

# Prey classification by an araneophagic ant-like jumping spider (Araneae: Salticidae)

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## Keywords

*Myrmarachne*; prey choice; myrmecomorphy; mimicry; prey preference; predation.

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Editor: Nigel Bennett

Received 5 April 2009; revised 15 May 2009; accepted 15 May 2009

doi:10.1111/j.1469-7998.2009.00602.x

## Abstract

What to attack is one of the most basic decisions predators must make, and these decisions are reliant upon the predator's sensory and cognitive capacity. Active choice of spiders as preferred prey, or araneophagy, has evolved in several distantly related spider families, including jumping spiders (Salticidae), but has never been demonstrated in ant-like jumping spiders. We used prey-choice tests with motionless lures to investigate prey-choice behaviour in *Myrmarachne melanotarsa*, an East African ant-like salticid that normally lives in aggregations and often associates with other spider species. We show that *M. melanotarsa* chooses spiders as prey in preference to insects and, furthermore, discriminates between different types of spiders. *Myrmarachne melanotarsa*'s preferred prey were juvenile hirsilliids and its second most preferred were other salticids. To date, all documented examples of araneophagic salticids have been from the basal sub-family Spartaecinae. *Myrmarachne melanotarsa* is the first non-spartaeine and also the first ant-like salticid for which araneophagy has been demonstrated.

## Introduction

When and what to attack are among the most basic decisions predators must make, and an appreciation of the predator's sensory and cognitive capacity underpins our understanding of the decisions a predator makes (Shettleworth, 1998). Predators actively select particular types of prey, and thus it is important to distinguish clearly between a predator's natural diet and its prey-choice behaviour. Knowledge of how a predator classifies prey and its ability to discriminate between prey types is conceptually different from simply determining a predator's natural diet or determining whether a natural diet deviates from a random sample of prey available in the environment (Morse, 1980; Huseynov, Jackson & Cross, 2008). This distinction has important implications. For example, a detailed understanding of the sensory systems underpinning decision-making processes has the potential to explain the variable fit of empirical data to predictions from optimal foraging theory (Sih & Christensen, 2001). A predator's prey-choice behaviour is an expression of its underlying preferences, something internal to the animal and conceptually distinct from what the predator actually ends up eating, or in other words, its diet. A predator's preference is only one of the factors that may influence a predator's natural diet. For example, data on diet alone cannot distinguish between a predator's preferences and how the active defence mechanisms of a chosen prey

might interfere with a predator's prey-capture efforts. In order to investigate prey preferences, it is necessary to manipulate the type of prey available to the predator.

For experiments on prey-choice behaviour, jumping spiders (Salticidae) have been especially suitable subjects (Jackson & Pollard, 1996; Li & Jackson, 1996a). Most spiders have simple eyes and only rudimentary eyesight (Land, 1985; Land & Nilsson, 2002), but salticids are a major exception because their unique, complex eyes (Land, 1969a,b; Blest, O'Carroll & Carter, 1990) provide spatial acuity approaching that of primates (Williams & McIntyre, 1980; Harland & Jackson, 2004). Numerous salticid species are known to make vision-based discriminations between objects comparable to themselves in size from distances of 10 to 40 body lengths away (Harland, Jackson & Macnab, 1999). The ability to discriminate between different types of prey from afar may have been an important factor facilitating the evolution of prey-specific predatory behaviour and fine-grain prey-choice behaviour in salticids. One of the advantages of using salticids in prey-choice experiments is that testing can be based on presenting the salticid with dead prey mounted in a life-like posture on cork discs (lures) or with projected images (virtual prey) derived from computer animation (e.g. Harland & Jackson, 2002; Nelson & Jackson, 2006a). This gives us much tighter control over the potentially confounding variables that arise when a predator interacts with living prey during an experiment.

