PARASITES OF ANIMALS IN THE NETHERLANDS

SUPPLEMENT III: ECTO- AND ENDOPARASITES OF WILD MAMMALS

by

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INTRODUCTION

The third list of parasites from wild mammals found in the Netherlands (1964 through 1967) is followed by more elaborate notes, than were added to the previous lists (Swierstra c.s., 1959; van den Broek and Jansen, 1964). The numbers of students of small mammals as well as of their parasites in this country is increasing, and more detailed information about the recorded parasites might stimulate further research in this field.

Moreover, parasites of wild mammals may be transferred to domesticated animals and vice versa, therefore a more thorough knowledge of the parasitic fauna of wild animals is desirable. (Jansen, 1965, 1966).

With a few exceptions, van den Brink's (1955) scientific names and sequence of hosts have been followed in this paper.

The parasite specimens are in the collection of the Institute for Veterinary Parasitology.

The fur mites (Acarina) which were collected from mammals, could not be identified with certainty and are not included in the list.

ACKNOWLEDGEMENTS

The material, this time, has come from many different sources. Details, if necessary, will be given in the discussion.

We thank all collectors for their willingness and cooperation.

ABBREVIATIONS

A — ACARINA; H — HEXAPODA; N — NEMATODA; T — TREMATODA; C — CESTODA; Ac — ACANTHOCEPHALA; P — PROTOZOA.

HOST:	PARASITE:	
Sorex araneus	*Ixodes trianguliceps* Birula, 1895 nympha	A
	Doratopsylla dasycnema (Rothschild, 1897)	H
	Palaeopsylla soricis (Dale, 1878)	H
	Ctenophthalmus agyrtes s.l. (Heller, 1896)	H
Sorex minutus	*Doratopsylla dasycnema* (Rothschild, 1897)	H
	Palaeopsylla soricis (Dale, 1878)	H
Neomys fodiens	*Hystrichopsylla talpae orientalis* Smit, 1956	H
	Palaeopsylla soricis (Dale, 1878)	H
	Ctenophthalmus agyrtes s.l. (Heller, 1896)	H
Talpa europaea	*Ctenophthalmus bisoctodentatus heselhausi* (Oudemans, 1914)	H
	Palaeopsylla minor (Dale, 1878)	H
	Omphalometra flexuosa (Rudolphi, 1809)	T
	Ityogonimus talpae (Goeze, 1782) (syn.: *I. ocreatus* (Dujardin, 1845))	T
	Parastrongyloides winchesi Morgan, 1928	N
Plecotus auritus	*Seuratium mucronatum* (Rudolphi, 1809)	N
Lepus europaeus	*Haemodipsus setoni* Ewing, 1924	H
Sciurus vulgaris	*Ixodes ricinus* (L., 1758)	A
	Catenotaenia dendritica (Goeze, 1782)	C

