

Diptera and Other Arthropods of the Sukkertoppen Tasersiaq Area, Southwest Greenland¹

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ABSTRACT. Arthropods were collected in the Sukkertoppen area of Greenland (66°16'N., 51°13'W.) during the summer of 1963 and identified. Thirty-one families of insects in the orders Neuroptera, Trichoptera, Homoptera, Hemiptera, Coleoptera, Diptera, Lepidoptera, and Hymenoptera were collected. Seventeen of the 31 families of insects were Diptera, and these comprised more than 90 per cent of the total insects collected. Other insect families collected and identified included Hemerobiidae, Cicadellidae, Lygaeidae, Coccinellidae, Pieridae, Nymphalidae, Lycaenidae, Arctiidae, Noctuidae, Lymantriidae, Ichneumonidae, and Bombidae. Dipping of aquatic habitats produced specimens of Dytiscidae and Limnephilidae. Other arthropods collected by dipping or sweeping included Bdellidae, Eviphididae, and Cheyletidae (Acarina), and Branchinectidae and Lepiduridae (Crustacea).

RÉSUMÉ. *Diptères et autres arthropodes de la région de Sukkertoppen-Tasersiaq dans le sud-ouest du Groënland.* Au cours de l'été 1963, les auteurs ont recueilli et identifié des arthropodes dans la région de Sukkertoppen au Groënland (66°16' N., 51°13' W.). Cette cueillette comprenait trente et une familles d'insectes des ordres Neuroptères, Trichoptères, Homoptères, Hémiptères, Coléoptères, Diptères, Lépidoptères et Hyménoptères. Dix-sept de ces trente et une familles d'insectes étaient des Diptères et comprenaient plus de 90 pour cent du total d'insectes recueillis. D'autres familles d'insectes recueillies et identifiées comprenaient des Hémerobiidés, des Cicadellidés, des Lygaéidés, des Coccinellidés, des Piéridés, des Nymphalidés, des Lycaénidés, des Arctiidés, des Noctuidés, des Lymantriidés, des Ichneumonidés et des Bombidés. Les filets jetés dans des habitats aquatiques ont ramené des spécimens de Dytiscidés et de Limnéphilidés. Les autres arthropodes recueillis au filet ou par écumage comprenaient des Bdellidés, des Eviphididés et des Cheylétidés (Acarins), ainsi que des Branchinectidés et des Lépiduridés (Crustacés).

РЕЗЮМЕ. *Diptera и другие членистоногие в северо-западной Гренландии.* В течение лета 1963 года в северо-западной Гренландии, в районе расположенном 66° 16' северной широты и 51° 13' западной долготы, был собран и классифицирован целый ряд членистоногих. Всего было собрано 31 семейство насекомых, относящихся к отрядам Neuroptera, Trichoptera, Homoptera, Hemiptera, Coleoptera, Diptera, Lepidoptera и Hymenoptera. 17 семейств из 31 относились к отряду Diptera, и они составили более 90% всех собранных насекомых. Другие идентифицированные семейства включали в себя: Hemerobiidae, Cicadellidae, Lygaeidae, Coccinellidae, Pieridae, Nymphalidae, Lycaenidae, Arctiidae, Noctuidae, Lymantriidae, Ichneumonidae и Bombidae. В водной среде были обнаружены экземпляры Dytiscidae и Limnephilidae. Кроме того были также собраны членистоногие семейств Bdellidae, Eviphididae, Cheyletidae (Acarina), Branchinectidae и Lepiduridae (Crustacea).

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INTRODUCTION

In 1963 the senior author was a member of the Institute of Polar Studies' second Sukkertoppen expedition to Southwest Greenland (66°16'N., 51°13'W.). Since no studies in entomology had been conducted previously in that particular isolated region, it was considered that any information concerning insects and other arthropods of the area would be of value. Collecting of arthropods was undertaken as a sideline of the expedition's regular field program.

Abiotic and ecological factors which existed during the collection period are discussed to elucidate the general environmental conditions under which these arthropods were collected.

Since Diptera represent the major portion of the arthropods in arctic regions, all other identified arthropods are included here as general entomological information.

MATERIALS AND METHODS

Four collection areas 50 m. in length were marked off for terrestrial insect collections. These areas were swept with a 35 cm. insect-collecting net at weekly intervals during relatively calm periods in mid-morning and late afternoon in July and August. Net strokes approximately one metre in length were made at the tops of the vegetation. Specimens collected by this method and those taken by

TABLE 1. Pedologic and biologic factors at 4 study sites, Sukkertoppen area, Greenland, July and August 1963.

