

Research Note

Helminth Parasites of Rats in Fiji and Solomon Islands, with a Note of *Capillaria traveræ* Ash, 1962

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Since *Angiostrongylus cantonensis* was incriminated as a cause of human eosinophilic meningitis, many workers have been engaged in detecting the larvae from molluscs and the adults from rodents in the Pacific islands (Cross, 1979). However only a few papers are available concerning the other helminthes of rats (Lindquist and Li, 1955; Ash, 1962; Jackson, 1962). In the present study, 86 rats (44 *Rattus rattus* and 42 *R. exulans*) and 5 *R. rattus* were examined for helminth parasites in Fiji and in Solomon Islands respectively in 1982. The Fijian rats were the same ones described in another paper confirming the presence of *A. cantonensis* there (Uchikawa *et al.*, in press). The heart, lungs, pulmonary arteries and brain of the rats were checked on *A. cantonensis* and other alimentary organs were preserved in 10 % formalin. Later, helminthes were removed, and nematodes were treated with lactophenol, while cestode and acanthocephalan worms were stained by Semichon's carmin for microscopic observation. Alternatively, the whole bodies of intraepithelial nematodes were obtained after sub-

merging esophagus and stomach in lactophenol.

A total of twelve species of helminthes were detected from 42 *R. rattus* and 38 *R. exulans* in Fiji, representing 2 cestode, one acanthocephalan and 9 nematode species. Three nematodes (*Capillaria gastrica*, *C. traveræ* and *Heterakis spumosa*) were found only in Bretu on Rewa delta, while *Hymenolepis diminuta* was detected only in Galoa-Vunibau area which is field along seashore. Other 8 species were detected in both areas (Table 1).

Two species of cestodes, 1 species of acanthocephalan and 5 species of nematodes were detected from 5 *R. rattus* in Honiara, Solomon Islands, i.e., *H. diminuta* (2/5), *Cysticercus fasciolaris* (1/5), *Moniliformis moniliformis* (1/5), *C. gastrica* (1/5), *A. cantonensis* (2/5), *Syphacia muris* (4/5), *Gongylonema neoblasticum* (4/5) and *Mastophorus muris* (1/5). The seven species excluding *M. muris* were the same as those found in Fiji.

Among them *C. gastrica* and *S. muris* were newly found in the Pacific area, and other species except *C. traveræ* are known as common helminthes of rats in adjacent Southeast Asian countries. Any trematode species were not detected in Fiji as well as Solomon Islands.

C. gastrica was first found in Europe (Baylis, 1926) and then in Japan (Yamagiti, 1941) and Australia (Obendorf, 1979). This species was found in both Fiji and Solomon Islands. Though this intraepithelial nematode is hard-

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Table 1 Prevalence (%) of helminth parasites in rats, *Rattus rattus* and *R. exulans* on Viti Levu, Fiji

Locality	Bretu		Galoa-Vunibau		Total	
	<i>R. rattus</i>	<i>R. exulans</i>	<i>R. rattus</i>	<i>R. exulans</i>	<i>R. rattus</i>	<i>R. exulans</i>
Host species						
No. examined	7	37	37	5	44	42
<i>Hymenolepis diminuta</i>	—	—	24(64.9)	1(20.0)	24(54.5)	1(2.4)
<i>Cysticercus fasciolaris</i>	1(14.3)	—	8(21.6)	—	9(20.5)	—
<i>Moniliformis moniliformis</i>	—	2(5.4)	9(24.3)	—	9(20.5)	2(4.8)
<i>Capillaria gastrica</i>	1(14.3)	11(29.7)	—	—	1(2.3)	11(26.2)
<i>C. traveræ</i>	—	5(13.5)	—	—	—	5(11.9)
<i>C. hepatica</i>	—	5(13.5)	10(27.0)	—	10(22.7)	5(11.9)
<i>Strongyloides ratti</i>	5(71.4)	19(51.4)	6(16.2)	—	11(25.0)	19(45.2)
<i>Heterakis spumosa</i>	2(28.6)	—	—	—	2(4.5)	—
<i>Angiostrongylus cantonensis</i> *	3(42.9)	22(59.5)	11(29.7)	3(60.0)	14(31.8)	25(59.5)
Trichostrongyloidea gen. sp.	5(71.4)	5(13.5)	9(24.3)	1(20.0)	14(31.8)	6(14.3)
<i>Syphacia muris</i>	1(14.3)	10(27.0)	17(45.9)	3(60.0)	18(40.9)	13(31.0)
<i>Gongylonema neoplasticum</i>	—	13(35.1)	18(48.6)	—	18(40.9)	13(31.0)
helminth free	1(14.3)	4(10.8)	1(2.7)	—	2(4.5)	4(9.5)

* Uchikawa *et al.* (In press)Table 2 Comparison of Hawaiian and Fijian *Capillaria traveræ*

Locality	Hawaii		Fiji	
	<i>Rattus norvegicus</i> and <i>R. rattus</i>		<i>R. exulans</i>	
Author	Ash (1962)		Present authors	
	male	Female	male	female
No. worms examined	10	10	7	8
Length	4.3-5.8	5.8-7.5	3.75-4.70	5.81-6.58
Maximum width	0.032-0.046	0.049-0.060	0.029-0.042	0.042-0.068
Esophagus length	2.2-3.1	2.5-3.5	1.63-2.22	1.99-3.25
Spicule length	0.578-0.805		0.611-0.714	
Egg	0.049-0.063×		0.049-0.062×	
	0.026-0.033		0.024-0.028	

ly found and removed completely from esophagus and stomach, it is not likely that the parasite is rare in Southeast Asia and other Pacific islands.

