



## RESEARCH COMMUNICATION

# Fleas of elephant shrews (Mammalia, Macroscelididae), and a new host and locality record for *Macroscelidopsylla albertyni* De Meillon & Marcus, 1958 (Siphonaptera, Chimaeropsyllidae)

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### ABSTRACT

BEAUCOURNU, J.-C., HORAK, I.G. & FOURIE, L.J. 2003. Fleas of elephant shrews (Mammalia, Macroscelididae), and a new host and locality record for *Macroscelidopsylla albertyni* De Meillon & Marcus, 1958 (Siphonaptera, Chimaeropsyllidae). *Onderstepoort Journal of Veterinary Research*, 70:251–253

Fleas collected from the elephant shrews *Elephantulus edwardii* (A. Smith, 1839) in the Western Cape Province, *Elephantulus myurus* Thomas & Schwann, 1906 in Free State Province, and an *Elephantulus* of undetermined species in the Eastern Cape Province, South Africa are recorded in this paper. Five flea species were recovered of which *Demeillonia granti* (Rothschild, 1904) was the most numerous and prevalent. It was followed by *Macroscelidopsylla albertyni* De Meillon & Marcus, 1958, collected only from *E. edwardii*. Both this elephant shrew and the locality are new records for *M. albertyni*. *Chiastopsylla octavii* (Rothschild, 1904), *Listropsylla agrippinae* (Rothschild, 1904), and a female flea of the *Ctenocephalides felis* group were accidental infestations. The sex ratio of *D. granti* was 0.86 on both male and female elephant shrews, while that of *M. albertyni* on *E. edwardii* was 0.83.

**Keywords:** *Demeillonia granti*, elephant shrews, *Elephantulus edwardii*, *Elephantulus myurus*, fleas, *Macroscelidopsylla albertyni*

With the exception of fleas that are not host specific, the fleas of elephant shrews (Macroscelididae) belong to two genera in the family Chimaeropsyllidae, viz. *Macroscelidopsylla* (Chimaeropsyllinae), a monotypic genus, and *Demeillonia* (Epirimiinae), comprising two species. The assignation by Traub & Evans (1967) of *Caenopsylla mira* Rothschild, 1909 and *Caenopsylla assimulata* (Weiss, 1913)

(Ceratophyllidae, Amphipsyllinae) as host specific to the North African macroscelid *Elephantulus rozeti* (Duvernoy, 1833) is erroneous. Infestation by the former is considered accidental (Beaucournu & Hellal 1977), and the latter as due to an ostensible phenomenon of morphological convergence. At present there is no known flea that specifically infests *E. rozeti*.

This paper records the fleas collected from 66 (41 infested) *Elephantulus edwardii* (A. Smith, 1839) on the farm "Gifberg" (31°47' S, 18°40' E) in the Vanrhynsdorp district, Western Cape Province; 23 (20 infested) *Elephantulus myurus* Thomas & Schwann, 1906, on the farm "Môreson" (28°48' S, 27°13' E), central Free State Province; and one *Elephantulus*

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of undetermined species at Kompasberg, close to New Bethesda (31°51' S, 24°34' E), Eastern Cape Province, South Africa. A single *Elephantulus rupestris* (A. Smith, 1831) examined at Avis (22°35' S, 17°07' E), in the district of Windhoek, Namibia was not infested with fleas. The fleas collected from the elephant shrews are summarised in Table 1.

### Host specific infestations

#### *Demeillonia granti* (Rothschild, 1904)

This flea was originally described from *Macroscelides proboscideus* (Shaw, 1800) and has also been collected from *Elephantulus rupestris*. In addition, both *Elephantulus edwardii* and *Elephantulus myurus* were infested in this survey. Infestations of *D. granti* on small mammals, other than macroscelids, should be regarded as accidental (De Meillon, Davis & Hardy 1961). *Demeillonia granti* is widely distributed south of 23° S latitude, with the majority of localities lying between 27° S and 34° S. Although it is present throughout the southern regions of the African continent its distribution is patchy as it is dependent upon that of its preferred hosts.