Site	1	2	3	4
Elevation (m.)	681	687	695	684
Orientation	East-West depressed area	South-facing slope	North-facing slope	North-South depressed area
Approximate per cent exposed rock cover	0	25	20	0
Depth to permafrost level (cm.), July 20, 1963	46	61	52	35
Major plant species and approximate per cent of total vegetation cover	<i>Carex</i> sp., 96 <i>Poa</i> sp., 2 <i>Cassiope tetragona</i> , 1 Mosses, 1	<i>Cassiope tetragona</i> , 30 <i>Carex</i> sp., 30 <i>Vaccinium uliginosum</i> , 20 <i>Poa</i> sp., 10 <i>Dryas integrifolia</i> , 10	<i>Carex</i> sp., 70 <i>Cassiope tetragona</i> , 20 Mosses, 5 <i>Betula nana</i> , 3 <i>Dryas integrifolia</i> , 2	<i>Carex</i> sp., 95 <i>Poa</i> sp., 3 Mosses, 2
General Description	Vegetated with <i>Carex</i> sp. hummocky and wet	Mixed vegetation pattern Many frost heaves and exposed rocks	Vegetation predominantly <i>Carex</i> sp. Moist meadow and exposed rock area	Vegetated with <i>Carex</i> sp. hummocky and wet

TABLE 2. Arthropods other than Diptera collected in the Sukkertoppen area of Greenland, July and August 1963.

INSECTA				
<i>Order</i>	<i>Family</i>	<i>Species</i>		
Neuroptera	Hemerobiidae	<i>Kimminsia betulina</i> (Stroem.).		
Trichoptera	Limnephilidae	<i>Limnephilus</i> sp. <i>Apantania</i> sp.		
Homoptera	Cicidellidae	<i>Macrosteles fascifrons</i> (Stal.).		
Hemiptera	Lygaeidae	<i>Nysius groenlandicus</i> Zett.		
Coleoptera	Coccinellidae	<i>Coccinella transversoguttata ephippiata</i> Zett.		
Lepidoptera	Dytiscidae	<i>Colymbetes groenlandicus</i> Aube.		
	Pieridae	<i>Colias</i> sp.		
	Nymphalidae	<i>Boloria</i> sp.		
	Lycaenidae	<i>Chrysophanus</i> sp.		
	Lymantriidae	<i>Byrdia groenlandica</i> (Staud.).		
	Arctiidae	<i>Platarctia</i> sp.		
Hymenoptera	Noctuidae	Agrotinae sp.		
	Ichneumonidae	<i>Cryptus laborator fabricii</i> (Sch.).		
		<i>Campoletis</i> sp.		
		<i>Olesicampe</i> sp.		
		<i>Phygaceuon</i> sp.		
		<i>Mesoleptus</i> sp.		
		<i>Atractodes</i> sp.		
		<i>Bombus hyperboreus</i> Schon.		
		Acarina	ARACHNIDA	
			Bdellidae	<i>Nemoligus littoralis</i> (L.)
Cheyletidae	<i>Acaropsis docta</i> (Berl.).			
	Eviphididae	Nymph, undetermined.		
Anostraca	CRUSTACEA			
	Branchinectidae	<i>Branchinecta paludosa</i> (Mull.).		
	Notostraca	<i>Lepidurus arcticus</i> (Pall.).		

dipping of aquatic habitats were preserved in 70 per cent alcohol for later identification.

Representative plant specimens were collected from the 4 collection areas and transported to the United States for species identification. At each collection site the percentage of cover of major plant species and exposed rock was determined visually. Pedologic data were determined by soil scientists working in the immediate area during the period of study.

The Base Camp weather station was located less than 400 m. from each of the collecting sites, and meteorological data from the station were applicable generally to the 4 adjacent collecting areas.

