

***Orthocladius naumanni* Brundin
(Dipt. Chiron.), new to Denmark, with
description of the female.**

By
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During a year's stay at the Freshwater biological laboratory of the University of Copenhagen, in Hillerød, I had the opportunity to determine a small collection of Chironomidae from Grib sø, a humic lake in North Zealand. The animals were hatched from larvae in the laboratory in 1945 by B. Fristrup, M.Sc., as a part of an investigation on the fauna of Grib sø. This investigation has been going on for several years under the direction of Prof., Dr. Kaj Berg, the leader of the laboratory. I wish here to express to Prof. Berg my sincere thanks for giving me opportunity to examine this interesting material and for permitting me to use some of his yet unpublished figures and observations.

As already mentioned the material was rather small, consisting only of 4 different species.

Ablabesmyia sp.

Psectrocladius stratiotis Kieff.

Sergentia longiventris Kieff.

Orthocladius naumanni Brundin.

Of these *Orthocladius naumanni* proved to be new to Denmark. Previously this species has only been found in Sweden, where it was described in 1949 by L. Brundin (1949, p. 823). But only the male was described as he never succeeded in catching a female; and he never tried to hatch larvae to get females. It was therefore very interesting to find as many as 6 ♀♀ of the species in the Grib sø material.

Before the description of the ♀, a few notes are made on the larvae and their occurrence in Sweden and Denmark.

An excellent description of the larva and pupa of *O. naumanni* is given by Brundin (l. c., p. 824—26). The Danish larvae agree completely with this, apart from one single detail: The pale seta ("blasse Borste"), situated on the apex of the basal joint of the antenna, is, in the Gribso specimens, not quite so long as indicated for the Swedish specimens. But this small difference may be due to a slight ecological difference between the Danish and the Swedish populations.

Brundin states (l. c., p. 395) that *O. naumanni* is a typical animal in humic biotopes. In South and Middle Sweden the larva seem to be characteristic of polyhumic, oligotrophic lakes with bottom sediments rich in dy. Here they are most abundant in the profundal zones. In the lake Skärshultsjö an average number of 100 ind. per sq. m. was found at a depth of 6 m. (l. c., p. 337). In the lake of Hovtjärn an average number of 535 ind. per sq. m. was found in the profundal zone at 2.5—5 m. (l. c., p. 492).

In North Sweden the species is found also in oligo-humic lakes, here being most abundant on the border between the littoral and profundal zones: In the lake of Balsjö larvae were found at 4—5 m. depth. In Gransjö several larvae were found at 4—7 m. depth (l. c., p. 713).

Brundin's investigations on the Swedish populations are in good agreement with those made on the Gribso population.

Gribso has a pH of about 5 throughout the year. There is a sharp thermocline, and the temperature of the bottom water never exceeds 6° C. The oxygen content of the bottom water is very low. At 6 m. the maximal oxygen saturation amounts to about 72 % in May,

but decreases rapidly during the summer and in Sept.-Oct. is about 13-14 ‰. At 8 m. the oxygen content has completely disappeared in Sept., but increases again in Nov.

The larva of *O. naumanni* is the dominating chironomid here. It is found from 2-3 m. to 7-9 m., i. e. on the border between the littoral and the profundal zones. Its upper limit coincides with the thermocline. — Thus the life conditions of the species in Gribso confirm Brun-
din's statement (l. c., p. 551), viz. that the larvae are supposed to be euryoxybiontic and cold stenothermal.

Table I gives some figures of the average number and weight of the larvae at different depths in Gribso:

Depth	Average number of ind./sq. m.	Average weight (mg)
1.5	0	0
2	29,6	4,0
3.5	504	240
5	1252	578
7	475	270
9	39,5	19,5
11—12	0	0

Just to show the striking dominance of the species in Gribso it is worth noticing that the larvae of *Sergentia longiventris* Kieff. which come next to *O. naumanni* in number of individuals per sq. m. have their maximum of 325 individuals per sq. m. at a depth of 7 m.

