

# First records of *Lamellaria latens* (Linnaeus, 1758) and *Velutina plicatilis* (O.F. Müller, 1776) (Caenogastropoda, Velutinidae) from the southern North Sea

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During the 2019 expedition of ‘Stichting Duik de Noordzee Schoon’ (DDNZS Foundation, or Dive to Clean the North Sea) several species were collected from ship wrecks that have not previously been recorded from the southern North Sea. A remarkably large specimen of *Lamellaria latens* (O.F. Müller, 1776) was found on the Queenford (40 km W of IJmuiden, The Netherlands) and juvenile specimens on the Ocean Prince and Inger Neilsen (Dogger Bank, United Kingdom). A juvenile specimen of *Velutina plicatilis* (O.F. Müller, 1776) was found on the St Luke (Dogger Bank, United Kingdom) and another on the U97 (105 km NW of Den Helder, The Netherlands). Over the last decade numerous species have been reported for the first time as autochthonous from wrecks in the Dutch part of the southern North Sea as a result of the DDNZS and other dive campaigns. They are part of the rich fauna living on hard substrates. As most are well known from the rocky shores of the British Isles it is likely that these species have previously been underreported due to sampling methods employed.

Key words: *Lamellaria latens*, *Velutina plicatilis*, southern North Sea.

## INTRODUCTION

The expeditions of ‘Duik de Noordzee Schoon’ (DDNZS Foundation or Dive to Clean the North Sea) with the objectives of studying animals and seaweeds on wrecks by removing fishing nets and other materials, and studying the removed materials onshore, has delivered interesting finds. Reports of molluscs found during earlier campaigns include Gittenberger et al. (2013), Bartelink et al. (2016),

Driessen (2016), van Leeuwen et al. (2016, 2017), van Leeuwen (2018), Raven & van Leeuwen (2019, 2020) and Dekkers et al. (2019).

In 2019 two expeditions were organised (Fig. 1), one to the Dogger Bank (July 2019) and one to the Borkum Rocks (September 2019). Underwater archaeologists participated in both expeditions and made a detailed report on the wrecks (van den Berg et al., 2019). A full report on the molluscs is given in Raven (2020). In this paper details are presented on a few rare finds amongst the numerous species of molluscs collected during the 2019 expeditions.

## MATERIAL AND METHODS

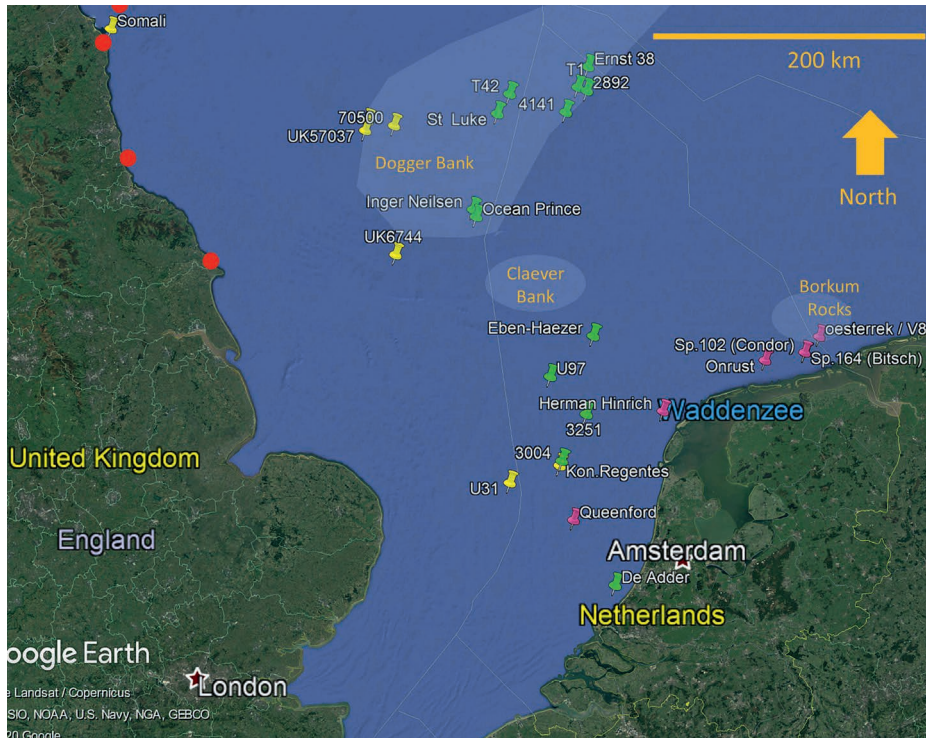
During the expeditions biologists recorded specimens, made photographs and collected a few species of large molluscs. At the end of the expedition the collected trash was brought to Scheveningen harbour where it was studied by another group of people to record all kinds of organisms. Large species may be recognised on location, but most species (especially the smaller ones) are recorded based on samples studied afterward. The material collected has been deposited in the personal collections of the participants. All photographs were made by the author.