Previous work on salticid prey-choice behaviour has focused especially on an assortment of species that have a pronounced preference for spiders as prey (araneophagic salticids) (e.g. Li, Jackson & Barrion, 1997) and another assortment of species that have a pronounced preference for ants as prey (myrmecophagic salticids) (e.g. Huseynov, Cross & Jackson, 2005). The small number of genera for which pronounced araneophagy is known (*Brettus*, *Cocalus*, *Cyrba*, *Gelotia*, *Phaeacius* and *Portia*) are all spartaeines, the subfamily Spartaeinae being regarded as a basal branch of the family Salticidae (Maddison & Hedin, 2003; Su *et al.*, 2007). *Portia fimbriata* is noteworthy among araneophagic salticids because one particular population, from Queensland, Australia, has a hierarchy of preferences. Besides preferring spiders to insects as prey, it chooses salticids in preference to other spiders as prey (Li & Jackson, 1996b). The majority of salticid genera belong to a more recent clade in salticid phylogeny, referred to as the Salticoida (Maddison & Hedin, 2003). The genera for which pronounced myrmecophagy is known all belong to the Salticoida. Most salticids, however, appear to have an active aversion to close proximity to ants (Nelson & Jackson, 2006b) and, except for the araneophagic spartaeines, prey primarily on other kinds of insects (Jackson & Pollard, 1996).

Besides the myrmecophagic salticids, another sizeable minority of salticid genera, the myrmecomorphic salticids (i.e. salticids with an ant-like appearance), have their biology closely tied to ants. The species we consider here, *Myrmarachne melanotarsa* Wesolowska & Salm, (2002), belongs to the largest of these genera. It is rare for myrmecomorphic salticids to prey on ants (but see Allan & Elgar, 2001), and there is no evidence that an ant-like appearance has any role in deceiving ants and thereby assisting in their capture. However, there is now considerable evidence that the ant-like appearance of *Myrmarachne* and other myrmecomorphic salticids functions as Batesian mimicry (McIver & Stonedahl, 1993; Cushing, 1997; Nelson & Jackson, 2006b,c).

The prey-choice behaviour of myrmecomorphic salticids has not been a subject of detailed experimental studies in the past, but an earlier baseline study suggested that araneophagy, not myrmecophagy, might be pronounced in *M. melanotarsa*, as spiders dominated the prey records of this species in the field and it preyed readily on spiders in the laboratory (Jackson, Nelson & Salm, 2008). The model of this East African salticid is *Crematogaster* sp. (Hymenoptera, Formicidae), a myrmicine ant with which it lives in close association. *Myrmarachne melanotarsa* also lives in close association with other conspecific individuals in nest complexes (masses of interconnected nest chambers) on tree trunks. It shares these nest complexes with various other salticids, but especially with species from the genera *Menemerus* and *Pseudicius* (Jackson, 1986). Often these nest complexes are built next to the egg sacs of *Hersilia caudata* Audouin, 1827, a common harsiliid spider on tree trunks, and the juveniles of *H. caudata* were common prey for *M. melanotarsa* in the field (Jackson *et al.*, 2008). *Myrmarachne melanotarsa* is a small salticid (adult body length c. 3 mm)

and *Crematogaster* sp. is of a similar size. The prey of *M. melanotarsa* in nature tends to be even smaller, being especially often the smallest juvenile instars of *H. caudata*, *Menemerus* spp. and *Pseudicius* spp. (Fig. 1; Jackson *et al.*, 2008).

The earlier baseline study (Jackson *et al.*, 2008) suggested the hypothesis we consider here that *M. melanotarsa* makes distinct prey-choice decisions, with spiders being preferred prey. We also consider whether, when making prey-choice decisions, *M. melanotarsa* distinguishes between salticids and harsiliids. By using mounts instead of living prey, we consider whether *M. melanotarsa* can make its prey-choice decisions on the basis of vision alone and in the absence of movement cues.

## Materials and methods

The field site and laboratory were at the Thomas Odhiambo Campus (Mbita Point, western Kenya; 0°25'S–0°30'S by 34°10'E–35°15'E) of the International Centre of Insect Physiology and Ecology (ICIPE). All testing was carried out between 08:00 and 19:00 h (laboratory photoperiod 12L:12D, lights on at 07:00 h). The laboratory-rearing environment for salticids was enriched by placing the spiders in spacious cages containing meshworks of twigs. Insects were collected from the field as needed, but all individuals of *M. melanotarsa* and other salticids were from laboratory cultures (Table 1; for details on the rearing methods, see: Jackson & Hallas, 1986; Jackson *et al.*, 2008). For each individual of *M. melanotarsa*, the prey used for rearing was always different from the prey used in testing.