Table II gives a more detailed picture of the variation of the population throughout the year. The figures (as was the case with the figures of table I) are based on double samples (= 450 cm²) taken with a Birge-Ekman bottom sampler.

Date	Depth	Number of ind./450 sq. cm.	Weight of ind./450 sq. cm. (mg.)	Number of ind./sq. m.	Weight of ind./sq. m. (mg.)
11. 3. 1942	3.5	20	7.8*	440	171.6*
	5.5	10	4.7*	220	103.4*
29—30. 4. 1942	3.5	6	2.6	132	57.2
	5	7	2.9	154	63.8
	7	11	6.0	242	132.0
	9	1	0.8	22	17.6
22—23. 5. 1942	2	3	1.8	66	39.6
	3.5	36	19.3*	792	424.6*
	5	14	8.0	308	176.0
	7	11	8.0	242	176.0
4—5. 6. 1942	2	4	1.2	88	26.4
	3.5	22	13.3*	484	392.6*
	5	66	39.9	1452	877.8
	7	7	3.5	154	77.0
	9	1	0.4	22	8.8
7—8. 7. 1942	3.5	6	2.8	132	61.6
	5	51	26.1*	1122	574.2*
	7	34	20.9	748	459.8
	9	6	3.2	132	70.4
6—7. 8. 1942	3.5	28	15.2	616	334.4
	5	118	53.2	2596	1170.4
	7	24	14.7	528	323.4
	9	2	0.9	44	19.8
9—10. 9. 1942	2	3	6.4*	66	140.8*
	3.5	47	23.4	1034	514.8
	5	105	44.9	2310	987.8
	7	28	17.4	616	380.8
	9	1	0.3	22	6.6
5—6. 10. 1942	3.5	28	10.8	616	237.6
	5	54	22.5	1188	495.0
	7	32	19.0	704	418.0
	9	1	0.3	22	6.6
4—5. 11. 1942	2	2	0.4	44	8.8
	3.5	11	3.8	242	83.6
	5	82	31.9	1804	701.8
	7	24	7.7	528	169.4
	9	4	2.0	88	44.0

An asterisk (*) means that the *O. naumanni* larvae were weighed together with a few, rarely occurring larvae of other species.

The table shows that the number of individuals does not vary much during the season, there is, however, a small maximum in Aug.-Sept. There is a slight decrease of weight towards the end of the year. Thus 6-7. 8. 1942, at a depth of 3.5 m., 616 ind. weighed 334.4 mg., but 5-6. 10. 1942 at the same depth the same number of individuals weighed 237.6 mg. This decrease of weight may be due to less favourable food conditions at this season.

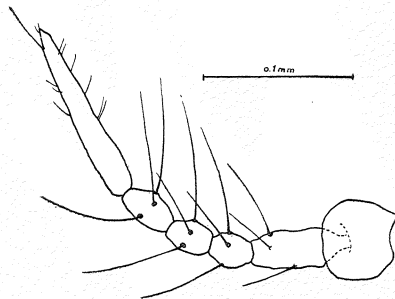
Further information on the ecology of the larvae will be given by Prof. Berg in a paper to be published on the fauna of Gribso.

As mentioned above 6 ♀♀ of *O. naumanni* were found in the material of hatched chironomids from Gribso. One of these was not fully developed, since it had been preserved too early in alcohol. The following description is therefore based on 5 specimens only.

**Description of the female of *Orthocladius*
naumanni Brundin.**

Length of body: 2.0 mm. Length of wing: 1.8 mm.

A detailed description of the colours cannot be given, as the animals have been preserved in alcohol for several years. However, some details may be stated: The mesonotal stripes are not confluent as in the male, the two lateral ones becoming narrower caudally, a little before the apex bud-like enlarged; scutellum pale, with dark borders; halteres pale. — Palps 4-jointed. Antennae 6-jointed: 2. segment not narrowed in the middle; 3.—5. segm. elliptic; 3. segm. about half as long as 2.; 4.



about $\frac{1}{10}$ longer than 3.; 5. about $\frac{1}{5}$ longer than 4.; 6. segm. about $\frac{1}{4}$ longer than 3.—5. segm. together, *sharply triangular pointed at the apex*. — Pretarsi not bearded. 4. segment of p_1 about $\frac{1}{5}$ longer than, of p_2 and p_3 as long as 5. segment. LR=0.66—0.71. — Wings in alcohol transparent, clearly punctured, but without microtrichiae even at great magnification. Anallobes not projecting, obtusely rounded. The veins agree with the *Orthocladius* group C of Edwards (1929, p. 344) and Brundin (l. c., p. 823).