RESULTS

Air temperature and the direction and velocity of the wind appeared to be major factors affecting the activity of airborne insects at the collecting sites. Precipitation measured by a rain gauge near the Base Camp totaled 41 mm. of

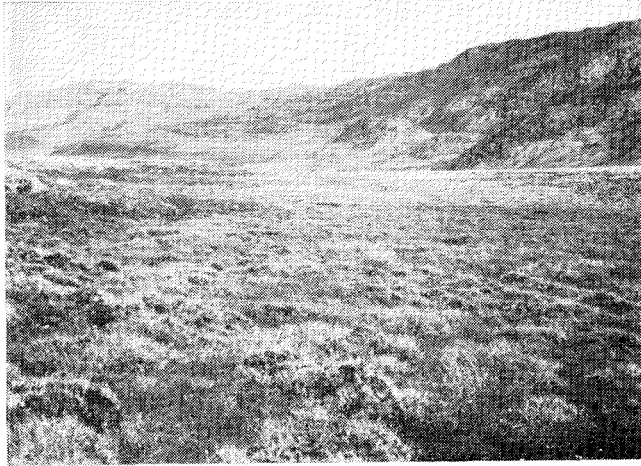


FIG. 4. Diptera collecting site No. 4, Sukkertoppen area. North-south orientation, wet hummocky meadow, *Carex*.

TABLE 6. Diptera collected at study site No. 4.

<i>Family</i>	<i>Species</i>
Simuliidae	<i>Prosimulium fulvum</i> (Coq.).
Chironomidae	<i>Chironomus</i> (<i>s.s.</i>) sp. <i>Cricotopus</i> sp. <i>Limnophyes</i> sp. <i>Orthocladius</i> (<i>Euorthocladius</i>) sp. <i>O. (Eudactylocladius) mixtus</i> Holmgr. <i>O. (Pogonocladius) consobrinus</i> Holmgr. <i>Paraphaenocladius</i> sp. <i>Procladius</i> sp. <i>Psectrocladius barbatimanus</i> Kief. <i>P. fennicus</i> Stora.
Ceratopogonidae	<i>Culicoides sordidellus</i> (Zett.).
Culicidae	<i>Aedes impiger</i> (Wlk.). <i>Aedes dorsalis</i> (Mg.).
Empididae	<i>Rhamphomyia</i> sp.
Ephydriidae	<i>Scatella stagnalis</i> (Fall.).

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were less abundant, and no activity was observed in the evening when the temperature was below 45°F. (7.2°C.). By mid-August, when blooms had largely disappeared from the tundra vegetation, insects were seldom observed on any of the study sites.

Over 90 per cent of the insects collected were Diptera, nearly all of which are species characteristic of the low arctic region (Hendricksen 1939). The dipterous families included Trichoceridae, Tipulidae, Simuliidae, Chironomidae, Ceratopogonidae, Culicidae, Sciaridae, Mycetophilidae, Empididae, Dolichopodidae, Piophilidae, Ephydriidae, Sciomyzidae, Muscidae, Calliphoridae, Tachinidae, and Oestridae. Chironomidae were dominant, accounting for 40 per cent of the dipterous fauna, and as expected, they were most abundant in the wet, hummocky meadow areas. Unfortunately, specific identification of many chironomids was not possible because of the damage which occurred during the collection and preservation of these fragile insects.



FIG. 2. Diptera collecting site No. 2, Sukkertoppen area. South-facing slope, mixed vegetation area, exposed rocks and frost heaves.

TABLE 4. Diptera collected at study site No. 2.

Family	Species
Trichoceridae	<i>Trichocera</i> sp.
Tipulidae	<i>Tipula arctica</i> (Curtis).
Chironomidae	<i>Chaetocladius adsimilis</i> Goetgh. <i>Cricotopus</i> sp. <i>Limnophyes</i> sp. <i>Smittia</i> sp. <i>Trichotanypus posticalis</i> Lundb.
Culicidae	<i>Aedes impiger</i> (Wlk.).
Mycetophilidae	<i>Exechia</i> sp.
Empididae	<i>Rhamphomyia</i> sp.
Dolichopodidae	<i>Dolichopus groenlandicus</i> Zett. <i>D. plumipes</i> (Scop.).
Muscidae	<i>Hydrophoria proxima</i> Mal. <i>Pollenia rudis</i> (F.).
Tachinidae	<i>Peleteria</i> sp. <i>Phorocera claripennis</i> Macq.

Since Diptera comprised the major portion of arthropods collected, the members of this order are listed separately for each of the study sites in Tables 3 to 6 (see Figs. 1 to 4). Other arthropods taken in the study are listed in Table 2.