Previous studies have shown that results are consistent when spiders are simultaneously presented with living prey, lures or projected images of prey (Li *et al.*, 1997; Nelson & Jackson, 2006a), and here we consider findings from only simultaneous-presentation testing using lures. Each lure was made by asphyxiating an arthropod with CO<sub>2</sub> and then placing it in 80% ethanol. One day later, the arthropod was mounted in a life-like posture on the centre of one side of a



**Figure 1** Female *Myrmarachne melanotarsa* with juvenile salticid prey.

**Table 1** Arthropods used as prey for making lures for choice tests with *Myrmarachne melanotarsa*

Prey category	Species	Family	Description	Rationale	Body length (mm)
Hersiliid spider	<i>Hersilia caudata</i> <sup>a</sup>	Hersiliidae	Tree trunk spider	Prey in field (Jackson <i>et al.</i> 2008)	2.0
Salticid spider	<i>Evarcha culicivora</i> <sup>a</sup>	Salticidae	Jumping spider	Sometimes present near complexes occupied by <i>M. melanotarsa</i>	2.0
	<i>Menemerus</i> sp. <sup>a</sup>	Salticidae	Jumping spider	Prey in field (Jackson <i>et al.</i> 2008)	2.0
	<i>Portia africana</i> <sup>a</sup>	Salticidae	Jumping spider	Sometimes present in nest complexes occupied by <i>M. melanotarsa</i>	2.0
	<i>Pseudicius</i> sp. <sup>a</sup>	Salticidae	Jumping spider	Prey in field (Jackson <i>et al.</i> 2008)	2.0
Other spider	<i>Argyrodes</i> sp. <sup>a</sup>	Theridiidae	Web-building spider	Common in vicinity of nest complexes occupied by <i>M. melanotarsa</i>	2.0
	<i>Clubiona</i> sp. <sup>a</sup>	Clubionidae	Hunting spider	Sometimes found in or near nest complexes occupied by <i>M. melanotarsa</i>	2.0
	<i>Nephilengys</i> sp. <sup>a</sup>	Nephilidae	Web-building spider	Common in vicinity of nest complexes occupied by <i>M. melanotarsa</i>	2.0
	<i>Pardosa messingerae</i> <sup>a</sup>	Lycosidae	Wolf spider	Representative spider (usually found on ground, but occasionally on tree trunks near nest complexes occupied by <i>M. melanotarsa</i> )	2.0
Insect	<i>Ablabesmyia nilotica</i> <sup>b</sup>	Chironomidae	Lake fly	Prey in field (Jackson <i>et al.</i> 2008)	4.0
	<i>Anopheles funestris</i> <sup>b</sup>	Culicidae	Mosquito	Prey in field (Jackson <i>et al.</i> 2008)	3.5
	<i>Chaoborus</i> sp. <sup>b</sup>	Chaoboridae	Lake fly	Prey in field (Jackson <i>et al.</i> 2008)	4.0
	<i>Chilo partellus</i> <sup>c</sup>	Pyralidae	Stemborer larva (caterpillar)	Prey in field (Jackson <i>et al.</i> 2008)	3.0
	<i>Psychoda</i> sp. <sup>b</sup>	Psychodidae	Moth fly	Sometimes found in vicinity of nest complexes occupied by <i>M. melanotarsa</i>	2.0
	Unidentified mirid <sup>d</sup>	Miridae	Mirid bug	Sometimes found in vicinity of nest complexes occupied by <i>M. melanotarsa</i>	2.0
	Unidentified psocid <sup>e</sup>	Ectopsocidae	Psocid	Prey in field (Jackson <i>et al.</i> 2008)	2.0

<sup>a</sup>Order Araneae.<sup>b</sup>Order Diptera.<sup>c</sup>Order Lepidoptera.<sup>d</sup>Order Hemiptera.<sup>e</sup>Order Psocoptera.

