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Melissotarsus Emery (Insecta: Hymenoptera: Formicidae), a new country record for Namibia

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Introduction

The ant genus *Melissotarsus* is widespread in the Afrotropical region, but less often collected. They possess a number of unusual characteristics. They nest in cavities that they chew out of healthy wood, and many aspects of worker morphology represent adaptations to wood chiselling. Most noticeable are the middle pair of legs that are permanently bent upwards to provide additional leverage against the tunnel roof during chewing, in fact, because of this workers are unable to walk normally in an unconfined space (Khalife *et al*. 2018). The ants live in a symbiotic relationship with armoured scale insects (Hemiptera: Diaspididae) that they tend inside their nests (Ben-Dov & Fisher 2010). The nests provide protection for the scale insects, while the ants feed off the wax and other secretions that normally build the armoured coverings of the scale insects (Peeters *et al*. 2017). Because the diaspidids themselves feed on sap, the ant nests are largely restricted to the living sap-carrying layers just under the bark, meaning that the ants can potentially kill their host plants by interrupting sap flow. The worker ants do not forage and never leave the nests, of which there is often very little surface trace. Nest breaches are fixed by workers with a mixture of silk and wood fragments: *Melissotarsus* are some of the very few ants that are able to produce silk, from glands below the head, and they spin it with specialised front tarsi (Fisher & Robertson 1999).

Observations

In January 2020 a Windhoek resident approached the National Museum of Namibia with some ant specimens that had caused damage to trees in her garden. Upon examining the site, three different carob trees, *Ceratonia siliqua*, were observed to be affected, with some branches already dead. Eradication attempts by the owners had altered the appearance of nests and bark in most cases, but one unaffected area remained where silk-lined covered surface runways overlay subsurface tunnels with scattered small openings connecting the tunnels and runways (Figures 1, 2). Most consulted literature sources remark on the usual absence of surface traces of *Melissotarsus* nests, so this was an atypical nest configuration but one similar to that previously described by Prins *et al*. (1975). Two completely dead non-indigenous *Aloe* species on the same property and a palm tree on an adjacent property were pointed out to me as having died from the same cause. Ben-Dov & Fisher (2010) had previously listed at least 23 different tree species that host *Melissotarsus*, but remarked that the list included no monocotyledons. *Melissotarsus* make their burrows mainly in the cork cambium (Mony *et al*. 2013), a layer that is absent in most monocotyledons. I was only able to examine the aloes in the present case and the presence of soil inside the stems suggested that the already dead plants had been eaten by termites. Windhoek was at that time experiencing a severe drought with restrictions on watering of garden plants and it is more likely that these particular monocotyledons had died of drought than of damage by *Melissotarsus*.

Figure 1: *Covered surface runways of* Melissotarsus emeryi *on tree branch.*

Figure 2: Melissotarsus emeryi *runways with cover partly removed to show connecting holes to corresponding subsurface nest cavities.*

Figure 3: Melissotarsus emeryi *workers. Note the upturned middle legs. Scale bar: 1 mm.*

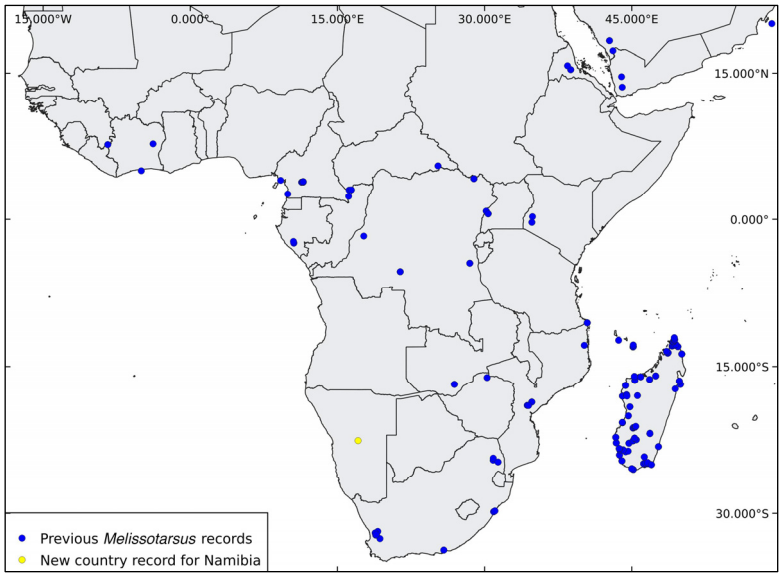

Figure 4: *Known distribution of* Melissotarsus*, all species combined. Data sources: AntWeb (2020) version 8.40.1; Global Ant Biodiversity Informatics (GABI) Project, data release 1.0 (Guénard et al. 2017).*

The ants, all worker caste, were identified with the help of Fisher & Bolton (2016) and Bolton (1982) as *Melissotarsus emeryi* Forel (Figure 3). The genus had not been recorded from Namibia before (Figure 4). Based on my assessment of climate and habitat at the southern African *Melissotarsus* localities with which I am familiar, I would expect them to occur naturally in savanna woodland in north-eastern Namibia, but probably not in the arid savanna of central Namibia. If this is correct it might mean that they were artificially introduced to Windhoek through the importation of infested live wood from an area where they do occur.

Material examined: 9 exx.; NAMIBIA, Khomas Region, Klein Windhoek at: 22.5660 S, 17.0990 E, 20.I.2020, A. Oosthuizen. National Museum of Namibia accession number SM H 65918.

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