Microtus oeconomus	*Ixodes ricinus* (L. 1758)	A
	Hystrichopsylla talpae orientalis Smit, 1956	H
	Ctenophthalmus agyrtes s.l. (Heller, 1896)	H
	Nosopsyllus fasciatus (Bosc, 1800)	H
	Megabothris walkeri (Rothschild, 1902)	H
Apodemus (= *Sylvaemus*) *sylvaticus*	*Ixodis ricinus* (L., 1758)	A
	Polyplax serrata (Burmeister, 1839)	H
	Typhloceras poppei Wagner, 1903	H
	Doratopsylla dasycnema (Rothschild, 1897)	H
	Ctenophthalmus agyrtes s.l. (Heller, 1896)	H
	Nosopsyllus fasciatus (Bosc, 1800)	H
	Ceratophyllus garei Rothschild, 1902	H
	Eucoleus gastricus (Baylis, 1926)	N
Rattus norvegicus	*Hymenolepis fraterna* Stiles, 1906	C
Mus musculus	*Aspiculuris tetraptera* (Nitzsch, 1821)	N
Meles meles	*Trichodectes melis* (J. C. Fabricius, 1805)	H
Mustela nivalis	*Megabothris turbidus* (Rothschild, 1909)	H
Putorius putorius	*Listrophorus mustelae* Megnin, 1885	A
	Monopsyllus sciurorum (Schrank, 1803)	H
Phoca vitulina	*Phagicola septentrionalis* van den Broek, 1967	T
Sus scrofa	*Haematopinus apri* Goureau, 1866	H
	Metastrongylus confusus Jansen, 1964	N
	Haemonchus cf. *placei* (Place, 1893)	N
	Stadelmannia circumcincta (Stadelmann, 1894)	N
	Trichostrongylus axei (Cobbold, 1879)	N
	Strongyloides ransomi Schwartz and Alicata, 1930	N
	Ascaris lumbricoides L., 1758	N
	Trichuris trichiura (L., 1771)	N
	Globocephalus urosubulatus (Alessandrini, 1909)	N
	Oesophagostomum dentatum (Rudolphi, 1803)	N
	Cysticercus tenuicollis Rudolphi, 1810	C
Cervus elaphus	*Fasciola hepatica* L., 1758	T
	Eimeria robusta Supperer and Kutzer, 1961	P
	Eimeria elaphi Jansen and van Haaften, 1966	P
Capreolus capreolus	*Trichostrongylus colubriformis* (Giles, 1892)	N
	Cysticercus tenuicollis Rudolphi, 1810	C
	Eimeria ponderosa Wetze, 1942	P
	Eimeria capreoli Galli-Valerio, 1927	P
Ovis aries musimon	*Ixodes ricinus* (L., 1758)	A
	Damalinia ovis (Schrank, 1781)	H
	Cooperia oncophora (Railliet, 1898)	N
	Nematodirus filicollis (Rudolphi, 1802)	N
	Nematodirus roscidus Railliet, 1911	N
	Oesophagostomum venulosum (Rudolphi, 1809)	N
	Cysticercus tenuicollis Rudolphi, 1810	C

DISCUSSION

Sorex araneus and Sorex minutus

Ixodes trianguliceps, one female only, was caught on a shrew at De Bilt, near Utrecht. This species has been recorded from several European countries, but not yet from the Netherlands (see Arthur, 1963).

The three species of fleas all come from the eastern part of the North Sea Island Terschelling.

Larvae of *Porrocaecum* sp. have been found in *Sorex araneus* (Twente, see Hoekstra, 1967), *Sorex* sp. (Terschelling, Meyendel) and *Neomys fodiens* (Texel). They were located in cysts in the subcutaneous tissue, mainly in the neck but also at the back of the host. No characters are known by which these larvae can be properly identified. The Meyendel material has been examined by Dr. G. Osche, who identified it as either *P. talpae* (Schrank, 1788) or *P. depressum* (Zeder, 1800) (Osche, personal communication 1961). No infection percentages of host populations in the Netherlands can be given. Similar larvae have been described in other European countries (see Osche, 1957; Bernard, 1961; Sharpe, 1964). The infection percentages given by these and other authors varied, on the whole they are rather low. Final hosts of these ascaroid nematodes are owls, buzzards and other birds of prey.

Talpa europaea

These hosts all come from a meadow in the vicinity of Utrecht and apparently belong to the same population.

Ityogonimus ocreatus has been found in four out of eight host specimens, the preferred site was the second quarter of the ileum (numbers: 3, 4, 9 and 11 specimens respectively). *Omphalometra flexuosa* occurred only once, with more than 200 specimens, scattered over the whole small intestine of the host. The numbers of these trematode parasites can be compared with those given by Frankland (1959).

Parastrongyloides winchesi was found in one host specimen. It has been recorded from Britain (Morgan, 1928) and Belgium (Bernard, 1961), in *Talpa europaea* and *Sorex* sp.

Plecotus auritus

One unfertilized female nematode was found in the abdominal cavity of a Long-eared Bat collected near Enschede (Twente, see Hoekstra, 1967). The eggs, still without walls, were not characteristic in shape, but otherwise the specimen was fairly in agreement with the description of Biocca and Chabaud (1951), who collected several specimens of *Seuratium mucronatum* in the intestine of a *Plecotus auritus* in France (distr. Richelieu). It is therefore assumed that our nematode belongs to this species.

