

A new *Arachnidium* species, *Arachnidium lacourti* spec. nov. (Bryozoa: Ctenostomona), from the coast of The Netherlands

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Key words: *Arachnidium*; lageniform; north-western Europe; introduction; estuarine.

A new species of the genus *Arachnidium* is described from The Netherlands. The detached distal part of the zooids and their bottle shape are diagnostic of the species. It is recorded from oligo-mesohaline waterways with intensive navigation and it is assumed to have been introduced by shipping.

Introduction

During investigations of the macro-invertebrate fauna of hard substrates in brackish parts of estuaries in The Netherlands an undescribed bryozoan was collected at two localities. As the localities are situated along waterways to two of the largest ports in Europe, we assume the bryozoan is an introduced species. The chances that a native intertidal bryozoan in north-western Europe goes undetected until now are very low. In the present article the species is described and short comparisons with north-western European congeners are given. The genus *Arachnidium* contains elusive species, forming inconspicuous colonies. They are seldom recorded. Differences between species are subtle and some species recorded worldwide may in fact consist of several closely similar species. Most species are marine and subtidal. The present species is atypical in its morphology and its habitat preference; it was collected from the intertidal zone in oligo-mesohaline waters.

Arachnidium lacourti spec. nov.

Material.— Holotype (MNHN-BRY-20044) Bath (Westerschelde), 05.vii.2003, small part of colony on *Balanus improvisus* Darwin, 1854, M.A. Faasse. Paratypes: (RMNH BRY 3192) Rotterdam (Nieuwe Waterweg), 17.viii.2004, 4 parts of colonies on boulders, M.A. Faasse; (MNHN-BRY-20045) Rotterdam (Nieuwe Waterweg), 17.viii.2004, 1 part of colony on boulder, M.A. Faasse. Bath (Westerschelde), 1999, exact date unknown, dried out colony on *Crassostrea gigas* (Thunberg, 1793) (coll. M.A. Faasse); Rotterdam (Nieuwe Waterweg), 09.viii.2004, dried out parts of colony on *Balanus improvisus* (coll. M.A. Faasse).

Type locality.— Bath, eastern brackish part of Westerschelde estuary, The Netherlands. Colony attached to the underside of a boulder and barnacles (*Balanus improvisus*).

Diagnosis.— *Arachnidium* with non-anastomosing colony. Zooid typically lageniform (bottle-shaped), proximal part of variable length, sometimes very long and thread-

like. Cylindrical distal part of the zooid detached from the substrate. Peristome long, round, cylindrical and partially retractable. Peristome continuous with the distal part of the zooid, situated completely distally and curved to the frontal side. Orifice round.

Description.— Colony creeping, with zooids in linear series, branched dichotomously. A large proportion of the zooids may be attached to the substratum with small rectangular crenulations of approximately 110 microns long and 30 microns wide, variable in number, up to 8 on each side (fig. 1a, 1b). The polypide has 8 tentacles.

Each zooid comprises three parts:

1. A proximal creeping part of variable length, sometimes very long and threadlike (fig. 1c), up to 0.9 mm long with a diameter of 0.04–0.06 mm. In some zooids the proximal part may be much shorter, 0.05–0.06 mm, particularly in the first zooids where a new series has budded off.
2. A wide distal part, length 0.36–0.42 mm, width 0.14–0.21 mm, encrusting proximally, cylindrical and free distally. Variable proportion detached from the substrate, at least corresponding to the peristomial region. The encrusting part is flattened or concave when the lophophore is extended or in preserved material, convex in live specimens with retracted lophophore.
3. A cylindrical peristome, obliquely directed to the frontal side, with fine plications and a round orifice. Length 0.10 mm, diameter 0.08–0.09 mm. The distal part of the zooid being bottle-shaped, the peristome is carried not on the frontal side, but directly and without demarcation on the extreme distal part. The peristome can be for the greater part retracted into the zooid and then have a length of only some 40 microns, while the orifice can reach a diameter of 0.15 mm.

The budding of daughter zooids occurs on the wide distal part of the zooids, simultaneously distally, and laterally at the disto-ventral and latero-ventral regions. One of the lateral daughter zooids buds from the mother zooid more proximally than the other. The branching of a series of zooids occurs at a zooid with a long threadlike proximal portion, at the posterior part, just before an interzooidal connection. In this case the first daughter zooid lies closely to the proximal part of the mother zooid, diverging only near the wide distal part.

The threadlike portion is connected to the wide distal part axially or at the latero-posterior angles.

The rectangular ancestrula lacks a polypide and has a length of 0.26 mm and a width of 0.18 mm. At each of its four sides a daughter zooid buds off, each of them separated by a septum at its basis. The larvae are unknown.

Etymology.— The present species is dedicated to the late A.W. Lacourt, whose publications constitute the largest contribution to the bryozoan fauna of The Netherlands.

Ecology.— *Arachnidium lacourti* was collected in the oligo-mesohaline part of the Westerschelde estuary and the Nieuwe Waterweg. Salinity at the collecting locality in the Westerschelde varies between 1‰ and 13‰ (Wolff, 1973; Baeyens et al., 1998), mainly dependent on river discharge. Turbidity varies between 20 and more than 200 mg.l⁻¹ (dry weight) (Wolff, 1973; Baeyens et al., 1998) and temperature varies between 0 and 20°C (Wolff, 1973). Although recent data from the Nieuwe Waterweg are lacking, this canal clearly has the characters of an estuary (Paalvast, 1998).

