



New reports of sessile ciliates from Amsterdam, The Netherlands

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Keywords sessile ciliates, The Netherlands, distribution

Abstract The aim of this contribution is to present some ciliate reports from Amsterdam, the Netherlands. They are: *Acineta nitocrae* Dovgal, 1984, *Metacineta micraster* (Penard, 1914), *Opercularia* sp., *Campanella* sp., *Platycola decumbens* Ehrenberg, 1830, *Thuricola folliculata* Kent, 1881, and *Stentor* sp. The systematic position of the several finds of these species are given along with the related information in the study. To the best of our knowledge, this is the first time that *A. nitocrae* has been reported in Northern European freshwaters, which is the third region after Ukraine and Canada where the species was found.

Nowe doniesienia o orzęskach z Amsterdamu w Holandii

Słowa kluczowe orzęski bezszypułkowe, Holandia, rozmieszczenie

Streszczenie Celem pracy jest doniesienie dotyczące stwierdzenia orzęsków z Amsterdamu w Holandii. Są to: *Acineta nitocrae* Dovgal, 1984, *Metacineta micraster* (Penard, 1914), *Opercularia* sp., *Campanella* sp., *Platycola decumbens* Ehrenberg, 1830, *Thuricola folliculata* Kent, 1881 i *Stentor* sp. Podano pozycję systematyczną wybranych gatunków. Według naszej najlepszej wiedzy jest to pierwszy przypadek występowania *A. nitocrae* w słodkowodnych wodach Europy Północnej, które są trzecim regionem po Ukrainie i Kanadzie, gdzie ten gatunek został znaleziony.

Introduction

Sessile ciliates (Suctorea, Peritrichia, Chonotrichia) are common both in marine and fresh waters. There are some host specific epibiont species whereas many other are not substrate specific and can be found on either living or non-living substrates.

There are several regional investigations containing data on species compositions of sessile ciliates (Stiller, 1971; Sieber, 1988; Alardo-Lubel, Mayén-Estrada, Reyes-Santos, 2006; Dovgal, 2013, Konstantynenko, 2014, etc.). However, such investigations of the Netherlands ciliates have not been reported much.

Hence, the works of Oppenheim (1957; 1976) on suctorian ciliates from river Amstel, investigations of sessile ciliates from amphipod crustacean, collected in Dutch coastal waters (Wijnhoven, Zwiep, Hummel, 2018) and paper about epiphytic ciliates of Roos and Trueba (1977) should be mentioned.

The present paper is due to recent finds of several species of sessile ciliates from Amsterdam. Seven ciliate species were found among them *Acineta nitocrae* Dovgal 1984 is commensal of harpacticoid copepods, whereas *Metacineta micraster* (Penard, 1914), *Opercularia* sp., *Campanella* sp., *Thuricola folliculata* Kent, 1881 and *Platycola decumbens* Ehrenberg, 1830 were observed as epiphytic on filamentous algae and *Stentor* sp. was temporary attached to the detritus.

Material and Methods

Ciliate samples containing also copepods and benthic algae were collected by using pasteur pipettes of various mouth diameters and pincets at three localities from Amsterdam (The Netherlands-coll. C. Yalçin). St. 1 (52°21'25.9"N 5°00'04.8"E), St. 2 (52°22'30.2"N 4°59'02.2"E); St. 3 (52°21'21.0"N 4°58'06.4"E) (Figure 1). Samples were observed as alive and recorded under a compound light microscope (Euromex Oxion) by the first author (CY). Images of specimens were taken, analyzed and measured using a Euromex CMEX-5 Pro camera and its Image Focus Alpha imaging software. In addition to that, ciliate videos are shared on the first author's YouTube channel (<https://www.youtube.com/channel/UCd-ZmKdJG3ajNmy3WOFmXhQ/videos>).

The systematic position of found suctorian ciliates follows Dovgal (2002, 2013) and Lynn (2008) for peritrichs and heterotrichs ciliates.