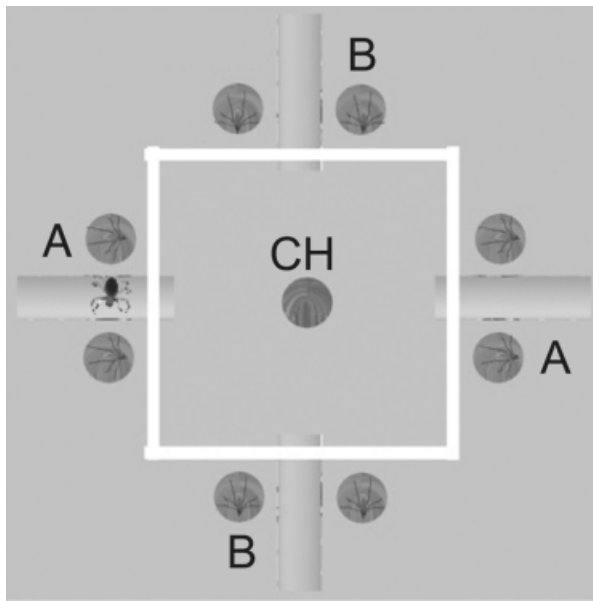
For spider lures only juveniles used in order to standardize size.

disc-shaped piece of cork (diameter 1.25 × the body length of the arthropod; thickness *c.* 2 mm) and sprayed with an odourless transparent plastic adhesive for preservation.

The testing apparatus was a square transparent glass box with four vials fitted into holes that were spaced around the four sides (Fig. 2). There was a lure on each side of each vial (i.e. a total of eight lures surrounded the box). Each lure sat on the wooden platform and faced directly towards the side of the box. Two lure types were present during each test. One type was placed on two of the opposing sides (positions A) and the other type was placed on the other two opposing sides (positions B). Which of the two lure types was placed in positions A was decided at random (for more details, see Jackson, Nelson & Sune, 2005).

The box was mounted on a wooden platform (170 × 170 mm) and was surrounded by a 40-mm-high wooden fence against which *M. melanotarsa* saw the lures. The apparatus was lit by a 200 W incandescent lamp, positioned *c.* 400 mm overhead. Fluorescent ceiling lamps provided ambient lighting.

After introducing the test spider into the box and then plugging the hole in the lid with a rubber stopper, tests lasted 30 min or until the test spider made a choice. When the spider entered and remained inside any one of the four vials for 30 s, this was recorded as its choice (in preliminary trials, individuals that stayed in a vial for this duration remained for at least 5 min and, if they subsequently left, they did not enter and remain in another vial for more than a few



**Figure 2** Apparatus used for vision-based prey-choice testing. Glass box with a central hole (CH), plugged with a rubber stopper. Spider introduced through CH. Each of four glass vials (diameter, 50 mm) fits in a hole in the side of a box. Lures mounted on cork discs and positioned one on each side of each vial. Type of lure at A different from type at B. Criterion for 'choice': a spider entered the vial and remained there for more than 30 s.

seconds). Between tests, the box, the stopper and all vials were washed with 80% ethanol, followed by distilled water and then allowed to dry.

The arthropods used for making lures (Table 1) were species that appeared in field prey records for *M. melanotarsa* (Jackson *et al.*, 2008), other species that were similar to species from the prey records and species that are common in *M. melanotarsa*'s habitat. Based on preliminary tests, we know that *M. melanotarsa* will readily kill and eat each of these prey species in the laboratory. Some terms were defined for referring to lures. Hersiliid: *Hersilia caudata*, Salticid: salticid species other than *M. melanotarsa*, 'Other spider': spiders other than hersiliids and salticids.

For standardization, only adult females of *M. melanotarsa* were tested, and no individual was used in more than one test. Each individual of *M. melanotarsa* was kept without food for 7 days before testing to ensure that it would readily respond to prey. For each experiment (i.e. each pair of prey),  $n$  was between 12 and 20. Data were analysed using  $\chi^2$ -tests of independence, binomial tests and tests of goodness of fit in SPSS v. 16 ( $\alpha$  set at 0.05).

## Results

*Myrmarachne melanotarsa* chose hersiliids significantly more often than any of the salticid species used as alternative prey (Table 2), choosing hersiliids in 87.8% of tests and salticids in 12.2% of tests overall (Fig. 3). How often *M. melanotarsa* chose the hersiliid instead of the salticid did

not vary significantly among the four salticid species used as alternative prey ( $\chi^2_3 = 0.24$ ,  $P = 0.97$ ,  $n = 74$ ) and we pooled these data in the interest of making further comparisons easier to present. How often *M. melanotarsa* chose the hersiliid instead of non-salticid (other) spiders ( $\chi^2_3 = 2.74$ ,  $P = 0.43$ ,  $n = 64$ , Table 2) and insects ( $\chi^2_6 = 3.29$ ,  $P = 0.77$ ,  $n = 100$ , Table 2) also did not differ among these two groups of alternative prey (non-salticids and insects, respectively). On the whole, *M. melanotarsa* chose hersiliids in 87.5% of tests and other spiders in 12.5% of tests, and chose hersiliids in 88% of tests and insects in 12% of tests (Fig. 3).

