, UAE (Collingwood and Agosti 1996), Qatar (Abdel-Dayem 2007), Syria (Tohmé and Tohmé 2000), North Africa (Sharaf 2006), Turkey (Karaman and Aktaş 2013), and central Asia: Turkmenistan and Uzbekistan (Radchenko 1997 a).

**Ecological and biological notes.** The seasonal foraging activity of this species stretches from March to October with a peak in September (Sharaf *et al.* 2013), where workers frequently forage on the milkweed tree, *Calotropis procera* (Aiton) W. T. Aiton (Apocynaceae). Collingwood (1985) mentioned that the species start foraging in the early evening in the KSA.

Genus *Cataglyphis* Foerster, 1850

**Cataglyphis arenaria** Finzi, 1940

(Fig. 8 A–C)

*Cataglyphis* (*Cataglyphis*) albicans var. arenaria Finzi, 1940: 164 (w.) Algeria. Palearctic.

**Diagnosis. Worker.** Head, mesosoma, and petiole yellow, gaster golden yellow, and apex of terminal gaster tergites brown, in some individuals the body is uniform yellow; propodeum distinctly low in profile; petiole a truncated node with a flat dorsal surface sloping forward in profile; mesosoma covered with dense, whitish, appressed pubescence.

**Material examined.** Qatar, Msaid Road, 09.iv.2005, 24°59’N, 51°33’E, (M.S. Abdel-Dayem leg.) (1w); Al Kharara-Seleiyin Road, 09.iv.2005, 24°53’N, 51°10’E, (M.S. Abdel-Dayem leg.), 2w, (KSMA).

**Geographic distribution.** A Palearctic species originally described from Algeria and is known from Jordan (Borowiec and Sałata 2020) KSA, Oman (Collingwood and Agosti 1996), UAE (Collingwood *et al.* 2011), and Egypt (Sharaf 2006). This species is recorded for the first time from Qatar.

**Cataglyphis livida** (André, 1881)

(Fig. 9 A–C)

*Myrmecocystus albicans* var. *lividus* André, 1881a: 58 (w.) Palestine. Palearctic.

**Diagnosis. Worker.** Body uniformly yellow, gaster usually darker; posterior margin of head with about three pairs of setae; propodeum and petiole with few erect setae; sides of mesonotum and propodeum with appressed silvery pubescence; cephalic surface super-ficially sculptured.
Palearctic region ranging from Algeria and Egypt to Afghanistan (Radchenko, 1997b); and extends north into Turkey and Bulgaria. It also has been reported from most countries of the Arabian Peninsula (Collingwood 1985, Tigar and Collingwood 1993, Collingwood

**Material examined.** Al Kharara-Seleiyn Road, 09.iv.2005, 24°53’N, 51°10’E, (M.S. Abdel-Dayem leg.), 2w, (KSMA).

**Geographic distribution.** *Cataglyphis livida* occupies a broad geographic range through the

![Image of *Cataglyphis arenaria*](www.AntWeb.org)

![Image of *Cataglyphis livida*](www.AntWeb.org)
and Agosti 1996, Tigar and Osborne 1999, Collingwood et al. 2011).

**Ecological and biological notes.** *Cataglyphis livida* is a common species at nature reserves in Riyadh Province (e.g. Rawdhat Khorim) where the population peaks in spring and in June (Sharaf et al. 2013). This species was found to be abundant foraging on *Acacia gerrardii* Benth. (Fabaceae). This species is recorded for the first time from Qatar.

*Cataglyphis nigra* (André, 1881)
(Fig. 10 A–C)

*Myrmecocystus viaticus* var. *niger* André, 1881a: 56 (w.) Palestine. Palearctic.

**Diagnosis.** Worker. Uniform black; head usually red-black; first funiculus segment nearly 2× as long as second; propodeum high in profile with dorsum rounding evenly into its descending face; petiole a thick node, about as high as long in profile; cephalic surface densely superficially sculptured.

**Material examined.** Doha, Al-Dohuil, 14.iii.2005, 25°22’N, 51°29’E, (M.S. Abdel-Dayem leg.), 2w (KSMA)

**Geographic distribution.** *Cataglyphis nigra* is a Palearctic species originally described from Palestine and is broadly distributed in the Arabian Peninsula including KSA, Kuwait, Oman, Yemen (Collingwood 1985), UAE (Walker and Pittaway 1987, Collingwood et al. 2011), and some countries in the Middle East including Syria (Santschi 1929), Israel (Ionescu and Eyer 2016), North Africa, from Algeria eastwardly to Egypt (Sharaf 2006, Borowiec and Salata 2020). The distribution map presented by Walker and Pittaway (1987) shows a geographic range extending eastward and including Qatar without any details about the record. Therefore, we consider our record to be the first confirmed collection of the species from the country.