Lepus europaeus

Haemodipsus setoni is at present sympatric with *H. lyriocephalus* (Burmeister, 1838) on the European hare, at least in the Netherlands and in Britain (van den Broek, 1965). Recently, mixed infections have been found on hares in the eastern part of the country (Broekhuizen, personal communication, 1967). This suggests that *H. setoni* is spreading Eastward into Germany, from where it has never been reported by students of Anoplura. More data on the present distribution of this species, and on the relation between *H. lyriocephalus* and *H. setoni*, would be interesting.

Microtus oeconomus (*M. ratticeps* according to van den Brink, 1955).

Ectoparasites have been collected by Mr. V. van Laar on the island of Texel. The incidence of *Hystrichopsylla talpae orientalis* is most surprising (Smit, 1968 a and b). *Nosopsyllus fasciatus*, a straggler from rats, is apparently able to maintain itself on this host in small numbers, rather far from human settlements (1 – 2 km). *Megabothris walkeri*, a species which prefers rather humid conditions, has been collected in convincing numbers and seems to occur regularly in this host population (5♂, 6♀ in 1964; 5♂, 1♀ in 1966). It has been found only once before in the Netherlands (Smit, 1962).

Apodemus sylvaticus

These host specimens were caught on the Dutch North Sea Islands Vlieland and Terschelling. Cooperation with Drs. W. R. van Mourik, I.B.P.-team, Terschelling, is gratefully acknowledged.

The occurrence of *Doratopsylla dasycnema* on *A. sylvaticus* (one male only) must be regarded as accidental. Shrews are the principal hosts of this flea. According to Smit (1962), the principal fleas of *A. sylvaticus* are *Typhloceras poppei* and *Ctenophthalmus agyrtes*. These species were collected regularly on this host. Other fleas were found in smaller numbers.

Although *Rattus norvegicus* is at present exterminated on Vlieland where it occurred occasionally only (Van Wijngaarden, 1964), its flea, *Nosopsyllus fasciatus*, has apparently been able to maintain itself on the long-tailed fieldmouse (2♂, 2♀). This flea has also been found in the deserted nest of a Shell-Duck, *Tadorna tadorna*, about 700 m from the spot where the fieldmice were trapped (1♂, 1♀).

Ceratophyllus garei, 1♀, was found on *Apodemus sylvaticus*, on the Boschplaat, Terschelling (Stuifdijk, paal 20). *C. garei* is a bird flea which normally occurs in nests in rather humid environments, it is for instance rather common in the woods on the island of Vlieland.

RATTUS NORVEGICUS

At the same locality as before (meadow, near Utrecht), the nematode *Ganguleterakis spumosa* (Schneider, 1866) was collected from colon and rectum of a Norway Rat, which corroborates the previous finding of a single male of this species (van den Broek and Jansen, 1964).

MUSTELA NIVALIS and PUTORIUS PUTORIUS

The fleas recorded on these species are stragglers, which have rodents as their main hosts. (Smit, 1962). Two Weasles and seven Polecats, collected in Twente, had specimens of *Skrjabingylus* (N) in their skulls (Hoekstra, 1967, p. 11 ff.) The examined specimens did not quite agree with descriptions of *Skrjabingylus nasicola* (Leuckart, 1842), and therefore this species has not been included in the list.

SUS SCROFA

The nematode fauna of the Wild Boar in the Netherlands was discussed by Jansen (1964a, 1964b, 1967). *Haemonchus placei, Stadelmannia circumcincta* and *Trichostrongylus axei* are incidental parasites of the wild boar; these trichostrongylids belong to the nematode fauna of ruminants. After a better technique of sampling was adopted *Strongyloides ransomi* was found, a parasite of the small intestine, not mentioned by Jansen (1967).

OVIS ARIES MUSIMON

An investigation on the worm fauna of the Moufflon is not yet finished. The most interesting worm is *Nematodirus roscidus*, which was found for the first time in this host animal by Jansen and van Haaften (1968). Giving the geographical distribution of *N. roscidus* they overlooked, however, its occurrence in Denmark (Guildal, 1962). Afterwards *N. roscidus* was reported from Germany by Siefke (1968).