When a representative salticid (*Menemerus* sp.) was used as one of the prey and the paired alternatives were other spiders or insects, *M. melanotarsa* chose the salticid significantly more often than the other spider or the insect (Table 2). On the whole, *M. melanotarsa* chose *Menemerus* sp. in 86.6% of tests and other spiders in 13.4% of tests, and chose *Menemerus* sp. in 86.1% of tests and insects in 13.9% of tests (Fig. 3). The frequency with which *M. melanotarsa* chose the salticid instead of the other spider or the insect did not vary significantly among the different spider ( $\chi^2_3 = 4.80$ ,  $P = 0.19$ ,  $n = 67$ ) and insect species ( $\chi^2_6 = 7.84$ ,  $P = 0.25$ ,  $n = 108$ ) and we pooled data for streamlining further comparisons. Pooled data indicate that *M. melanotarsa* chose hersiliids significantly more often than salticids ( $\chi^2 = 42.38$ ,  $P < 0.001$ ,  $n = 74$ , Fig. 3), other spiders ( $\chi^2 = 36.00$ ,  $P < 0.001$ ,  $n = 64$ , Fig. 3) or insects ( $\chi^2 = 57.78$ ,  $P < 0.001$ ,  $n = 100$ , Fig. 3), but it chose salticids more often than other spiders ( $\chi^2 = 35.84$ ,  $P < 0.001$ ,  $n = 67$ , Fig. 3) or insects ( $\chi^2 = 56.33$ ,  $P < 0.001$ ,  $n = 108$ , Fig. 3).

In tests in which a representative other spider [*Pardosa messingerae* (Strand 1916)] was used as one of the prey and was paired with a variety of insects, how often *M. melanotarsa* chose *Pa. messingerae* was not significantly different in each instance from how often it chose insects (Table 2). *Myrmarachne melanotarsa* chose *Pa. messingerae* in 55.3% of tests and chose insects in 44.7% of tests (Fig. 3), but there was a variation in this dataset as a whole ( $\chi^2_6 = 14.90$ ,  $P = 0.02$ ,  $n = 150$ ) and, accordingly, we did not pool these data.

## Discussion

When discussing ants, Wilson (1971) made an offhand remark that was not entirely facetious: that 'a group of species sharing common descent can be said to have truly radiated if one or more species is a specialized predator on others'. By this criterion, spiders join ants as a 'truly radiated' group. A wide assortment of spider species has evolved specialized methods of preying on other spiders. In the case of *M. melanotarsa*, not only do we now have the first experimental evidence of an araneophagic ant mimic, but this species also becomes the only known example of an araneophagic non-spartaeine salticid.

Findings from an earlier natural field-based study (Jackson *et al.*, 2008) provided the impetus for the current investigation of *M. melanotarsa*'s prey-choice behaviour. In nature, *M. melanotarsa*'s diet primarily comprises hersiliids

**Table 2** Results of prey choice tests of *Myrmarachne melanotarsa* with results from associated binomial test ( $H_0=0.5$ )