**Ecological and biological notes.** This species is abundant in most countries of the Arabian Peninsula (Collingwood 1985, Collingwood and Agosti 1996), with a seasonal peak in June that then decreases in cooler months (Sharaf et al. 2013). In Rawdhat Khorim (Riyadh Province, KSA), *C. nigra* was found foraging next to the following plants: *Acacia gerrardii*, Benth. (Fabaceae), *Calotropis procera* (Aiton) W. T. Aiton (Apocynaceae), *Rhazya stricta* Decne (Apocynaceae) and *Ziziphus nummularia* (Burm. f) Wight &Arn. (Rhamnaceae) (Sharaf et al. 2013). Pashaei Rad et al. (2018) mentioned its habitat preference in Iran includes moderate and low rainfall.

![Figure 10. *Cataglyphis nigra*, worker. A, body in profile B, body in dorsal view C, head in full-face view, CASENT0280330 (Ryan Perry), www.AntWeb.org.](image-url)
Genus *Lepisiota* Santschi, 1926

*Lepisiota bipartita* (Smith, 1861)  
(Fig. 11 A–C)

*Formica bipartita* Smith, 1861a: 33 (w.) Lebanon. Palearctic.

**Diagnosis.** Worker. Bicolored species with head, mesosoma, petiole, and appendages red, gaster dark brown to black; antennal scape relatively short (SI < 200); petiole narrower, less than 0.30 × HW; body sculpture coarse, general appearance opaque; gaster always with some projecting hairs; body pilosity rare except for a few long setae on anterior clypeal margin, and promesonotum, and sparse appressed pubescence on cephalic dorsum.

**Material examined.** Qatar, Rawdet Rashed, 12.iii.2005, (M.S. Abdel-Dayem leg.), 25°1.4.006′N, 51°12.258′E, 12w; Al-Rayyan, 25°18′N, 51°25′E, 15.iii.2005, (M.S. Abdel-Dayem leg.), 4 w; Al-Dohul, 15.iii.2005, 25°22′N, 51°29′E, (M.S. Abdel-Dayem leg.), 11w; Al-Dohul, 8-18.iii.2005, 25°22′N, 51°29′E, (M.S. Abdel-Dayem leg.), 82w (KSMA).

**Geographic distribution.** The species is distributed across the Palearctic region from Algeria to Levant: Egypt, Israel, Jordan, Lebanon, Syria (Sharaf 2006, Vonshak and Ionescu 2009, Borowiec and Salata 2020); the Arabian Peninsula: KSA, UAE (Collingwood and Agosti 1996, Sharaf et al. 2020); and Iran (Paknia et al. 2008, Pashaei Rad et al. 2018). Its distributional range reaches the Central Asia: Turkmenistan; and Oriental region: India. The studied material represents a new record for Qatar.

*Lepisiota gracilicornis* (Forel, 1892)  
(Fig. 12 A–C)

*Acantholepis gracilicornis* Forel, 1892: 42 (diagnosis in key) (w.) Yemen. Afrotropic.

**Diagnosis.** Worker. This species is easily diagnosed from other members of the Arabian *Lepisiota* by the distinctly long antennae (SI 175–195) and legs, the smooth and shining body surfaces, and the bare mesosoma.

**Material examined.** Qatar, Doha, 08.iii.2005, 25°18′N, 51°25′E, 31w; Doha, 02.iv.2005, 25°18′N, 51°25′E, 6 w, 3 q, 6 m, (KSMA).

**Geographic distribution.** Afrotropical species known from west and east Africa: Senegal, Sudan, Eritrea, Ethiopia; Levant: Egypt, Israel, Jordan (Sharaf 2006, Ionescu and Eyer 2016, Borowiec and Salata 2020); and the Arabian Peninsula: KSA, UAE (Collingwood and Agosti 1996, Sharaf et al. 2020); and Iran (Paknia et al. 2008, Pashaei Rad et al. 2018). This species is a new record for Qatar.

*Paratrechina* Motschaulsky, 1863

*Paratrechina longicornis* (Latreille, 1802)  
(Fig. 13 A–C)

*Formica longicornis* Latreille, 1802: 113 (w.) Senegal. Afrotropic.

**Diagnosis.** Worker. Head, mesosoma, petiole, and gaster dark brown to black-brown; body with faint bluish iridescence; antennae long with 12 segments; scapes exceptionally long, when laid back from their insertions surpassing posterior margin of head by at
least one-half its length; eyes close to posterior margin of head; legs exceptionally long; pilosity characteristi-

cally long, stout, scattered, suberect to erect, greyish or whitish setae.
Material examined. Qatar, Doha, 25°17.124’N, 51°31.86’E, 08.iii.2005, 34w; Al-Dohuil, 15.iii.2005, 25°22’N, 51°29’E, (M.S. Abdel-Dayem leg.), 5w; Al-Rayyan, 07.iii.2005; 25°18’N, 51°25’E, (M.S. Abdel-Dayem leg.), 37w; Al-Rayyan, 8.iii.2005, 25°18’N, 51°25’E, (M.S. Abdel-Dayem leg.), 3w, (KSMA).