Abbreviations: Naturalis = Naturalis Biodiversity Center, Leiden, The Netherlands; RMNH = Rijksmuseum van Natuurlijke Historie, now part of Naturalis; ZMA = Zoologisch Museum Amsterdam, now part of Naturalis.

## RESULTS

### *Lamellaria perspicua* (Linnaeus, 1758)

*Lamellaria perspicua* (Linnaeus, 1758) has been recorded alive from the English coast (NBN-Atlas, 2018) and from the Eastern Scheldt and Grevelingen (Zeeland, The Netherlands; de Bruyne et al., 2013: 215; van der Loos & Gmelig Meyling, 2019: 90-91), but the first autochthonous open sea



**Fig. 1.** Sample localities: yellow – 2018; green – Dogger Bank expedition July 2019; pink – Borkum Rocks expedition – September 2019; dark pink – the Sperrbrechers Bitsch & Condor are located close together and are marked by a single pin; red – records of *Lamellaria latens* (Linnaeus, 1758) from England (NBN-Atlas, 2018).

record from the southern North Sea is from the wreck of the Hanna Berit (Dutch sector; van Leeuwen, 2018).

During the 2019 Dogger Bank expedition specimens of *Lamellaria* were found at three localities, but all belong to a different species: *Lamellaria latens* (O.F. Müller, 1776). On the Queenford (Dutch sector) a single decomposing animal with a slightly crushed shell was found (Fig. 3) whereas on the Ocean Prince (Dogger Bank, UK sector) two fresh juveniles were found. On the Inger Neilsen (Dogger Bank, UK sector) a juvenile (Fig. 2) was collected with some remarkable wrinkles interpreted as damage caused by an external factor – the upper part of the edge of the aperture also broke off as can be seen from the older growth line.

The shell of *L. latens* has a much lower spire than in *L. perspicua*, in dorsal view it is clearly more elongate, in ventral view all previous whorls are visible, whereas the edge of the columella is broader. These characteristics are also present in juveniles.

*Lamellaria latens* occurs from Norway to the Mediterranean and around the British Isles (De Kluijver et al., 1996). Beached shells from Brittany (France) and the Cantabrian Sea (northern Spain) are typically only up to 3 mm wide (own records). Trigo et al. (2018: 281) record specimens up to 9.5 mm from Galicia (Spain) and in the United Kingdom it reaches a width of 9 mm (Graham, 1988: 318). The specimen from the Queenford is 10.1 mm wide, thus remarkably large.

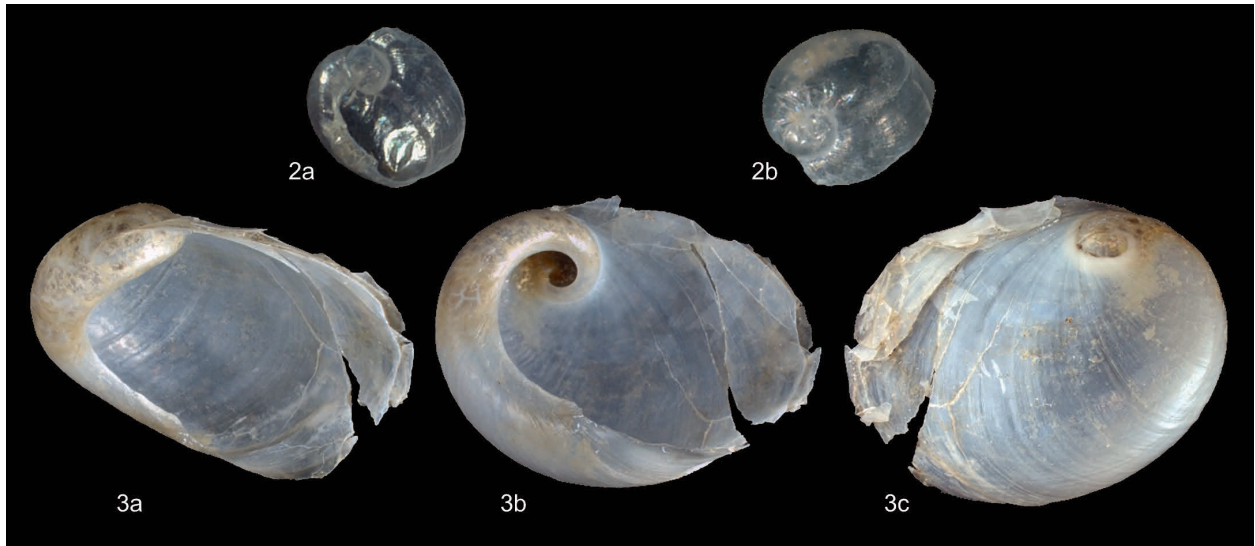
The nearest records from the United Kingdom are live specimens from a number of localities in Yorkshire on the

