

Vomiting of land planarians (Turbellaria: Tricladida: Terricola) ingested by cats

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Land planarians (Turbellaria: Tricladida: Terricola) are entirely free-living carnivorous flatworms (Jennings 1971). Contact between planarians and domestic animals appears to be fortuitous, and largely confined to incidents of "pseudoparasitism", a phenomenon recently reviewed by Winsor (1980).

This paper reports 3 cases*, one each from Australia, St. Helena Island and the United States of America, in which cats have ingested specimens of the planarian *Bipalium kewense* Moseley, (1878) and subsequently vomited these worms. Identification of specimens was performed in conjunction with current taxonomic studies of land planarians undertaken by the author.

Case 1

A specimen of *B. kewense* recovered by A. Loveridge was vomited by a cat on 3 October 1960 at the Agriculture and Forestry farm, St Helena, South Atlantic. (CBE. 17335; BM. 1960.10.28.1).

Case 2

A 3-year-old domestic cat from Richmond, Victoria, was presented to Dr P. Kidd on 13 February 1980, together with a worm, identified as *B. kewense* (VRI 2128; VRL 25520 Parasite No. 50-80) which it had vomited. The specimen was alive when presented. The following day the cat was presented again for examination, having vomited another of the worms overnight. The cat was otherwise healthy and normal.

Case 3

In Raleigh, North Carolina, United States of America in 1959, a Siamese cat vomited a dark brown worm. The worm was not preserved, but from its morphology it was considered to be a species of *Bipalium*; *B. kewense* has been subsequently found in the area where the incident occurred, and is assumed to be the species involved in this case.

Ingestion and subsequent vomiting of *B. kewense* by cats has not previously been reported. The biology and occurrence of this cosmopolitan land planarian has recently been reviewed (Winsor 1981). It occurs naturally in the upland rainforests of Vietnam and Kampuchea; elsewhere it is restricted to man-modified environments, having been passively dispersed with rooted plants by man. Earthworms appear to be its sole food-source. It has been implicated in cases of "gastrointestinal pseudoparasitism" of man and domestic animals in the United States (Walton and Yakogawa 1972; Daly *et al* 1976; 1977). Experimental evidence against gastrointestinal parasitism by *B. kewense* has been advanced by Daly *et al* (1977).

* The sources of specimens examined, together with specimen or registration numbers, are indicated by the following abbreviations: British Museum (Natural History), London (BM); Commonwealth Bureau of Entomology, London (CBE); Veterinary Research Institute, Parkville, Victoria (VRI) and the "Attwood" Veterinary Research Laboratory, Westmeadows Victoria (VRL).

Circumstances in which the cats ingested the planarians are unknown. The specimens of *B. kewense* from St. Helena and Richmond were largely intact with little evidence of being chewed, suggesting that they were swallowed whole. Autolysis, which on death of the planarian can occur very rapidly, was absent.

Food habits of house cats (feral, field-roaming and pets) have been the subject of numerous studies, recently reviewed by Fitzgerald and Karl (1979). From these, and more recent investigations (Jones and Coman 1981), it is evident that cats are opportunistic predators and scavengers and it seems likely that the planarians were ingested prey. It is also likely that vomiting was induced by dermal secretions of the planarians some of which have been attributed as having an unpleasant, lasting, astringent taste (Moseley 1877; Dendy 1889), and others implicated in fatal poisoning when ingested by fowls (Terajima, in Kawakatsu 1969). In southern Chile, sudden death in cattle and horses has been attributed to poisoning by the large land planarian *Polycladus gayi* where this species had been found in the stomachs of afflicted animals (Graff 1889). In this unusual but reliable account it was presumed that the worms were ingested together with moist grass upon which stock were grazing. When recovered the ingested flatworms were partially digested though identifiable.

Arndt (1925) recognised 2 toxins from flatworms (*B. kewense*), namely a cardiotoxin, which was localised in dermal slime, and a haemolytic toxin distributed throughout the planarian body. The cardiotoxin was related in its effect, but not necessarily in its chemistry, to cardiac glycosides. The effects of these toxins and the speed with which they act when administered orally, were not investigated.

Dr A. Adolph, Victorian Department of Agriculture, "Attwood" Laboratory, Westmeadows; Dr D. Gibson and Mr R. Bray, Parasitic Worms Section, British Museum (N.H.), London, Dr P. Kidd, Richmond; Dr P. Presidente, "Attwood" Laboratory and Professor S. Tyler, University of Maine, Orono, are thanked for providing details and specimens of the cases reported here. Part of this work was undertaken while supported by SRC Grant GR/A 86350 awarded to Dr R. Gibson, Biology Department, Liverpool Polytechnic, England. Support by the CSIRO Science and Industry Endowment Fund for the author's taxonomic studies on land planarians is also gratefully acknowledged.

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