Geographic distribution. A successful tramp species originally described from Senegal and widely spread throughout the tropical and subtropical regions worldwide (Wetterer 2008). In the Arabian Peninsula it was reported from Qatar (Wetterer 2008), the KSA, Oman, Yemen (Collingwood 1985, Collingwood and Agosti 1996, Sharaf et al. 2018), and UAE (Collingwood et al. 1997). It is also collected from Egypt (Sharaf 2006) and Israel (Vonshak and Jonescu 2009).

Ecological and biological notes. The nesting preference includes both disturbed and wild sites (Sharaf et al. 2017). In Socotra Archipelago Sharaf et al. (2017) collected it from dry leaf litter in the wild sites. It is a generalized scavenger and also known to attend honeydew-producing Homoptera (Wetterer et al. 1999).

Subfamily Myrmicinae
Genus Cardiocondyla Emery, 1869

Cardiocondyla emeryi Forel, 1881 (Fig. 14 A–C)

Cardiocondyla emeryi Forel, 1881: 5 (w.) Virgin Is. Neotropic.

Diagnosis. Worker. Bicolored species with head and mesosoma yellow to brown, or orange-brown; terminal funicular segments always darker than rest of antennae; gaster black-brown to black, strongly contrasting head and mesosoma; antennal scapes of moderate length, when laid back from their insertions fail to reach posterior margin of head; eyes of moderate size with 8–10 ommatidia in longest row; pronotal corners rounded in dorsal view; metanotal groove sharply impressed; propodeal spines relatively short and stout; postpetiole in profile with a ventral bulge projecting anteriorly.

Material examined. Qatar, Al-Rayyan, 08.iii.2005, 25°18’N, 51°25’E, (M.S. Abdel-Dayem leg.), 3w (KSMA).

Geographic distribution. A successful cosmopolitan tramp species (Bolton 1987, Wetterer 2012). The species was originally described from the Virgin Islands, and reported from most countries of the Arabian Peninsula, including Oman, Yemen (Collingwood and Agosti 1996), KSA (Collingwood 1985), UAE (Collingwood et al. 1997), and the Socotra Archipelago (Collingwood et al. 2004, Sharaf et al. 2017). Our material represents the first record from Qatar.
Ecological and biological notes. This species has a broad global distribution facilitated by human trade (Seifert 2003, Wetterer 2012), and it is commonly encountered in heated buildings and greenhouses of the Afrotropical region (Bolton 1987).

Genus *Crematogaster* Lund, 1831

*Crematogaster antaris* Forel, 1894

(Fig. 15 A–C)

*Crematogaster* (*Acrocoelia*) *auberti* r. *antaris* Forel, 1894: 26 (w. q.) Algeria. Palearctic.

**Diagnosis.** Worker. Uniform brown species with posterior third of gaster dark brown; mesonotum in profile with a small tubercle close to promesonotal suture; petiole in dorsal view with concave anterior margin; petiole in dorsal view with rounded anterior corners; anterior half of cephalic surface or at least area in front of eyes and clypeus longitudinally striated; promesonotum and mesonotum dorsum unsculptured; promesonotum without hairs; hairs on first gaster tergites rare and restricted to a few pairs on posterior margin of the tergite.

**Material examined.** Qatar, Msaid Road, 09.iv.2005, 24°59’N, 51°33’E, (M.S. Abdel-Dayem leg.), 10w; Al Kharara-Seleiyn Road, 09.iv.2005, 24°53’N, 51°10’E, (M.S. Abdel-Dayem leg.), 13 w, (KSMA).

**Geographic distribution.** This is a Palearctic species originally described from Algeria and is distributed eastwardly across Egypt (Sharaf 2006), Israel (Vonshak and Ionescu 2009), the Arabian Peninsula: UAE (Tigar and Collingwood 1993), Kuwait, UAE, Oman and Yemen (Collingwood 1985, Collingwood and Agosti 1996, Collingwood and van Harten 2001), Qatar (Sharaf *et al.* 2019), to Iran (Paknia *et al.* 2008).

Genus *Messor* Forel, 1890

*Messor arenarius diabolus* Santschi, 1938

*Messor arenarius diabolus* Santschi, 1938: 35, fig. 5 (w.) Egypt. Palearctic.

**Diagnosis.** Worker. Uniform black with black-brown mandibles, funiculus and tarsi brown-red; posterior margin of head strongly deeply concave in full-face view; body pilosity profuse, especially on the gaster.

**Previous records.** Doha, 02.v.1983, 5 w; Abu Samrah, 03.iv.1984, 20 w; Al Shahaniyah, 20.iii.1985, 7w, (Abdo and Shaumer 1985).