Prey 1	Prey 2	Chose 1	Chose 2	P value
<i>Hersilia caudata</i> (H)	<i>Evarcha culicivora</i> (S)	18	2	<0.001
<i>H. caudata</i> (H)	<i>Menemerus</i> sp. (S)	17	3	0.003
<i>H. caudata</i> (H)	<i>Portia africana</i> (S)	15	2	0.002
<i>H. caudata</i> (H)	<i>Pseudicius</i> sp. (S)	15	2	0.002
<i>H. caudata</i> (H)	<i>Argyrodes</i> sp. (O)	12	2	0.013
<i>H. caudata</i> (H)	<i>Clubiona</i> sp. (O)	14	1	0.001
<i>H. caudata</i> (H)	<i>Nephilengys</i> sp. (O)	14	4	0.031
<i>H. caudata</i> (H)	<i>Pardosa messingerae</i> (O)	16	1	<0.001
<i>H. caudata</i> (H)	<i>Ablabesmyia nilotica</i> (I)	12	0	<0.001
<i>H. caudata</i> (H)	<i>An. funestris</i> (I)	13	3	0.021
<i>H. caudata</i> (H)	<i>Chaoborus</i> sp. (I)	11	1	0.006
<i>H. caudata</i> (H)	<i>Chilo partellus</i> (I)	12	1	0.003
<i>H. caudata</i> (H)	<i>Psychoda</i> sp. (I)	14	3	0.013
<i>H. caudata</i> (H)	Unidentified mirid (I)	12	2	0.013
<i>H. caudata</i> (H)	Unidentified psocid (I)	14	2	0.004
<i>Menemerus</i> sp. (S)	<i>Argyrodes</i> sp. (O)	12	0	<0.001
<i>Menemerus</i> sp. (S)	<i>Clubiona</i> sp. (O)	17	3	0.003
<i>Menemerus</i> sp. (S)	<i>Nephilengys</i> sp. (O)	14	1	0.001
<i>Menemerus</i> sp. (S)	<i>Pardosa messingerae</i> (O)	15	5	0.041
<i>Menemerus</i> sp. (S)	<i>Ab. nilotica</i> (I)	15	5	0.041
<i>Menemerus</i> sp. (S)	<i>An. funestris</i> (I)	12	0	<0.001
<i>Menemerus</i> sp. (S)	<i>Chaoborus</i> sp. (I)	14	1	0.001
<i>Menemerus</i> sp. (S)	<i>Chilo partellus</i> (I)	12	0	<0.001
<i>Menemerus</i> sp. (S)	<i>Psychoda</i> sp. (I)	14	4	0.031
<i>Menemerus</i> sp. (S)	Unidentified mirid (I)	14	3	0.013
<i>Menemerus</i> sp. (S)	Unidentified psocid (I)	12	2	0.013
<i>Pa. messingerae</i> (O)	<i>Ab. nilotica</i> (I)	14	6	0.115
<i>Pa. messingerae</i> (O)	<i>An. funestris</i> (I)	15	15	1.000
<i>Pa. messingerae</i> (O)	<i>Chaoborus</i> sp. (I)	14	6	0.115
<i>Pa. messingerae</i> (O)	<i>Chilo partellus</i> (I)	7	13	0.263
<i>Pa. messingerae</i> (O)	<i>Psychoda</i> sp. (I)	6	14	0.115
<i>Pa. messingerae</i> (O)	Unidentified mirid (I)	13	7	0.263
<i>Pa. messingerae</i> (O)	Unidentified psocid (I)	14	6	0.115

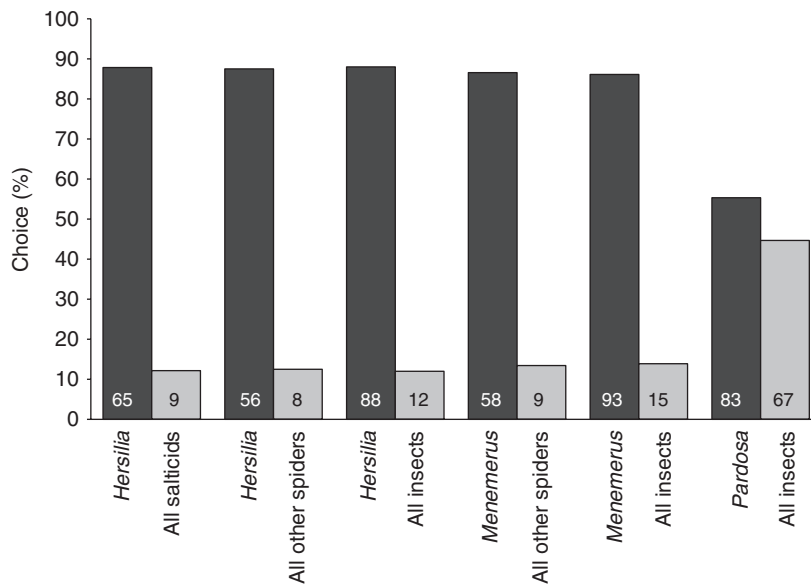
Prey category (see Table 1): H, hirsiliid; S, salticid; O, other spider: not hirsiliid or salticid; I, insect.