5 ♂♂ are present in the material. They exactly agree with the description given by Brundin.

As regards the systematic position of *Orthocladius naumanni* Brundin states (l. c., p. 826) that the imagines seem to be related to the genus *Trissocladius* (palps 4-jointed, form of hypopygium), but the larval characters apparently do not confirm this view.

Nothing definite can be said about the biology of the imagines, as they were all hatched in the laboratory. Brundin states (l. c., p. 714) that the imago mainly flies from September to October, at which time he has collected them at the shores of the lakes. These statements do not seem to agree very well with the observations made on the larvae in Gribssø. As shown in table II the larvae occur from April to November in numbers that do not vary much. This small variation seems to indicate that, in Denmark at any rate, the species have a rather diffuse swarming period, from about May—June to October—November, perhaps with a small maximum in September—October, corresponding to the small larval maximum at this season. Unfortunately no sampling has hitherto been made at the shores of Gribssø, so at present we cannot make any exact statements on the swarming period of the species in Denmark.

References:

- Berg, K., Clemens Petersen et al.: Studies on a humic laké, Store Gribso (unpublished).
- Brundin, L. (1949): Chironomiden und andere Bodentiere der südschwedischen Urgebirgsseen. — Inst. Freshw. Res. Drottningholm, Rep. No. 30.
- Edwards, F. W. (1929): British non-biting midges. — Trans. Roy. Ent. Soc. London **77**: 279—430.

Anmeldelser.

P. Boysen Jensen: **Det Levende. En Fremstilling af Grundtrækkene af den almindelige Biologi og et Forsøg paa at benytte dem som Grundlag for et biologisk Verdensbillede.** I Kommission hos Gyldendal, Kbh. 1951—53. 1.—4. Del. 706 Sider, 59.75 Kr.

I Anmelderens Studietid vidste man med ærefrygtblandet Forbauselse, at Professoren i Plantefysiologi P. Boysen Jensen "var Vitalist". Forbauselsen skyldtes nu ikke blot ungdommelig Forstokkethed — for som bekendt er Ungdommen mere forstokket end Alderdommen — men ogsaa det Forhold, at Tiden mellem de to Verdenskrige var haardkogt materialistisk. I de senere Aar synes en Forstaaelse for, at ikke alt er sagt med kemiske Formler, langsomt at brede sig; og Prof. Boysen Jensen har nu sammenfattet sine Synspunkter i en Bog, knap og skematisk i Stil og Opbygning, som hans Værker altid er det.

Der er altid noget berigende ved at læse højtbevagede Naturforskeres Bekendelse til et Livssyn. Om det end ikke altid er den Grundtanke, der har baaret deres Videnskab, saa er det dog en af denne ukrystalliseret Tanke. Herhjemme har tidligere Schiødte (1879), C. G. Johs. Petersen (1928) og Wesenberg-Lund (1937) givet saadanne Livssyn, ofte dog mærket af for ringe filosofisk Skoling; heri staar Boysen Jensen langt højere, som det ses af hele Opbygningen, selvom han ensidigt bygger paa Hans Driesch's Vitalisme. Vitalisme er jo efter sin Ordlyd blot Erkendelsen af en principiel, en væsentlig, Forskel mellem det levende og det ikkelevende, ikke blot en Gradsforskel; og med Boysen Jensens ofte ualmindeligt lykkelige Greb paa Ordet har han formet Titlen paa sin Bog "Det Levende".

Fra Starten er Argumenteringen lysende klar, lige fra Inddelingen af Biologerne i dem, for hvem det at løse Opgaven er