**Geographic distribution.** This subspecies was originally described from Egypt and seems to be endemic to the country.

**Remarks.** This record was mentioned in Abdo and Shaumer (1985) under the name *Camponotus arenarius* var. *diabolus*. Since there is no species of this name under the genus *Camponotus*, it is most likely referring to *Messor arenarius diabolus*. This subspecies, however, is only known from the type locality and has not been collected from any country in the Arabian Peninsula, therefore, we consider the record of Abdo and Shaumer (1985) is dubious and represents a misidentified taxon.
Genus *Monomorium* Mayr, 1855

*Monomorium abeillei* André, 1881

(Fig. 16 A–C)

*Monomorium abeillei* André, 1881b: 531 (footnote) (w.) Palestine. Palearctic.

**Diagnosis. Worker.** Color evenly brown-black to black with pale funiculi, tarsi, and mandibles; anterior margin of clypeus slightly concave; eyes moderately large, with 9–10 ommatidia in the longest row; posterior margin when seen in full-face view weakly emarginate with rounded corners; mesosoma in profile with promesonotal dorsum meeting the flat propodeum at an oblique angle; propodeum with a characteristic, well-defined, longitudinal, V-shaped furrow bordered by a distinct raised edge at each side; petiole in profile is a high, rounded triangle; pronotum and petiole each have one pair of hairs, postpetiole with two pairs; few scattered hairs on first gastral tergite; head, pronotum, and nodes superficially reticulate; gaster shining with superficial sculpture.

**Material examined.** Qatar, Al Dhakira Park, 07.iii.2005, 25°43'N, 51°32'E, (M.S. Abdel-Dayem leg.), 8w; Al-Dohuil, 18-8.iii.2005, 25°22'N, 51°29'E, (M.S. Abdel-Dayem leg.), 3w; Al-Rayyan, 08.iii.2005, 25°18'N, 51°25'E, (M.S. Abdel-Dayem leg.), 4 w (KSMA).

**Geographic distribution.** A Palearctic species originally described from Palestine and is known from Levant: Egypt, Palestine, Israel, Jordan, Syria (Borowiec and Salata 2020); Arabian Peninsula: KSA, Kuwait, Oman, Yemen (Collingwood 1985, Collingwood and Agosti 1996), UAE (Tigar and Collingwood 1993; Collingwood et al. 2011); and east to Iran and Afghanistan. This species is recorded for the first time from Qatar.

**Ecological and biological notes.** The habitat preference of *M. abeillei* includes sandy desert, coastal areas, and high ground in the Asir mountains above 2200 m.a.s.l. (Collingwood 1985).

*Monomorium areniphilum* Santschi, 1911

(Fig. 17 A–C)

*Monomorium Salomonis* var. *areniphila* Santschi, 1911: 84 (w.) Tunisia. Palearctic.

**Diagnosis. Worker.** Uniform dark brown with paler tarsi; eyes with 12–14 ommatidia in longest row; mesosoma in profile with the promesonotal outline, with the posterior portion of the mesonotum sharply down curved and descending to impressed metanotal groove; dorsal of mesosoma without standing hairs; propodeal dorsum with a narrow, flattened, median, longitudinal strip.

**Material examined.** Qatar, Al-Dohuil, 15.iii.2005, 25°22'N, 51°29'E, (M.S. Abdel-Dayem leg.), 8w; Rawdet Rashed, 12.iii.2005, 25°14.006'N, 51°12.286'E, (M.S. Abdel-Dayem leg.), 47w; Doha, 08.iii.2005, 25°18'N, 51°25'E, (M.S. Abdel-Dayem leg.), 31w; Al-Rayyan, 08.iii.2005, 25°18'N, 51°25'E, (M.S. Abdel-Dayem leg.), 26w, (KSMA).
Monomorium subopacum (Smith, 1858)  
(Fig. 18 A–C)

Myrmica subopaca Smith, 1858: 127 (w.q.) Portugal (Madeira Is.). Afrotropic.

**Diagnosis.** Worker. Color brown, with gaster darker than head and mesosoma; eyes with 9–11 ommatidia in the longest row; mesonotum sloping evenly back to a shallow metanotal groove; cephalic surface in profile without standing hairs; mesosoma dorsum without standing hairs; petiole and postpetiole each with a single pair of hairs or rarely the postpetiole with two pairs.

**Material examined.** Qatar, Doha, 25°17.124’N, 51°31.86’E, 08.iii.2005, (M.S. Abdel-Dayem leg.), 15w, (KSMA).

**Geographic distribution.** Monomorium subopacum is widely distributed in the Mediterranean Basin and has sporadic distribution in the Afrotropical and Oriental regions (Bolton 1987). It has been recorded from KSA, Oman, UAE, and Yemen (Collingwood 1985, Collingwood and Agosti 1996, Collingwood et al. 2011). Our material represents the first record from Qatar.

