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Staphylinidae (Coleoptera), Aphodius (Coleoptera: Scarabaeidae), and Ptiliidae (Coleoptera) in dung of reindeer (Rangifer tarandus) of Northern Finland.*

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Zusammenfassung

Staphylinidae (Coleoptera), Aphodius (Coleoptera: Scarabaeidae) und Ptiliidae (Coleoptera) im Dung des Rentiers (Rangifer tarandus) von Nordfinnland

Im Dung des Rentiers *(Rangifer tarandus)* aus Nordfinnland (69,5° N, 29° E) wurden im August 1979 und im Juli 1984 folgende Käfer gefunden: Scarabaeidae: Aphodius spec., Ptiliidae und Staphylinidae: *Proteinus apicidens, Deliphrum tectum, Eucnecosum brachypterum, Oxytelus laqueatus, Tachinus pallipes, Aleochara moerens, Atheta alpestris, A. microptera, A. macrocera, A. picipennis, A. incognita, A. allocera, A. diversa, A. subtilis,* Larven von Staphylinidae und Aphodius.

Die meisten Staphylinidae aus Rentier-Dung wurden auch im Rinder-Dung Südfinnlands gefunden.

Introduction

During a study trip 1960 Prof. Dr. Tischler, former professor for Ecology at the University of Kiel, Germany, demonstrated cow pats to us students. I was fascinated by the variety of organisms living in this little biochorion.

In his books "Agrarökologie", 1965, and "Biologie der Kulturlandschaft", 1980, Prof. Tischler pointed to the importance of organisms for the decomposition of dung. In the meantime research about dung has increased. For 1991 only, "Biological Abstracts" has reviewed more than 60 titles relating to dung.

In this paper there are listed beetles (Coleoptera) of the families Staphylinidae, Scarabaeidae, and Ptiliidae found in the Northern parts of Finland (Lapland) in reindeer dung. For the determination of the Staphylinidae I used the books of FREUDE, HARDE, LOHSE, 1964 and 1974, and the collection of staphylinids in the Museum of the Zoological Institute of the University of Helsinki, Finland. To Mr. E. Helve, Helsinki, I am grateful for his determination of the Aleocharinae (Staphylinidae).

* Dedicated to Prof. Dr. Tischler to his 80th birthday.

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Location, time, method

Pats of reindeer dung were collected in a bag of plastic during two walks through Finnish Lapland:
a) 10.–13. 8. 1979 in Muotkattunturit between Karigasniemi and Inari (69,2° N, 26,2° E): 38 samples.
b) 14.–18. 7. 1984 West of the River Kevo between Karigasniemi and Utsjoki (69,5° N, 26,2° E): 40 samples.

Both parts of Finnish Lapland are about 300–500 m above sea level. Most scattered birch trees *(Betula pubescens totuosa)* have a height of about 2–3 m. Areas above 400 m are without trees and have tundra (arctic) vegetation.

In the evening of each day staphylinid larvae and some dung were put into glass tubes in order to know which staphylinids have their larval development in dung.

Results and discussion

The investigation and the determination of beetles in reindeer dung have not been finished yet. The following incomplete list of beetles (Table 1) should be seen as a preliminary notice.

The weight of a reindeer pat (dung) varies between 35 g and 55 g, the average weight is about 45 g.

There has been a lot of research about the coprophagus beetles of the genus *Aphodius*. The imagines and larvae of *Aphodius* live in dung and eat dung.

The biology of the rove beetles (Staphylinidae) living in dung is less known. Staphylinidae like *Philonthus, Ontholestes, Tachinus* are predators either as imagines or as larvae. The larvae of *Aleochara* live as parasitoids in larvae of Diptera. It seems that imagines and larvae of most of the other staphylinid species are predators, too.

Some of the Staphylinidae of Northern Finland living in reindeer dung are found in horse dung, too, so *Tachinus pallipes* in July 1980 in the valley of the River Teno (Norwegian: Tana) near Levajok (70° N, 26,5° E) about 20 m above sea level not far from the River Kevo (LIPKOW, 1982).

Staphylinidae as *Proteinus apicidens* and *Atheta subtilis* found for the first time in the valley of the River Teno by BISTRÖM and HELVE, 1977, are signed with BI in Table 1.

Staphylinidae living in cow dung in Southern Finland found by KOSKELA, 1977, are signed with KO in Table 1.

Big staphylinids like *Philonthus* found in horse dung in Levajok, in the valley of the River Teno (LIPKOW, 1982) and in cow dung in Southern Finland (KOSKELA, 1972, LIPKOW, 1982) were not found in reindeer dung. May be there is not enough food for the larvae of *Philonthus* in a relatively small pat of reindeer dung.

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Table 1: Numbers of beetles (Coleoptera) found in reindeer dung in Northern Finland. 1979: 38 samples in Muotkattunturit near Karigasniemi. 1984: 40 samples West of River Kevo. Meaning of abbreviation after name of species:
BI: Staphylinid found by BISTRÖM and HELVE, 1977, in the valley of the River Teno.
KO: Staphylinid found by KOSKELA, 1972, in cow dung in Southern Finland

		Karigasniemi 69,2° N, 26,2° E 10. – 13. 8. 1979			Kevo 69,5° N, 26,5° E 14. – 18. 7. 1984		
		Σ	♂	♀	Σ	♂	♀
Staphylinidae		196			135		
Proteininae		1					
Proteinus apicidens Jan.Sji	BI	1					
Omaliinae		14					
Deliphrum tectum Payk	KO	12	5	7	·		
Eucnecosum brachypterum Gyll		2					
Oxytelinae		80	30	50	21		
Oxytelus laqueatus Marsh		80			21	13	8
Tachyporinae		2					
Tachinus pallipes Grav	KO	2	1	1			
Aleocharinae		99			98		
Aleochara moerens Gyll		6			·		
Atheta: all species		93			·		
Atheta alpestris Heer		·					
A. microptera Thoms	KO	·					
A. macrocera Thoms	KO	·					
A. picipennis Mannh	KO	14					
A. incognita Sharp		·					
A. allocera Eppelsh		·					
A. diversa Sharp	KO	·					
A. subtilis Scriba	BI, KO	40					
Larvae of Staphylinidae		·			120		
Ptiliidae		·			100		
Scarabaeidae		24			199		
Aphodius spec.		24			199		
Larvae of Aphodius		·			60		

Summary

In dung of reindeer *(Rangifer tarandus)* in the northern parts of Finland (69,5° N, 29° E) there are found in August 1979 and in July 1984 the following Coleoptera: Scarabaeidae: Aphodius spec., Ptiliidae, and Staphylinidae: *Proteinus apicidens, Deliphrum* tectum, Eucnecosum brachypterum, Oxytelus laqueatus, Tachinus *pallipes, Aleochara moerens, Atheta alpestris, A. microptera, A. macrocera, A. picipennis, A. incognita, A. allocera, A. diversa, A. subtilis,* Larvae of Staphylinidae and of *Aphodius*. Most of the Staphylinidae in reindeer dung are also found in cow dung in Southern Finland.

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