

2. Investigation of the seasonal incidence of fleas on experimental animals at the Townsville Institute of Tropical Medicine gave results as tabulated below:—

Flea Species.	Host Species.	1922.											
		Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.
<i>X. cheopis</i>	20 white rats	7	3	4	81	205	330	700	589	1,404	1,681	1,867	726
	10 guinea pigs	1	9	1	..	..	..	1	63	16	4	43	105
	1 rabbit	..	..	..	..	..	3	..	..	..	..	..	..
<i>C. felis</i>	20 white rats	14	10	1	..	1	..	..	1	..	1	..	..
	10 guinea pigs	14	16	7	4	..	..	3	1	1	..	..	..
	1 rabbit	..	381 (c)	105	..	..	..	8	1	..	..	..	..
	1 dog	..	274 (c)	74	74	65	157 (c)	70	74	..	..	..	..

NOTE.—(a) Four collections. (b) Three collections. (c) Four collections.

The rabbit died in June, and the dog in July. *P. irritans* was present only in the dog, and very occasionally. *C. canis* was present on the dog on one occasion, and on a white rat on one occasion.

GENERAL CONCLUSIONS.

(1) *Xenopsylla cheopis* is very widely distributed along the coast of Australia, having been collected from all the ports mentioned from Adelaide on the south coast, along to the east coast, and as far north as Thursday Island. No fleas were received from the western coast, or from the inland districts.

Otenocephalus felis seems to have as wide a distribution, though occurring in much smaller numbers on rodent hosts.

(2) *Ceratophyllus fasciatus* and *Leptopsylla muscui* were not obtained north of Wallangarra (N.S.W.—Queensland Border), and Brisbane, respectively, except where noted from coastal vessels.

They are both rare along the North Queensland coast.

(3) The very large percentage of *Pulex irritans* obtained from rodents from Sydney is very interesting, the species being entirely absent from rats caught at other ports.

(4) *Otenocephalus canis* was rarely obtained from rodent hosts.

(5) Regarding local conditions in Townsville from November, 1921, to October, 1922, results seem to indicate that at the end of 1921, and the commencement of 1922, conditions were favorable to *Otenocephalus felis*. Subsequently the numbers dropped rapidly. *Xenopsylla cheopis* was much more prevalent from the middle to the end of 1922. *Pulex irritans* and *Otenocephalus canis*, both occurred only on a few occasions on the experimental animals.

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Abstracts.

NOTES ON SIX COMMON SPECIES OF FLEAS IN AUSTRALIA.

THE following is a digest of a report entitled, "Notes on Six Common Species of Fleas in Australia," by H. W. Bennetts, M.V.Sc., Acting Assistant Microbiologist, Australian Institute of Tropical Medicine, Townsville, North Queensland.

The information was compiled from local records, and from collections which were made recently by the officers of the Commonwealth Department of Health at various ports and forwarded to Townsville for identification.

The work was commenced in November, 1921, by Mr. G. F. Hill, F.E.S., the Entomologist of the Australian Institute of Tropical Medicine, and continued by Mr. Bennetts from May, 1922, to November, 1922.

With a view to obtaining information relative to the seasonal incidence and prevalence of different flea species locally, a systematic examination of fleas from animals kept at the Institute was inaugurated and the results recorded. All fleas obtained from this and other sources were mounted in Canada balsam for examination.

Tabulations are given showing—

- (1) The distribution at certain localities in the Commonwealth from which specimens have been received, of flea species.
- (2) The seasonal incidence of fleas in Townsville.

1. Tabulation of species and numbers of fleas obtained from various parts in the Commonwealth: Fleas obtained from rodents (*Rattus rattus*; *Rattus norvegicus*; *Mus musculus*; some unclassified species):—

Locality.	No. of Fleas.	<i>X. cheopis</i> .	<i>Cer. fasciatus</i> .	<i>Lep. muscui</i> .	<i>P. irritans</i> .	<i>Ct. felis</i> .	<i>Ct. canis</i> .
Adelaide	297	244	35	14	..	3	1
Melbourne	52	31	20	1	..	1	..
Sydney	136	15	27	13	66	15	..
Wallangarra	8	..	5	3	..	..	..
Brisbane	167	163	..	4	..	..	..
Townsville	34	29	..	1 (a)	..	4	..
Cairns	57	54	2 (b)	..	..	1	..
Port Douglas	16	16	..	..	..	..	..
Cocktown	19	7	..	..	..	12	..
Thursday Island	2	2	..	..	..	..	..

NOTE.—(a) and (b) These fleas were obtained from rodents caught on coastal boats.

Fleas were also obtained at several of the ports of Queensland from hosts and sources other than rats, including human, guinea pigs, domestic cats, dogs, native cats, and dwelling houses.

Of 180 fleas so obtained 176 were *Otenocephalus felis* and 4 *P. irritans*.