Monomorium tumaire Collingwood & Agosti, 1996  
(Fig. 19 A–B)

Monomorium tumaire Collingwood & Agosti, 1996: 356, fig. 29 (w.) Saudi Arabia. Afrotropic.

**Diagnosis.** Worker. Color light brown or yellow-brown; metanotal groove shallowly impressed; propodeal furrow distinct; underside of head with numerous hairs, the longest exceeding the maximum eye length; posterior margin of head with two pairs of hairs; pronotum with one pair of hairs, petiole with one pair and postpetiole with two pairs of hairs; gaster with 12–16 suberect hairs on the first tergite; head and mesosoma shallowly reticulate-punctate.

**Previous records.** Qatar, Doha, 25°17’N, 51°30’E, 22.ix.2005, (M. Lush leg.).

**Geographic distribution.** Monomorium tumaire was originally described from KSA and is endemic to the Arabian Peninsula, where it is reported from KSA, Oman, UAE (Tigar and Collingwood 1993, Collingwood and Agosti 1996, Collingwood et al. 2011), and Qatar (Lush 2009).

Monomorium venustum (Smith, 1858)  
(Fig. 20 A–C)

Myrmica venusta Smith, 1858: 126 (w.) Syria. Palearctic.

**Diagnosis.** Worker. Bicolored species with head, mesosoma, petiole, and postpetiole red, gaster brown

Figure 17. Monomorium areniphilum, worker. A, body in profile; B, body in dorsal view; C, head in full-face view, CASENT0048000 (April Nobile), www.AntWeb.org.

**Geographic distribution.** The species is widely distributed throughout the Saharan and sub-Saharan Africa (Bolton 1987, Sharaf 2006) and extending eastward to the Arabian Peninsula: KSA, Kuwait, Oman, UAE, and Yemen (Collingwood 1985; Collingwood and Agosti 1996; Collingwood et al. 2011). This material represents the first record from Qatar.
Figure 18. *Monomorium subopacum*, worker, A, body in profile B, body in dorsal view C, head in full-face view, CASENT0064820 (April Nobile), www.AntWeb.org.

Figure 19. *Monomorium tumaire*, syntype worker, A, body in profile B, head in full-face view, CASENT0922347 (Michele Esposito), www.AntWeb.org.

to black; metanotal groove well-developed, deep, and broad; petiolar node high and rounded in profile; mesosoma, petiole, and postpetiole superficially faintly sculptured; petiole and postpetiole each have one pair of dorsal hairs while the first gastral tergite is bare.

*Monomorium venustum* closely resembles *M. niloticum* Emery, 1881 from which it can be differentiated by a lack of mesosomal pilosity.

**Material examined.** Qatar, Rawdet Rashed, 12.iii.2005, 25°14.006’N, 51°12.286’E, (M.S. Abdel-Dayem leg.), 9w, (KSMA).

**Geographic distribution.** This species was originally described from Syria and is known from Libya, east to Levant: Egypt, Israel, Jordan, Lebanon, Syria (Borowiec and Salata 2020); Arabian Peninsula: KSA, Kuwait, and Oman (Collingwood 1985, Collingwood and Agosti 1996); Iran, and Turkmenistan (Borowiec and Salata 2020). This material represents a new record for Qatar.
light brown; posterior margin of head deeply emarginated in full-face view; second funicular segment slightly longer than broad; metanotal groove well-developed and broad; propodeal spines short and acute; cephalic surfaces longitudinally rugulose running posteriorly to two-thirds of head length; posterior corners of head without striae; body surfaces with abundant long hairs.

**Material examined.** Qatar, Al-Dohuil (Doha), 8-18.iii.2005; 25°22’N, 51°29’E, (M.S. Abdel-Dayem leg.), 4w, (KSMA).

**Geographic distribution.** This species was described from Egypt and is known from East Africa: Eritrea, Kenya, Sudan; Morocco; Levant: Egypt, Israel, Iraq (Sharaf 2006, Vonshak and Ionescu 2009); the Arabian Peninsula: KSA, Oman, UAE, Yemen (Collingwood 1985, Collingwood and Agosti 1996, Collingwood et al. 2011); and Iran (Paknia et al. 2008). This material represents a new record for Qatar.

Genus **Strumigenys** Smith, 1860

**Strumigenys membranifera** Emery, 1869
(Fig. 23 A–C)

*Strumigenys* (*Trichoscapa*) *membranifera* Emery, 1869: 24, fig. 11 (w.) Italy. Palearctic.