C. traveræ was described by Ash (1962) as a new species from Hawaiian *R. norvegicus* and *R. rattus* and is characteristic of the size (smaller than other capillarids), the spicule length and the morphology of eggs. Until now, to our knowledge, no reports on this nematode have been presented. All measurements (Table 2) and remarks (Fig. 1)

in Fijian specimen from small intestine of *R. exulans* were coincided with those of *C. traveræ* by Ash (1962), though he omitted the drawings of the parasite. Schacher and Cheong (1960) reported a capillarid from the intestine of Malaysian *R. norvegicus* as *Capillaria* sp. because of absence of complete worm. The size of uterine eggs (0.023-0.026 by 0.045-0.054 mm) in their specimen are closely corresponding with those of *C. traveræ* discussed here. Therefore, it is possible that this species has been spread in Southeast Asia

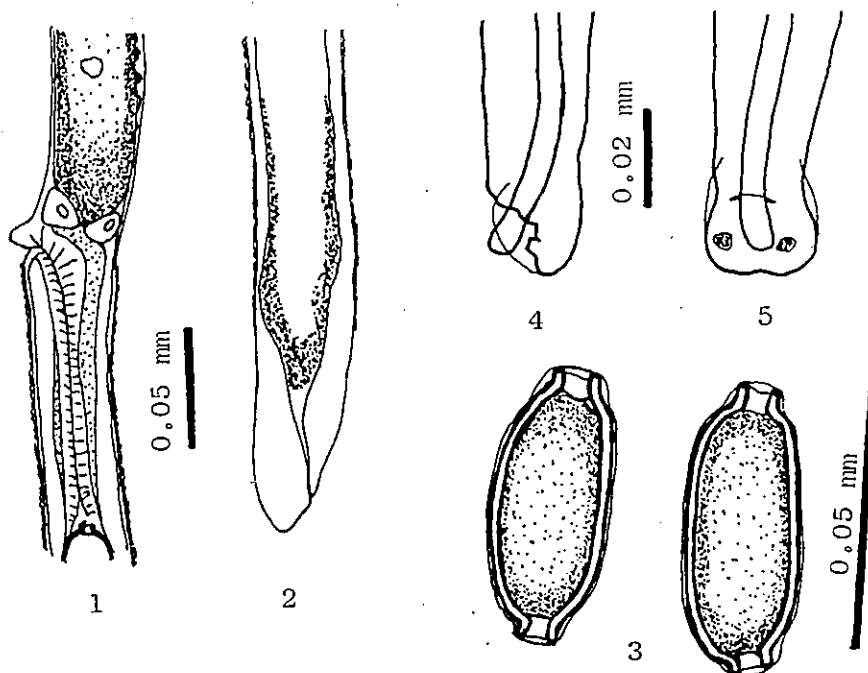


Fig. 1 *Capillaria traveræ* Ash, 1962

- 1 : Vulvar region, lateral view
- 2 : Posterior end of female, lateral view
- 3 : Eggs
- 4 : Posterior end of male, lateral view
- 5 : Posterior end of male, ventral view

and the Pacific islands.

Although it is well known that *Nippostrongylus brasiliensis* occurs in Southeast Asia and the Pacific area, some workers have proposed several new genus and species belonging to Trichostrongyloidea from rodents in Australia (Obendorf, 1979), in Thailand (Ohbayashi and Kamiya, 1980) and in Malaysia (Ow Yang *et al.*, 1983). Further investigations on identification of Fijian specimen seem to be warranted.

S. muris reported in Malaysia (Singh and Cheong, 1971; Sinniah, 1979) was detected from Fiji and Solomon Islands. As for other *Sypacia* species, *S. obvelata* was recorded in Guam (Lindquist and Li, 1955), in Hawaii (Ash, 1962) and in New Guinea (Schmidt, 1975), and Schmidt and Kuntz (1968) described *S. coli* as a new species from *R. exulans* in Palawan, the Philippines.

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短 報

フィジーおよびソロモン諸島における野鼠の内部寄生蠕虫類,
とくに *Capillaria traueri* Ash, 1962について

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1982年南太平洋フィジーおよびソロモン諸島で捕獲された野鼠の内部寄生蠕虫類の調査を行ない、それぞれ12, 7種を検出した。このうち *Capillaria gastrica*

と *Syphacia muris* の2種は太平洋諸島からの初報告である。またフィジー産 *Rattus exulans* の小腸より得られた *Capillaria traueri* Ash, 1962を再記載した。