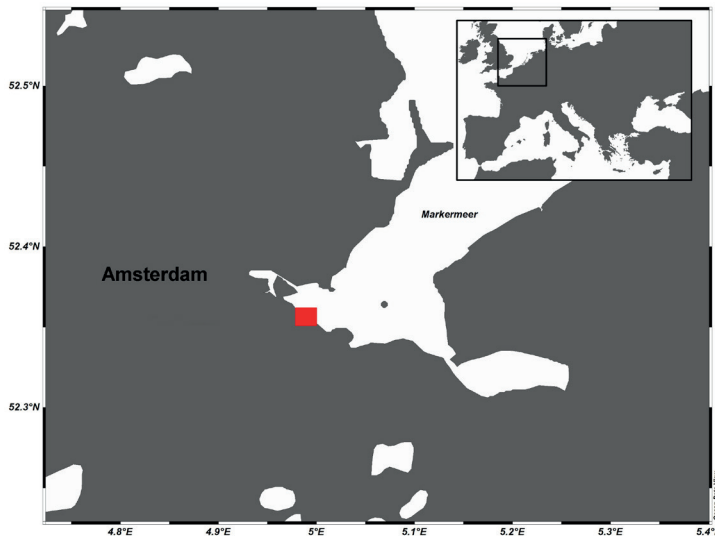


Figure 1. Map of the study area

Results and Discussion

Class SUCTOREA Claparède et Lachmann, 1859

Subclass ENDOGENIA Collin, 1912

Order ACINETIDA Raabe, 1964

Family ACINETIDAE Ehrenberg, 1838

Genus *Acineta* Ehrenberg, 1834

Acineta nitocrae Dovgal, 1984

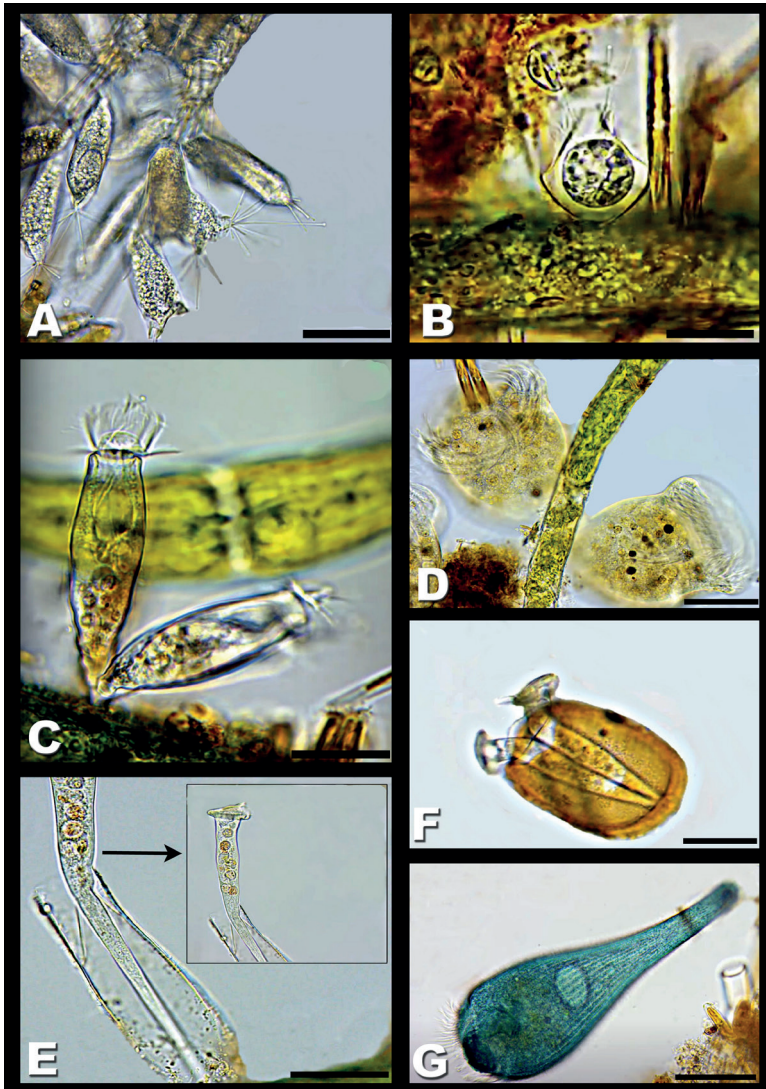


Figure 2. *Acineta nitocrae* (A), *Metacineta micraster* (B), *Opercularia* sp. (C), *Campanella* sp. (D), *Thuricola folliculata* (E), *Platycola decumbens* (F), *Stentor* sp. (G) (Scale bars: 50 μ m)

Material examined. Fourteen individuals of *A. nitocrae* were observed on furca of harpacticoid copepod *Nitocra* sp. collected from St. 1 (20 XII 2020).

Measurements. Lorica length 67–75 µm (n = 4); lorica width 17–25 µm, length of the tentacles 12–56 µm, macronucleus diameter 20–22 µm.

Distribution. *Acineta nitocrae* described by Dovgal (1984) from flood-land lake near Dnieper River (Ukraine-Kiev) as epibiont on furca of *Nitocra hibernica*. There upon was found in numerous localities in Ukraine on *N. hibernica*, *N. incerta*, *N. lacustris*, *Nitocra* sp. and *Canthocamptus staphylinus* (Dovgal, 2013; Rybka, Yuryshynets, 2018), also reported from Canada (Lake Saint Clair and Detroit River) as an epibiont from the *N. hibernica* (Grigorovich, Dovgal, MacIsaac, Monchenko, 2001).

Subclass EXOGENIA Collin, 1912

Order METACINETIDAE Jankowski, 1978

Family METACINETIDAE Bütschli, 1889

Genus *Metacineta* Bütschli, 1889

Metacineta micraster (Penard, 1914) (Figure 2B)

Material examined. Only one ciliate observed on *Oedogonium* from St. 2 (13 VII 2020).

Measurements. Lorica length 40 µm.