**Diagnosis.** Worker. Dull yellow to yellow-brown; masticatory margin of mandibles armed with 12 teeth; anterior clypeal margin broadly and weakly convex; eyes minute, with few ommatidia, located at ventral margin of antennal scrobes; metanotal groove absent; spongiform appendages of petiole and postpetiole massively developed; cephalic surfaces reticulate-punctate; sides of mesosoma smooth; propodeal dorsum and declivity smooth; cephalic pilosity restricted to one pair of hairs situated at highest point of vertex; cephalic dorsum with sparse, minute, appressed pubescence; lateral margins of head, clypeus with its anterior and lateral margins, and humeral pronotal angles all without projecting hairs; dorsal surfaces of petiole, postpetiole, and gaster bare.

**Material examined.** Qatar, Rawdat Al Faras, Qatar University Farm for Training and Research, 25°48’N, 51°20.4’E, 21.v.2015 (M. R. Sharaf leg.), 1w; Saudi Arabia, Qassim, Buraydah, 26.36°N, 44.03°E, 653 m a.s.l., 19.x.2013 (S. Salman leg.), (2 workers CASENT0914337, CASENT0914338).

**Geographic distribution.** A successful, broadly spread, pantropical tramp species originally described from Italy, introduced into most zoogeographical regions worldwide by human commerce (Bolton 1983, Bolton 2000, Wetterer 2011). In the Arabian Peninsula, the species is known from KSA, UAE (Sharaf *et al.* 2014), and Qatar (Sharaf *et al.* 2015).
**Ecological and biological notes.** *Strumigenys membranifera* seems to prefer habitats with some degree of ecological disturbance (Wetterer 2011, Tang et al. 2019) where nests are built in the dry or semidry soil of lawn and pastures (Wilson and Hunt 1967,
Genus *Trichomyrmex* Mayr, 1865

*Trichomyrmex destructor* (Jerdon, 1851)
(Fig. 24 A–C)

*Atta destructor* Jerdon, 1851: 105 (w.) India. Indomalaya.

**Diagnosis. Worker.** Posterior margin of head transversely striolate in dorsal view; promesonotum in profile nearly flat or weakly convex; propodeal dorsum in a continuous curve with propodeal declivity; transverse sculpture of propodeal dorsum fine and dense; pilosity of mesosoma, petiole, postpetiole, and gaster short and weakly curved.

*Trichomyrmex destructor* is closest to *T. mayri*, from which it can be distinguished only by its bicolored body. Its head, mesosoma, petiole, and postpetiole are yellow to brown-yellow, and its gaster dark brown to black, whereas *T. mayri* is unicolorous dark brown or black-brown.

**Material examined.** Qatar, Al Dhakira Park, 07.iii, 2005, 25°43'N, 51°32'E, (M.S. Abdel-Dayem leg.), 4w; Doha, no locality, 17.iii.2005, (M.S. Abdel-Dayem leg.), 8w, (KSMA).

**Geographic distribution.** A species originally described from India, and is broadly spread in tropical and subtropical regions (Wetterer 2009). The species is originated in central Asia but has been distributed by human commerce to tropical and subtropical regions (Wetterer 2009) and extending to southern Europe (Ruzsky 1907) and North America. The species is known from most countries of the Arabian Peninsula (Collingwood 1985, Collingwood and Agosti 1996), and the Socotra Archipelago (Collingwood et al. 2004, Sharaf et al. 2017). More information on species distribution is given by Wetterer (2009).

**Ecological and biological notes.** This successful invasive species can invade a broad range of habitats including highly polluted sites (Wetterer 2009). In the KSA, this species builds nests in humid soil under stones in wild sites where *Acacia*, date palm, *Phoenix dactylifera* L. (Arecales), and *Calotropis procera* (Aiton) W.T. Aiton (Asclepiadaceae) trees exist (Sharaf et al. 2016).

*Trichomyrmex mayri* (Forel, 1902)
(Fig. 25 A–C)

*Monomorium* (*Paraholcomyrmex*) *gracillimum* var. *mayri* Forel, 1902: 209 (w.) India. Indomalaya.

**Diagnosis. Worker.** *Trichomyrmex mayri* is closest to *T. destructor*, from which it can be separated by its uniform dark brown or black-brown color, whereas *T. destructor* has a yellow to brown-yellow head, mesosoma, petiole, and postpetiole, while its gaster is dark brown.
in the sub-Saharan Africa (Bolton 1987); Levant (Sharaf 2006, Vonshak and Ionescu 2009); the Arabian Peninsula (Collingwood 1985, Collingwood and Agosti 1996, Sharaf et al. 2013, 2016b), the Socotra Archipelago (Sharaf et al. 2017), and it was recorded from Qatar by Sharaf et al. (2016b).

**Ecological and biological notes.** In the Arabian Peninsula, *T. mayri* invades a wide range of habitats

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**Material examined.** Doha, Fereej Ben Mahmoud, 14.iii.2005, 25°17’N, 51°30’E, (M.S. Abdel-Dayem leg.), 1w; Doha, 25°17.124’N, 51°31.86’E, 17.iii. 2005, (M.S. Abdel-Dayem leg.), 1w, (KSMA).