The male to female ratio of the 468 specimens of *D. granti* we collected was 0.84 compared to 0.59 for the 175 specimens of De Meillon *et al.* (1961). The sex ratios of fleas may differ markedly or even be reversed depending upon whether they are present in the host's pelt or in its nest or lair (Beaucournu 1976). Mahnert (1972) suggested that the sex ratio of *Doratopsylla dasyncnema*, a flea of European shrews, varied according to the gender of its host. This is also true for several of our collections, but has not been specified in those of De Meillon *et al.* (1961). We collected 107 male and 124 female *D. granti* from those male *Elephantulus* spp. whose gender had been determined, while females harboured 74 male and 86 female fleas, resulting in an

identical sex ratio of 0.86 on animals of either gender. This appears to exclude the likelihood of the gender of the host affecting the sex ratio of *D. granti* collected from the pelage. Because trapping was intermittent it is not possible to determine a seasonal pattern in the intensity of infestation.

#### *Macroscelidopsylla albertyni* De Meillon & Marcus, 1958

The original description of this rare flea is based on three females from a macroscelid of unknown species at Aus in the Luderitz district, Namibia. The male was described from *Elephantulus vandami* Roberts, 1924 at the same locality. The latter animal is also host to *Demeillonia miriamae* Hopkins & De Meillon, 1964, a flea that seems never to have been collected again (Segerman 1995). *Elephantulus vandami* is considered a synonym of *E. rupestris* (Meester, Rautenbach, Dippenaar & Baker 1986), and thus the latter animal is the type host of *M. albertyni*.

Previously *M. albertyni* was known to infest only *E. rupestris*, consequently *E. edwardii* is a new host record. The sex ratio of the 249 specimens we collected is 0.83, and the average burden of the 23 elephant shrews examined is 10.8 fleas. Although the type locality of *M. albertyni* is Aus (26°40' S, 16°15' E), the intensity of infestation on *E. edwardii* at "Gifberg", about 600 km to the south-east of Aus, suggests that both this locality and host are at least equally suitable for the flea.

### Non-host specific infestations

#### *Chiastopsylla octavii* (Rothschild, 1904)

Fleas of the genus *Chiastopsylla* also belong to the Chimaeropsyllidae, but to the subfamily Chiastopsyllinae, which infests rodents often found togeth-

TABLE 1 Fleas collected from *Elephantulus* spp. in South Africa

Host species	Locality	No. of fleas collected				Other species
		<i>Demeillonia granti</i>		<i>Macroscelidopsylla albertyni</i>		
		Males	Females	Males	Females	
<i>E. edwardii</i>	"Gifberg"	173	196	113	136	<i>Chiastopsylla octavii</i> 2 f; and <i>Listropsylla agrippinae</i> 1 m, 1 f
<i>E. myurus</i>	"Möreson"	26	45	0	0	<i>Ctenocephalides</i> sp. 1 f
<i>Elephantulus</i> sp.	Kompasberg	14	14	0	0	0

er with macroscelids. Both female specimens of *C. octavi* in our collections come from *E. edwardii* examined at "Gifberg", one during July 1989 and the other during July 1992. Its preferred, and essentially only, host is the murid *Aethomys namaquensis* (A. Smith, 1834), which is widespread in southern Africa and parts of Angola, Zambia, Mozambique and Malawi (Skinner & Smithers 1990). However, the distribution of the mouse is more widespread than that of the *Chiastopsylla* spp. that infest it.

*Listropsylla agrippinae* (Rothschild, 1904)

The Listropsyllinae belong to the family Ctenophthalmidae. This monogeneric subfamily is restricted to the Afrotropical zone and particularly its southern regions. Its principal hosts are murid rodents such as *Otomys*, *Rhabdomys* and secondarily *Aethomys* (*namaquensis*) that make their nests at ground level (De Meillon *et al.* 1961). Our collections comprise a single male and female, both collected from *E. edwardii* at "Gifberg", the one in July 1989 and the other in July 1992.

*Ctenocephalides* sp.

The only specimen (a female) of this genus (Pulicidae, Archaeopsyllinae) came from "Môreson" and belonged to the "felis" complex. Because of morphological similarities it is impossible to assign this flea to *Ctenocephalides felis strongylus* (Jordan, 1925) or to *Ctenocephalides damarensis* Jordan, 1936 (Beaucournu & Ménérier 1998; Horak, Chaparro, Beaucournu & Louw 1999).

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