Distribution. The species distributed world widely. It was described by Penard (1914) from the Swiss Alps from mosses over growing old stone walls. Then it was repeatedly noted in freshwaters of Europe, America and Asia (Dovgal, 2013).

Class OLIGOHYMENOPHOREA de Puytorac et al. 1974

Subclass PERITRICHIA Stein, 1859

Order SESSILIDA Kahl, 1933

Family OPERCULARIIDAE Fauré-Fremiet in Corliss, 1979

Genus *Opercularia* Goldfuss, 1820

***Opercularia* sp.** (Figure 2C)

Material examined. Two specimens observed on filamentous algae collected from St. 1 (5 VII 2020). Found ciliates are most relative to *Opercularia stenostoma* Stein, 1854.

Measurements. Lorica lengths are 100 µm.

Distribution. The representatives of genus *Opercularia* sp. are common in fresh waters. Hence, *O. stenostoma* was first time reported from Niemeck (Germany) by Stein (1854). Later, it was reported near Brussels, Belgium (Kent, 1881), from Ukraine (Gassowski, 1960, Konstantynenko, 2014) and, Mexico (Mayén-Estrada et al., 2020).

Family EPISTYLIDAE Kahl, 1933

Genus *Campanella* Goldfuss, 1820

***Campanella* sp.** (Figure 2D)

Material examined. Four specimens observed on filamentous algae from St. 2 (8 VI 2020).

Measurements. Lorica length 145 µm.

Distribution. Representatives of the genus *Campanella* can commonly found in freshwaters. Thus, the type species of genus *Campanella umbellaria* (Linnaeus, 1758) have found from Ukraine (Gassowski, 1960; Konstantynenko, 2014), from Poland (Babko, Fyda, Kuzmina, Hutorowicz,

2010) and China (Shi, Warren, Yu, Shen, 2004). It also found among *Phragmites australis* in shallow freshwater lake near Amsterdam (Roos, Trueba, 1977).

Family VAGINICOLIDAE de Fromentel, 1874

Genus *Thuricola* Kent, 1881

***Thuricola folliculata* Kent, 1881** (Figure 2E)

Material examined. Only one species observed on filamentous algae from St. 2 (13 VII 2020).

Measurements. Lorica length is 140 µm. Stalk length is less than 10 µm.

Distribution. Widely distributed species, firstly described (Kent, 1881) in ponds near London and Stourbridge (United Kingdom), it also reported from Ukraine (Konstantynenko, 2014), Poland (Babko et al., 2010), Mexico (Mayén-Estrada et al., 2020), and the Hangzhou Bay, Ningbo, China (Lu et al., 2018).

Remarks. The species was described by Kent (1881), which believed that *T. folliculata* is identical with the *Vorticella folliculata* Müller, 1786. However, Trueba (1980) and Lu et al. (2018) have evidence that the species of Müller and Kent are different and stated the authority of Kent for representative of genus *Thuricola*.

Genus *Platycola* Kent, 1882

***Platycola decumbens* Ehrenberg, 1830** (Figure 2F)

Material examined. Two zooids in the same lorica observed on *Oedogonium* from St. 3 (26 IV 2020).

Measurements. Lorica length is 113 µm.

Distribution. Freshwater species, widely distributed in North America and Europe (Warren, 1982). It described by Kent (1881) near Dundee, Scotland, United Kingdom under synonymic name *Platycola longicollis* Kent, 1881 and in Switzerland under synonymic name *P. truncata* de Fromentel, 1874 (Sieber, 1988).

Class HETEROTRICHEA Stein, 1859

Order HETEROTRICHIDA Stein, 1859

Family STENTORIDAE Carus, 1863

Genus *Stentor* Oken, 1815

***Stentor* sp. (Figure 2G)**

Material examined. Only one specimen observed as free swimming and attached to detritus from St. 2 (17 I 2021). It is our point that the found ciliate is most probably relative to *Stentor multiformis* (Müller, 1786) considering the size of the extended individual, single bead macronucleus and azure to sea green cortical granules (Foissner, Wolf, 1994).

Measurements. Length of body is 220 µm.

Distribution. Most species of genus *Stentor* were found occur in dystrophic freshwaters, or in slightly brackish biotopes (Foissner, Wolf, 1994). The relative for found species *S. multiformis* was firstly described by Müller (1786) from Denmark (Copenhagen). Later the species was reported from Gulf of Cádiz (Spain) and Wismar (Germany) by Stein (1867). The species also found in freshwaters of Poland (Babko et al., 2010). Foissner and Wolf (1994) commented that

S. multiformis reported in marine, freshwater and terrestrial biotopes, but whether the marine and freshwater populations of the species are truly conspecifics is still questionable.

Acknowledgements

Third author's (ID) work was made within the framework of research issue of A.O. Kovalevsky Institute of Biology of the Southern Seas RAS #121040500247-0.

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Cite as: Yalçın, C., Durucan, F., Dovgal, I.V. (2021). New reports of sessile ciliates from Amsterdam, The Netherlands. *Acta Biologica*, 28, 25–31. DOI: 10.18276/ab.2021.28-03.

