SHORT NOTES

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TROPHIC NICHE OVERLAP IN SYMPATRIC *TARENTOLA MAURITANICA* AND *HEMIDACTYLUS TURCICUS*: A PRELIMINARY STUDY

MASSIMO CAPULA AND LUCA LUISELLI

Dipartimento di Biologia Animale e dell'Uomo, Università di Roma "La Sapienza", via A. Borelli 50, I-00161 Roma, Italia

The historical centre of Rome is inhabited by two species of gekkonid lizards, *Tarentola mauritanica* and *Hemidactylus turcicus*. These species are sympatric in many areas situated within the urban city centre, and are especially common in the archeological sites with roman age monuments. Because data on the ecology of sympatric populations of these species are absent from the scientific literature, we have carried out field research in order to provide preliminary information on this subject.

The research was conducted between May and September in three very famous archeological areas situated within the centre of Rome: (1) "Roman Forum", (2) "Colosseum", and (3) "Caracalla's Thermae". Areas (1) and (3) were generally sampled in the morning, and area (2) after the sunset.

Data coming from the three localities were pooled because there was not any significant difference either in relative abundance and activity, or in diet composition of lizards (in all cases, overlap between diets of two different population of the same species was >0.95, according to Pianka's (1973) equation).

Geckos were located above-ground (i.e. while basking or climbing on the ancient walls - often in the vicinity of artificial lights - after sunset), or more rarely, below-ground (i.e. while under stones during daylight).

When a lizard was found, it was captured by hand, identified to species, measured for snout-vent length (SVL), and analysed for any food item by collection of faecal pellets. Faecal pellets were collected by placing the geckos into small cages until defaecation occurred. We did not collect any faecal pellets from the soil. Seven *T. mauritanica* and three *H. turcicus*, which were found dead in the field (killed by man and cats), were dissected in order to obtain more food items. After dissection, these specimens were placed in 70% ethanol and deposited in the herpetological collection of one author (LL). Lizards were marked by toe-clipping and set free at the exact capture point. Laboratory examination of both faecal pellets and stomach contents of the few specimens found dead permitted identification (to the lowest taxon possible) of prey eaten by such lizards.

Niche overlap between species was calculated by using Pianka's (1973) symmetric equation (parameter *O*), which yields values ranging from 0 (no overlap) to 1 (total overlap).

In the text the term "fed animals" defines the total number of geckos from which faecal pellets were obtained, plus the total number of geckos found dead with prey in the stomachs.

During our study we examined a total of 243 *Tarentola mauritanica* and 51 *Hemidactylus turcicus*, obtaining 238 and 46 fed animals, respectively. Almost all *H. turcicus* were found after sunset, while *T. mauritanica* showed a diurnal active phase also, though it was more frequently found under sunset. The sample of 243 captures of *T. mauritanica* comprised 167 different individuals, several of which (n=24) were recaptured for a total of 76 times. The sample of 51 *H. turcicus* comprised 39 different individuals, of which some specimens (n=7) were recaptured a total of 12 times. In most cases, the above-ground *T. mauritanica* were seen while climbing on vertical surfaces (83.9% of the total above-ground sample [n=47]). The frequencies of specimens found while climbing on vertical surfaces did not differ significantly between species (χ^2 - test, 2 x 2 contingency table, $\chi^2 = 0.05$, $P>0.5$).

From 238 *T. mauritanica* fed animals we obtained a total of 367 food residues (29 out of which remained unidentified). With regard to to *H. turcicus*, we examined a total of 46 fed animals, obtaining 147 food items (31 out of which remained unidentified).

Prey	*T.m.*		*H.t.*	
	N	*N%*	*N*	*N%*
Arachnida	97	28.7	22	19.0
Salticidae	24		6	
Thomisidae	31		10	
Lycosidae	3		-	
undetermined	39		6	
Chilopoda	1	0.3	-	
Diptera	83	24.6	21	18.1
Coleoptera	41	12.1	27	23.3
Carabidae	6		2	
Scarabaeidae	4		2	
Curculionidae	5		3	
Tenebrionidae	7		7	
undetermined	19		13	
Homoptera	16	4.7	10	8.6
Lepidoptera	39	11.5	21	18.1
Formicidae	61	18.1	15	12.9

TABLE 1. List of the food items obtained from faecal pellets of *Tarentola mauritanica* (*T.m.*) and *Hemidactylus turcicus* (*H.t.*).

The data given here show that both species feed mainly on arthropods, like several gekkonid species living in other environments (e.g. see Dial, 1978; Pianka & Huey, 1978; Pianka, 1986; Perry & Brandeis, 1992). Both species preyed on the same taxonomic groups (see Table 1), and the diet composition was, on the whole, extremely similar (*O*= 0.92). Arachnida, Diptera, Coleoptera, Lepidoptera and Formicidae were common prey items in both *T. mauritanica* and *H. turcicus.* The most relevant characteristics of the diets of either species, however, were: (1) the frequent occurrence of Thomisidae and Salticidae spiders (this finding, though empirically rather predictable, has not been shown previously); (2) the absence of web-spinning spiders and Orthoptera; (3) the relatively high values for ants and flightless insects, representing 59.2% of the diet of *Tarentola mauritanica*, and 55.2% of the diet of *Hemidactylus turcicus.* The diet composition of both *T. mauritanica* and *H. turcicus* indicated a diet based primarily on terrestrial prey, and was relatively similar to *T. mauritanica* populations from the Iberian peninsula, Balearic and Chafarinas islands (Gil *et al*., 1991). These latter populations were shown to prey on the same major taxonomic groups that were preyed on by our gecko populations in Rome. Moreover, our data seem to indicate that both species are not very selective predators, though the lack of information on the abundance of potential prey types in our study areas makes it impossible to state any firm conclusion on this subject. Individual differences in food habits seem to be rather small in these species (Capula & Luiselli, unpublished data), but this will be analysed in more detail in a further paper.

In conclusion, further studies on sympatric *T. mauritanica* and *H. turcicus* should be done in order to demonstrate if a strong interspecific competition occurs between these two species. However, the basic conditions needed for the existence of interspecific competition, i.e. identical spatial distribution, very similar activity patterns (Capula & Luiselli, unpublished data) and very similar diet composition (this study), seem to be present, at least in sympatric geckos of the archeological areas of Rome

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