East coast of England (NBN-Atlas, 2018). In the Netherlands it is known only from floating objects washed onto beach (de Bruyne et al., 2013: 215). These are the first records of autochthonous occurrence in the southern North Sea, and in the Netherlands.

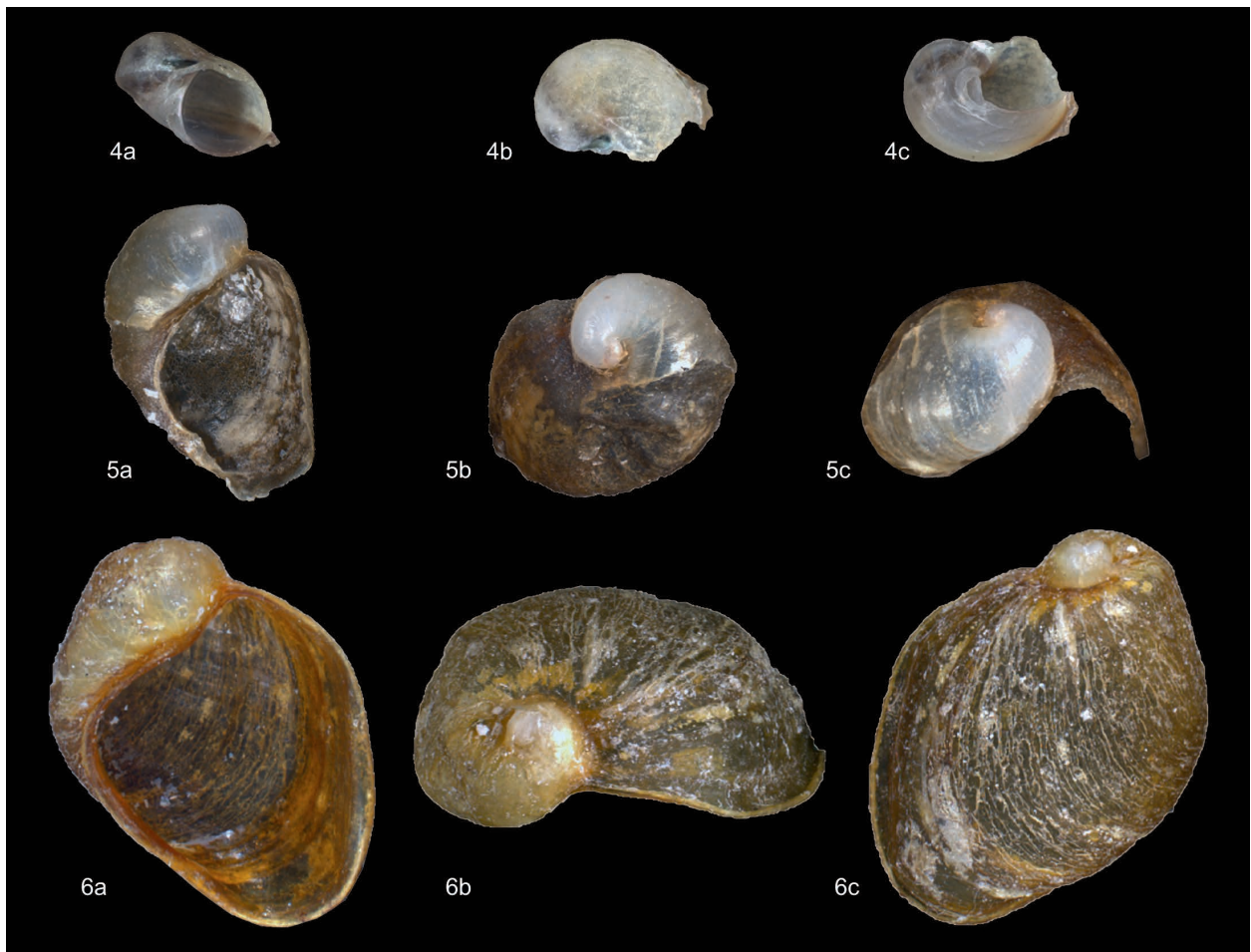
#### *Velutina plicatilis* (O.F. Müller, 1776)

