

RESEARCH COMMUNICATION

AN EARLY RECORD OF *CULICOIDES* SPECIES (DIPTERA: CERATOPOGONIDAE) DEVELOPING IN THE DUNG OF GAME ANIMALS IN SOUTHERN AFRICA

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ABSTRACT

DYCE, A. L. & MARSHALL, B. D., 1989. An early record of *Culicoides* species (Diptera: Ceratopogonidae) developing in the dung of game animals in southern Africa. *Onderstepoort Journal of Veterinary Research*, 56, 85-86 (1989).

The value of the dung of game animals as a larval habitat for *Culicoides* species was briefly investigated in 1973/74 in the Kruger National Park, Transvaal, Republic of South Africa. A total of 4 species in the subgenus *Avaritia* was reared, 3 from elephant dung, 2 from zebra dung and 1 from the dung of buffalo. These early studies have recently led to more intensive rearing and a better understanding of the systematics of this subgenus in the Afrotropical region.

The development of *Culicoides* biting midges in dung pats of African game animals is now well established (Meiswinkel, 1987, 1989). What is believed to be the first known observation of the utilization of dung of African game as a larval habitat by *Culicoides* has however not previously been reported. Prompted by the rearing of *Culicoides* species in the subgenus *Avaritia*, from cow dung pats both in Australia (Cannon & Reye, 1966) and in the Transvaal (Nevill, 1968) one of us (ALD) briefly visited the Kruger National Park from 2-8 February 1974 to explore the likelihood of *Culicoides* species developing in the dung of native game animals.

Limited samples of the dung of elephant (*Loxodonta africana*) and buffalo (*Syncerus caffer*) collected by the roadside near Skukuza were enclosed in emergence chambers (Fig. 1). More than 100 specimens of teneral adult *Culicoides* of both sexes were recovered over a period 2-3 days following collection from individual samples of moist elephant dung. Lesser numbers, down to a single specimen, were harvested from buffalo dung. Following this initial success the emergence chambers were passed on to the 2nd author (B.M.) who made supplementary collections and extended the coverage to include the dung of zebra (*Equus burchelli*). Results of the collections are summarised in Table 1.

TABLE 1 *Culicoides* species reared from dung of game animals—Skukuza, Kruger National Park, 1974

<i>Culicoides</i> sp.	Elephant	Buffalo	Zebra
<i>C. gulbenkiani</i> Caeiro	+	-	+
<i>C. bolitinos</i> Meiswinkel (= Cornet <i>C. sp.</i> 1348)	-	+	-
Cornet <i>C. sp.</i> 1311 (= Meiswinkel <i>C. sp.</i> 50)	+	-	-
<i>C. sp.</i> near <i>dasyops</i> Clastrier (= Meiswinkel <i>C. sp.</i> 54)	+	-	+

Harvested flies were preserved in formal alcohol (5 ml 4 % formalin in 95 ml 80 % ethyl alcohol), subsequently cleared and mounted on slides and submitted to Dr M. Cornet, Office de la Recherche Scientific et Technique

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Outre-Mer, Centre ORSTOM de Dakar, Senegal, for identification. He found there to be 4 species represented in the collections, namely *Culicoides gulbenkiani* Caeiro and 3 undescribed species which he recognised as *Culicoides sp.* 1348, *C. sp.* 1311 and *C. sp.* near *dasyops* Clastrier, all 4 species in the subgenus *Avaritia*. The submitted specimens were retained by Dr Cornet with whom, unfortunately, contact has been lost. Subsequently however these same species have been collected by R. Meiswinkel (Veterinary Research Institute, Onderstepoort; personal communication, 1988) who initially recognized Cornet *C. sp.* 1348 as Meiswinkel *C. sp.* 49 (Nevill, Venter, Edwardes, Pajor, Meiswinkel & Van Gas, 1988) and later described it as *C. bolitinos* (Meiswinkel, 1989). He has assigned his own numbers

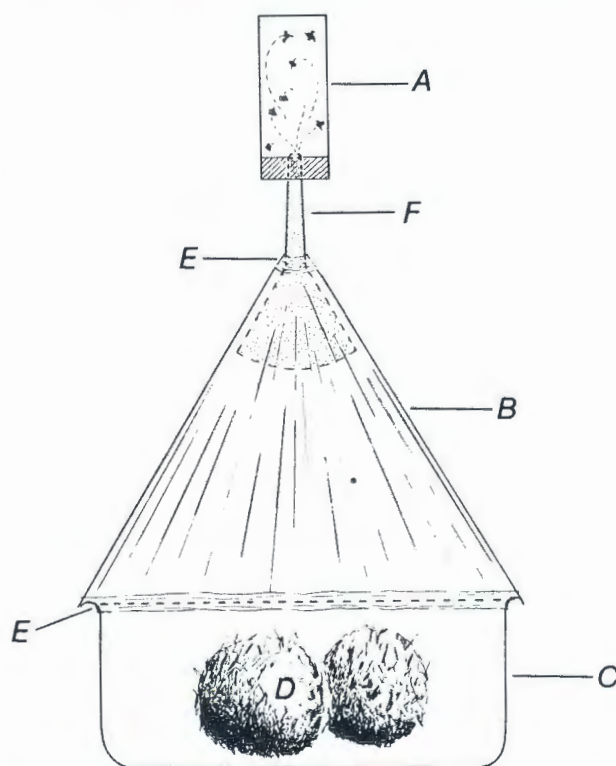


FIG. 1 Emergence chamber used to collect adult *Culicoides* breeding out of enclosed animal dung samples: a = clear glass container; b = opaque cone constructed from absorbent cardboard; c = opaque plastic bowl, 300 mm diameter; d = enclosed dung sample; e = tight seal; f = inverted funnel

to the remaining undescribed taxa as follows: Cornet *C.* sp. 1311 = Meiswinkel *C.* sp. 50 and Cornet *C.* sp. near *dasyops* Clastrier = Meiswinkel *C.* sp. 54.

C. bolitinos Meiswinkel (= Cornet *C.* sp. 1348) reared from buffalo dung was also reared by ALD from dung pats of domesticated cattle collected from widespread localities elsewhere in northern, eastern and central Transvaal during the period November 1973–March 1974. The results of this study on larval habitats will form the subject of a separate paper.

The cursory observations recounted above served to stimulate more intensive investigations of game dung as a larval medium for *Culicoides* species in southern Africa by a research group at the Veterinary Research Institute, Onderstepoort. Some of their results have already been published (Meiswinkel 1987, 1989; Nevill *et al.*, 1988).

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