and salticids, and more specifically, the small juveniles of these spiders. *Myrmarachne melanotarsa* is a small salticid species, with even the adult stage not being much larger than the early juvenile stages of the spider species on which it preys. Jackson *et al.*'s (2008) findings suggested that *M. melanotarsa* preys primarily on hirsiliid and salticid juveniles that have not yet dispersed far from the egg sac or nest from which they emerged. In these experiments, we controlled for encounter rate, prey mobility, active defence and detectability, as well as for predator experience and hunger as alternative explanations. Given that test spiders had never previously encountered the prey with which they were tested, our findings suggest that *M. melanotarsa* has an innate preference for salticids and hirsiliids as prey. Moreover, *M. melanotarsa* appears to take prey classification further by ranking hirsiliids as the most preferred prey, with salticids ranked next in line.

By preferring spiders to insects as prey and then ranking one spider type (hirsiliids) higher than another (salticids), *M. melanotarsa* parallels the extreme specialist salticid

*Po. fimbriata* (Harland & Jackson, 2004), while showing interesting differences. *Portia fimbriata* ranks salticids as its preferred prey and appears to choose a wide range of different spiders in preference to insects as prey. We could say that *Po. fimbriata*'s second-most preferred prey is spiders in general, whereas *M. melanotarsa* appears to single out particular types of spiders for most-preferred and for second-most preferred prey. Unlike in *Po. fimbriata*, we found no clear evidence of *M. melanotarsa* ranking spiders in general any differently from how it ranked insects in general.

Although the early-instar stages of hirsiliids and salticids, *M. melanotarsa*'s preferred prey, may be more or less harmless to *M. melanotarsa*, these prey are normally found in the company of their larger and more dangerous female parents. This raises questions about how *M. melanotarsa* succeeds in circumventing the parent's adaptations for defending its offspring. These questions are currently being investigated. It may, furthermore, appear surprising that *M. melanotarsa* appears to target prey of limited mobility



**Figure 3** Prey choices of *Myrmarachne melanotarsa* when tested with sympatric spiders and insects (see Table 1). Note: these are results from pooled data for *Hersilia caudata*, *Menemerus* sp., insects and *Pardosa messingerae*. The term 'all other spiders' refers to all spider species except *Menemerus* sp. and *H. caudata* ( $n$  within each bar).

(juveniles and eggs), because movement is important for predator detection in spiders. However, salticids are unusual in that they can detect and identify prey in the absence of movement and there has been considerable research on the static visual cues used by salticids to distinguish prey (e.g. Jackson *et al.*, 2005).

Previous research on salticid prey-choice behaviour has typically focused on species that choose other spiders as preferred prey (e.g. Li *et al.*, 1997) and species that choose ants as preferred prey (e.g. Huseynov *et al.*, 2005, 2008). Although *M. melanotarsa* lives in close proximity to its model, *Crematogaster* sp., there is no evidence that they prey on these ants (Jackson *et al.*, 2008). While specialized predatory behaviour of ants has been found among salticoids, all of the salticids previously demonstrated to be araneophagic belong to the Spartaeninae (Su *et al.*, 2007), a subfamily regarded as a basal branch in the family Salticidae (Maddison & Hedin, 2003). As such, araneophagy was considered as an ancestral characteristic that evolved once, at the base of the Spartaeninae (Su *et al.*, 2007). By classifying their prey into categories below the level of 'spider', and adopting different prey-capture and prey-choice behaviour for different categories of spiders, araneophagic salticids show remarkable discrimination abilities (Jackson, 1992, 2000; Harland & Jackson, 2004). Furthermore, *M. melanotarsa*, belonging to the more recent salticoids (Maddison & Hedin, 2003; Su *et al.*, 2007), constitutes both the first example of an ant mimic and a member of this much larger group of salticoids choosing spiders as preferred prey, demonstrating that, among salticids, araneophagy is not solely an ancestral trait.

## Acknowledgements

For technical assistance at ICIPE, we thank Godfrey Otieno Sune, Stephen Abok Aluoch, Silas Ouko Orima and Jane

Atieno Obanyo. This research was supported by grants to R.R.J. from the Royal Society of New Zealand (Marsden Fund and James Cook Fellowship) and the National Geographic Society. Voucher specimens of spiders have been deposited at the Museum of Natural History (Wroclaw University, Poland), the National Museums of Kenya (Nairobi) and the Florida State Collection of Arthropods (Gainesville, Florida).

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