Unveiling community patterns and trophic niches of tropical and temperate ants using an integrative framework of field data, stable isotopes and fatty acids

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Supplementary document S1: Bait composition and display (based on Houadria et al. 2015 and Rosumek 2017)

(1) Large prey: one individual of *Achaeta domesticus* (Linnaeus, 1758) with 1-2 cm body size, was tied between the first and second pair of legs to prevent it from escaping, but still be able to jump and move inside the trap. Represents larger, mobile prey with harder integument.

(2) Small prey: in Brazil, 15 termites were left free on a piece of mound, divided between workers and soldiers. Previous testing showed that termites do not leave the mound piece after 90 minutes. Another 10 individuals were glued to a small wood stick, to increase the time spent by ants on the bait. Individuals from the subfamily Nasutitermitinae were used, which have specialized workers with chemical defenses that can affect ants (Prestwich, 1984). In Germany, termites are rare, thus we used larvae of *Lucilia sericata* Meigen, 1826. Two maggots were pinned at the rear end, still able to move the body but not leave the bait. Previous testing showed

that they stayed alive for several hours under this condition. Both baits represent prey smaller, slower and softer, but not defenseless.

(3) Dead arthropods (2-3 g): crushed crickets and mealworms (*Tenebrio molitor* Linnaeus, 1758 – in Brazil) or maggots (*Lucilia sericata* Meigen, 1826 – in Germany).

(4) Bird feces (2-3 g): chicken feces from organic breeding. Represents nitrogen-rich bird feces, which could be directly collected by ants, or contain animal and vegetal remains used by them (Leal & Oliveira, 1998; Jaffe et al., 2001; Sainz-Borgo, 2015).

(5) Seeds (2-3 g): in Brazil, a mix of soy, millet, sunflower, canary, barley, linseed, grass seeds and ground corn, representing different sizes and shapes of seeds. We avoided seeds with elaiosomes because these mimic animal prey and attract predacious species, not only granivorous ones (Hughes et al., 1994; Giladi, 2006). However, in Germany, granivory is restricted to *Messor* ants, absent in our study site (Seifert, 2007). Thus, we used elaiosome seeds of *Chelidonium majus* (L.), known to be attractive to ants (Reifenrath, Becker & Poethke, 2012).

(6) Sucrose solution (2-3 ml): at 20% concentration. Sucrose and its components, fructose and glucose, are the main nutritional sugars in plant exudates and fleshy fruits (Percival, 1961; Baker et al., 1998; Blüthgen et al., 2004).

(7) Melezitose solution (2-3 ml): at 20% concentration. Represents insect-synthesized oligosaccharides present on honeydew (Kiss, 1981; Wäckers, 2000). Although melezitose and other oligosaccharides occur naturally almost only on honeydew, some insects secrete honeydew with little modification, similar to plant exudates (Völkl et al., 1999; Blüthgen et al., 2004). Therefore, preference for melezitose indicates use of honeydew, and avoidance suggests limited use, although not definitive lack of interaction with sap-sucking insects.

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