DISCUSSION

Diptera fauna from the Sukkertoppen Taseriaq region were not unusual when compared to other west Greenland entomological records (Wolf 1964; Henningsen 1957; Hendricksen 1939). The presence of these known Dipterans from an entomologically unknown region confirms and extends the previous distribution information in this part of Greenland (Nielsen 1966; Griffiths 1966).

The third Sukkertoppen expedition (summer 1964) encountered an extremely stormy and cold season during which insect activity was absent or greatly reduced. Mosquitoes were reported as absent. No entomological work was conducted during the 1964 expedition activities.

Owing to the fluctuation of arthropod activity from season to season and the incomplete nature of the entomological work done on the second Sukkertoppen expedition, an interesting opportunity for an intensive entomological study exists in the region.



FIG. 3. Diptera collecting site No. 3, Sukkertoppen area. North-facing slope, exposed rocky meadow area, primarily *Carex*.

TABLE 5. Diptera collected at study site No. 3.

<i>Family</i>	<i>Species</i>
Tipulidae	<i>Tipula arctica</i> (Curtis).
Chironomidae	<i>Chironomus</i> (s.s.) sp. <i>Cricotopus</i> sp. <i>Psectrocladius barbatimanus</i> Kief.
Ceratopogonidae	<i>Culicoides sordidellus</i> (Zett.).
Culicidae	<i>Aedes impiger</i> (Wlk.).
Mycetophilidae	<i>Exechia</i> sp.
Empididae	<i>Rhamphomyia</i> sp.

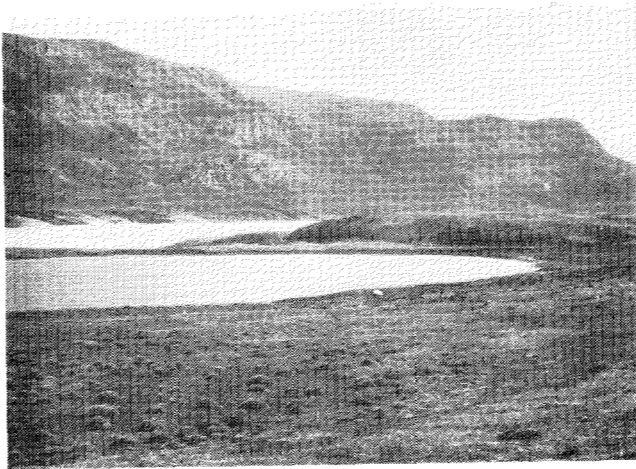


FIG. 1. Diptera collecting site No. 1, Sukkertoppen area. Wet, hummocky meadow area with *Carex*.

TABLE 3. Diptera collected at study site No. 1.

Family	Species
Chironomidae	<i>Chironomus</i> (s.s.) sp. <i>C. (Limnochironomus)</i> sp. <i>Cricotopus</i> sp. <i>C. pilosellus</i> Brund. <i>Orthocladius</i> (<i>Euorthocladius</i>) sp. <i>O. (Pogonocladius) consobrinus</i> Holmgr. <i>Pentaneura</i> sp. <i>Psectrocladius</i> sp. <i>P. barbatimanus</i> Kief. <i>P. fennicus</i> Stora. <i>Aedes impiger</i> (Wlk.).
Culicidae	<i>Bradyisia</i> sp.
Sciaridae	<i>Rhamphomyia</i> sp.
Empididae	<i>Dolichopus plumipes</i> (Scop.).
Dolichopodidae	<i>Piophila pilosa</i> (Staeg.).
Piophilidae	<i>Sepedon</i> sp.
Sciomyzidae	Phaoniidae
Muscidae	<i>Coenosia octopunctata</i> (Zett.).

rain during 25 days of the July-August period. Cloudiness measured in tenths averaged 6.1 for all clouds and 4.7 for the lowest clouds during the same period. Relative humidity was greater than expected for an arctic region and was about 68 per cent during both months (Kosiba and Loewe 1964).

Pertinent information including elevation, orientation, plant species, and pedologic conditions of the 4 collecting sites is presented in Table 1.

Insects were first collected and preserved for identification during the first week of July, although a few bumblebees, crane flies, mosquitoes, and chironomid midges were observed flying about in the last few days of June. Lepidoptera were first observed and collected on 5 July, after which insects of other orders appeared and reached maximum numbers during July. Mosquitoes were the most abundant insects during that month (Nielsen 1963). In early August many of the insects

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