SUMMARY

A second supplementary list is given of endo- and ectoparasites collected from wild mammals in the Netherlands.

REFERENCES

ARTHUR, D. R., 1963: British ticks. London.

BERNARD, J., 1961: Liste des nématodes parasites des micromammifères de la faune belge. Ann. de Paras. Hum. Comp. 36, 775-784.

BIOCCA, E., et CHABAUD, A. G., 1951: Redescription de *Seuratium mucronatum* (Rud., 1809) (Nematoda-Cucullanidae). Ann. de Paras. Hum. et Comp. 26, 85-92.

BRINK, F. VAN DEN, 1955: Zoogdierengids. Amsterdam.

BROEK, E. VAN DEN, 1965: Recent finds of *Haemodipsus* spp. (Anoplura, Hoplopleuridae) on hares and rabbits in the Netherlands. Entomol. Berichten 25, 226-230.

BROEK, E. VAN DEN, 1967: *Phagicola septentrionalis* n. sp. (Trematoda: Heterophyidae) from the harbour seal, *Phoca vitulina* L. Zool. Mededelingen 42, 1-4.

BROEK, E. VAN DEN, and JANSEN JR., J., 1964: Parasites of animals in the Netherlands. Supplement II: Parasites of wild mammals. Bijdr. tot de Dierk. 34, 103-105.

FRANKLAND, H. M., 1959: The incidence and distribution in Britain of the trematodes of *Talpa europaea*. Parasitology 49, 132-142.

GUILDAL, J. A., 1962: Endoparasites of Danish red deer (*Cervus elaphus* L.) and of Danish fallow deer (*Dama dama* (L)). Med. Hyg. Bakt. Lab. Kgl. Landbohøjsk. 83, 49-61.

HOEKSTRA, B., 1967: Twente natuurhistorisch VII: de zoogdieren van Twente. K.N.N.V. wetensch. meded. nr. 68.

JANSEN JR., J., 1964a: On the lungworms of the wild boar (*Sus scrofa* L.) in the Netherlands, with a description of *Metastrongylus confusus* n. sp. Tijdschr. Diergeneeskunde 89, 1205-1211.

—, 1964b: Stomach-worms of the wild boar (*Sus scrofa* L.) in the Netherlands. Tijdschr. Diergeneeskunde 89, 1277-1279.

—, 1967: The gastro-intestinal nematodes of the wild boar (*Sus scrofa* L.) in the Netherlands. Rap. VIIe Congr. Un. Inst. Biol. Gibier, 455-458.

JANSEN JR., J. and HAAFTEN, J. L. VAN, 1968: *Nematodirus roscidus* Railliet, 1911 in ruminants of the Netherlands. Bull. Wildlife Dis. Ass. 4, 21.

MORGAN, D. O., 1928: *Parastrongyloides winchesi* gen. et sp. nov. A remarkable new parasite of the mole and the shrew. J. of Helminthology 6, 79-86.

OSCHE, G., 1957: Ueber Entwicklung, Zwischenwirt und Bau von *Porrocaecum talpae, Porrocaecum ensicaudatum* und *Habronema mansioni* (Nematoda). Zeitschr. f. Parasitenkunde 17, 144-164.

SHARPE, G. I., 1964: The helminth parasites of some small mammal communities. Parasitology 54, 145-154.

SIEFKE, A., 1968: *Nematodicus roscidus* erstmals für Deutschland nachgewiesen. Angew. Parasitol. 9, 11-15.

SMIT, F. G. A. M., 1962: Catalogus der Nederlandse Siphonaptera. Tijdschr. v. Entomologie 105, 45-96.

—, 1968a: De vlooien (Siphonaptera) van de Beneluxlanden. K.N.N.V. Wetensch. meded. nr. 72.

—, 1968b: In the press.

SWIERSTRA, D., JANSEN JR., J. and BROEK, E. VAN DEN, 1959: Parasites of animals in the Netherlands. Tijdschr. Diergeneesk. 84, 892-900.

WIJNGAARDEN, A. VAN, 1964: The terrestrial mammal-fauna of the Dutch Wadden-Islands. Zeitschr. f. Säugetierkunde 29, 359-368.