The colonies in the Westerschelde were present on the underside of a boulder, on barnacles (*Balanus improvisus* Darwin, 1854) and on a Pacific oyster *Crassostrea gigas* (Thunberg, 1793). The colonies in the Nieuwe Waterweg were collected from the under-

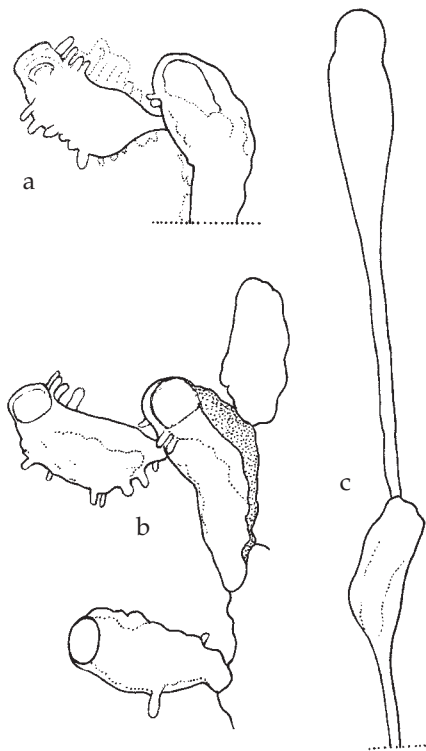


Fig. 1. a. zooids with attaching crenulations, b. zooids from a different part of the colony, c. zooids with threadlike proximal portions.

side of boulders and from barnacles, mostly embedded in a thin layer of mud. All colonies were living in the lower half of the intertidal zone. At the locality near Bath a deep tidal channel is present near to the bank. Frequent dredging occurs and the river bank is protected with boulders (van Moorsel, 2000). The invertebrate fauna on these boulders in the eastern part of the Westerschelde for a large proportion consists of introduced species. From the data of van Moorsel (2000) a proportion of 35% of introduced species can be calculated. The invertebrate fauna on the boulders in the Nieuwe Waterweg is very poor. Fourteen species of crustaceans, bryozoans and entoprocts were recorded, of which 5 (i.e. one out of three) are introduced species. As the bryozoan fauna of north-west Europe is relatively well-known and marine invertebrate species are introduced to this region at an accelerating rate, *A. lacourti* may be another introduced species, of unknown origin.

Discussion.— Three identification keys for the genus *Arachnidium* have been published (Prenant & Bobin, 1956; d'Hondt, 1983; Hayward, 1985), the first and the third

limited to the European fauna, the other treating the genus completely and including all the species of the family Arachnidiidae. A zooid consisting of three parts, a round peristome, a supple, however not membranous frontal side and a colony without erect parts characterise the genus *Arachnidium*.

The larvae, embryology and post-larval development of the genus are unknown, which make a discussion of the phylogenetic position of the genus within the ctenostomes completely subjective. The same even holds for the complete family Arachnidiidae.

The fact that some autozooids only have a very reduced proximal portion could, in the absence of other diagnostic characters, lead to confusion with the unconnected zooids of the peripheral parts of the colony in an aberrant species in the genus *Alcyonidioides*, i.e. *A. disjunctum* (Hincks, 1877). However, the latter species has a fronto-anterior peristome, not a distal one and the orifice is triangular in section.

The absence of frontal filaments rules out the possibility that the present species belongs to *A. fibrosum*, a European species, recorded from warm to temperate seas in different parts of the world. It is not clear whether these records really concern the same species or whether they refer to cryptic species. *A. fibrosum* is the only other species of *Arachnidium* for which latero-basal crenulations attaching the zooids to the substrate have been recorded, although of different shape. The reference of the present species to

the northern hemisphere *A. hippothoides* should be rejected as well, the transition between the two encrusting portions being abrupt, the proximal part being much shorter and the distal part much more dilated in the latter species. The same holds for the *Arachnidium* cf. *hippithoides* of Jebram (1975) from the Kattegat. We have not observed interzooidal anastomoses, present in all other species, with the exception of the northern European *A. simplex*. The latter species has a long tubular peristome as well, although square in section. However the peristome of *A. simplex* is not situated distally and curving frontally and it is more elongated.

The present species is morphologically similar to *Arachnidium clavatum* (Hincks, 1877) when viewed from above. However, in the latter species the wide distal part is not cylindrical. *A. clavatum* has zooids with a wide middle portion shaped like a tennis racquet or with nearly parallel sides, its width gradually decreasing to its origin, preceded by a tubular proximal portion. The zooid is not bottle shaped as the peristome is not situated distally and continuous with the middle part of the zooid, but clearly demarcated and frontally superimposed on it. In this species the peristome is a simple papilla. *A. clavatum* is only known as an epibiont of ascidians. The zooids have 11 tentacles (Hayward, 1985).

A. lacourti is the only species in the genus with the distal region of the zooids detached from the substrate. This character, together with the bottle shape of the autozooids are diagnostic of the species.

Acknowledgements

The typical aspects of this species are hard to capture in a drawing. Therefore we wish to express our gratefulness to Mrs. M.-J. d'Hondt, who kindly proposed to make the figures for this publication.

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