**Geographic distribution.** *Trichomyrmex mayri* was described from India and is widely distributed

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**Figure 24.** *Trichomyrmex destructor*, worker, A, body in profile B, body in dorsal view C, head in full-face view, CASENT00910235 (Alexandra Westrich), www.AntWeb.org.

**Figure 25.** *Trichomyrmex mayri*, worker, A, body in profile B, body in dorsal view C, head in full-face view, CASENT00919809 (Michele Esposito), www.AntWeb.org.
and constitutes the most common species of the genus (Sharaf et al. 2013, 2016). Nests are built in moist soil under stones next to date palm Phoenix dactylifera L. (Areceaeae) plantations, or close to Acacia trees in sites impacted by trash and human waste, whereas some exist next to the milkweed tree, Calotropis procera (Aiton) W.T. Aiton (Asclepiadaceae).

Subfamily Ponerinae
Genus **Brachyponera** Emery, 1900

*Brachyponera sennaarensis* (Mayr, 1862)  
(Fig. 26 A–C, 27 A–C)

*Ponera sennaarensis* Mayr, 1862: 721 (w.) Sudan. Afrotropic.

**Diagnosis. Worker.** Dark brown to black-brown, with antennae, tibiae, and tarsi reddish. In full-face view head with convex sides and concave posterior margin; eyes relatively large; metanotal groove deeply impressed; petiole a high and thick node with a straight anterior surface and convex posterior surface; first and second gastral tergites separated by a distinct constriction characteristic of ponerine ants; gaster ending with a powerful sting. All body surfaces covered with fine and dense pubescence.

**Material examined.** Qatar, Rawdet Rashed, 12.iii.2005, 25°14.006’N, 51°12.286’E, (M.S. Abdel-Dayem leg.), 3w; Al-Rayyan, 14.iii.2005, 25°18’N, 51°25’E, (M.S. Abdel-Dayem leg.), 25w; Al Dakhira Park, 14.iii.2005, 25°43.65’N, 51°32.052’E, (M.S. Abdel-Dayem leg.), 9w; Al-Rayyan, 17.iii.2005, 25°18’N, 51°25’E, (M.S. Abdel-Dayem leg.), 11w; Al-Dohuil, 18-8.iii.2005, 25°22’N, 51°29’E, (M.S. Abdel-Dayem leg.), 31w, (KSMA).

**Geographic distribution.** *Brachyponera sennaarensis* is an African native species originally described from Sudan, and spreads eastwardly from the Arabian Peninsula to Iran and India (Wetterer 2013). This ponerine ant is widely spread in all countries of the Arabian Peninsula (Collingwood 1985, Collingwood and Agosti 1996, Collingwood et al. 2011) and the Socotra Archipelago (Sharaf et al. 2017). It was recorded from Qatar by Wetterer (2013).

**Ecological and biological notes.** *Brachyponera sennaarensis* has the ability to invade a diverse range of habitats including moist soils around date palm trees, leaf litter, public gardens, under rocks and objects associated with moist soils, and any habitat close to human settlements (Collingwood 1985, Collingwood and Agosti 1996, Wetterer 2013). In Socotra Archipelago, Sharaf et al. (2017) found a colony under a rock next to a dragon blood tree *Dracaena cinnabari* Balf.f. (Asparagaceae). *Brachyponera sennaarensis* is a predaceous scavenger feeding on insects (Lachaud and Dejean 1994, Collingwood and Agosti 1996) and the seeds of tropical plants (Levieux and Diomande 1978). [Table 1]

**DISCUSSION**

The list of ant taxa known from Qatar has significantly increased to 23 species, belonging to 12 genera and four subfamilies. The subfamilies included are: Dolichoderinae (1 genus, 2 species), Formicidae (4 genera, 9 species), Myrmicinae (6 genera, 11 species),
and Ponerinae (1 genus, 1 species). The list includes 14 new species records for Qatar and one species, *Messor arenarius diabolus* is excluded from the faunal list because it is endemic to Egypt and has not been reported out its type locality.

Ants from two main biogeographical regions, the Palearctic and the Afrotropical, are encountered in Qatar. The geographic location of the State of Qatar in the eastern part of the Arabian Peninsula makes it an entry point for possible introductions of invasive/tramp ants. While the present study has recorded only five invasive species, *C. emeryi, P. longicornis, S. membranifera, T. melanocephalum,* and *T. destructor (~ 22%),* this list likely underestimates the actual number of introduced invasives. The relatively low percentage of recorded invasive species is due to the lack of serious collecting efforts in the country.

Many more invasive species surely await discovery (e.g., *Cardiocondyla mauritianca* Forel, 1890, *Cardiocondyla wroughtonii* (Forel, 1890), *Hypoponera punctatissima* (Roger, 1859), *Lioponera longipilosa* (Mayr, 1879), *Monomorium exiguum* Forel, 1894, *Monomorium pharaonis* (Linnaeus, 1758), *Plagiolepis pygmaea* (Latreille, 1798), *Pheidole*...
Bertelsmeier is breaking down biogeographic barriers, resulting in country and the Arab region as a whole. Human travel that will increase the probability of introducing invasive species on native fauna (Goodenough 2010, Bertelsmeier et al. 2015) that may lead to the extinction of endemic species (Blackburn et al. 2004, Clavero and Garcia-Berthou 2005).

Our study reveals a predominance of the Palearctic faunal elements (13 species / ~57%), followed by a relatively high proportion of invasive species (5 species / ~22%), a small proportion of faunal elements from the Afrotropical (4 species / ~17%), a minor fraction of Indomalayan species (1 species / ~4%). The supremacy of Palearctic elements is not surprising, since several works have pointed out that the fauna of the central and eastern region of the Arabian Peninsula bear clear similarities with those of the Palearctic region (e.g. Collingwood 1985, Cowie 1989, Collingwood and Agosti 1996, Penati and Vienna 2006, Collingwood et al. 2011, El-Hawagry et al. 2013, Sharaf et al. 2020 a). In addition, the low percentage of the Oriental species agrees with the results of Larsen (1984) on the Arabian fauna of the butterflies, Penati and Vienna (2006) on the Arabian Histeridae, and Abdel-Dayem et al. (2019) on the Carabidae of the southwestern mountains of the KSA.

The complete lack of any species endemic among the ant fauna of Qatar is surprising. A few endemic species are likely to be found with future inventories, but we expect the degree of endemism will remain low compared to the rest of the ant fauna. Many common/native species that are supposedly endemic to the Arabian Peninsula and have been recorded from adjacent territories may also occur in similar habitats in Qatar (e.g. *Cataglyphis adenensis* (Foreal, 1904), *Camponotus adenensis* Emery, 1893, *Camponotus thoracicus* (Fabricius, 1804), *Monomorium luteum* Emery, 1881, and *Nyländeria jaegerskioeldi* (Mayr, 1904), providing direction for further collecting efforts.

Qatar will host the FIFA World Cup 2022, an event that will increase the probability of introducing invasive ants and other groups of animal species to the country and the Arab region as a whole. Human travel is breaking down biogeographic barriers, resulting in shifts in the geographical distribution of organisms (Bertelsmeier et al. 2017). The huge numbers of people that will accompany this international sport event will strain Qatar’s quarantine inspection capabilities. Human activities, population movements, and global trade around the world greatly contribute to the further spread of invasive species outside their native habitats (e.g. McGlynn 1999, Sax et al. 2002, Sax and Gaines 2003, Steadman 2006, Van Damme and Benfield 2011). This assertion is supported by the abundance of the most collected invasive species around the Qatari capital, Doha (Fig. 1). Cities and harbors are both hotspots of introduction. The warmer climates of cities, caused by the urban heat island effect (Oke 1973), make cities ideal starting points for introduced species to spread (Von der Lippe and Kowarik 2007). Similarly, harbors represent major introduction pathways for of ants in particular (Suarez et al. 2010). Trade in Qatar goes through large harbors such as Al Wakrah, Doha, Halul Island, Ras Laffan, and Mesaieed (Oxford Business Group 2020). Among other products, ships carry agricultural and food products as well as fertilizers, all of which are mediums through which new species can be introduced.

From an ecological perspective, ants play a pivotal role in the regulation of other arthropod populations, since they occur in significant numbers in every type of habitat in the Arabian Peninsula as well as other Middle East and subtropical countries (Collingwood 1985, Collingwood and Agosti 1996, Collingwood et al. 2011, Sharaf et al. 2020 a, b). Many carnivorous species, including *Cataglyphis* and *Camponotus*, are scavengers rather than predators. They are also possibly a chief source of food for insectivorous birds. Finally, the ant fauna of Qatar is still far from being complete. With greater collection efforts, we expect the number of species found in the country might reach about 60.

ACKNOWLEDGMENTS

We are indebted to Barry Bolton, Boris Kondratieff, and Kadri Kiran for valuable comments. The authors are grateful to Said M. Said (Geology Department, Faculty of Science, Cairo University) and Eslam Hussein (Esri-NEA, Cairo, Egypt) for creating distribution maps. Mostafa Sharaf thanks Stephen Judd and Tony Hunter (World Museum Liverpool, U.K.) and James Hogan (Oxford University Museum, Oxford, U.K.) for appreciated hospitality during his visit to the U.K.

DISCLOSURE STATEMENT

The authors declare there are no competing interests.

Funding. The authors extend their appreciation to the Deputyship for Research & Innovation, “Ministry of
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Received: May 15, 2020
Accepted: September 1, 2020
Printed: December 30, 2020