At two localities (St Luke, UK sector (Han Raven) and U97, Dutch sector (Bart van Heugten)) a larval shell was found. The shells are small (U97 specimen: height 1.1 mm), consisting of one globose whorl with a diameter of 1.7 mm. Surface smooth, but with a clear fold near the base, on which a ridge forms after  $\frac{3}{4}$  whorl. The shell is white with cream coloured periostracum, the ridge slightly darker brown, marking the onset of the teleoconch. They were identified as *Velutina plicatilis* (O.F. Müller, 1776). Müller (1776) described his *Bulla plicatilis* concisely: “*tefta ovali pellucida, vertice depresso, apertura dilatata*” (oval, transparent shell, columella depressed, aperture dilatated). Other publications provide no further details (e.g. Graham, 1988: 320; Trigo et al., 2018: 278) and in none the larval shell is described.

The Naturalis Biodiversity Center (Leiden, The Netherlands) has a few lots from various localities in Europe, but these only comprise adult specimens. The visible part of the protoconch matches the juvenile specimens from the North Sea. The difference between protoconch and teleoconch is remarkable: whilst the former is relatively large and strong (as it is calcified) the latter consists of an only slightly calcified periostracum. It therefore is thin, translucent and



**Figs 2-3.** *Lamellaria latens* (Linnaeus, 1758). **Fig. 2.** Juvenile, Inger Neilsen, w 1.1 mm (leg. B. van Heugten; coll. H. Raven). **Fig. 3.** Adult, Queenford, w 10.1 mm (leg. & coll. H. Raven).



**Figs 4-6.** *Velutina plicatilis* (O.F. Müller, 1776). **Fig. 4.** Juvenile, U97, H 1.1 mm (leg. & coll. Han Raven). **Fig. 5.** Young specimen, Lagos, Algarve, Portugal, 27.ii.1990, H 4.7 mm (leg. D. Eisma, coll. ZMA.MOLL.340264). **Fig. 6.** Adult, Whitenhead bank, northern North Sea, vi.1972, 30 m depth, H 9.6 mm (leg. B. Zoder, coll. RMNH.MOLL.186959).



flexible, and desiccated specimens appear crumpled. Apart from growth lines some spiral ribs are present, the edge of the aperture is reflected.

The wear and tear and the rough edges of the specimen from the U97 (Fig. 4) suggest this specimen may not be a larval shell that settled and died on the wreck, but the protoconch of a larger shell, the fragile teleoconch of which broke off after death.

*Velutina plicatilis* is not known from the southern North Sea, but occurs in northern (circumboreal) waters reaching the northern North Sea (Fig. 6) and the West coast of Scotland (Graham, 1988: 320), with a single record from 1910 in Scarborough on the NE coast of England (Walls & Rimington, 1956: 55). The species is also known from the NW of the Iberian peninsula (Trigo et al., 2018: 278) and even occurs in southern Portugal (Fig. 5). The presence on two wrecks indicates larvae can reach the southern North Sea and that occasionally specimens grow up, but there is no evidence they reproduce there to establish a permanent presence. In future dives it is worthwhile to check for the presence of adult specimens.

## CONCLUSIONS

The discovery of species previously unknown from the southern North Sea urges the corroboration of previous records of closely related species, e.g. those of *Lamellaria perspicua*, especially if based on dive observations of living specimens.

The DDNZS expeditions deliver substantial new information on the fauna of hard substrates in the southern part of the North Sea. Although the recovered nets represent a very small volume of the fauna living on the wrecks, repeatedly species have been recovered that were unknown from the area or were considered rare. Some of those have now been reported from a large number of localities, e.g. *Modiolula phaseolina* (Philippi, 1844), *Pusillina inconspicua* (Alder, 1844), *Trivia arctica* (Pulteney, 1799), *Tritia incrassata* (Strøm, 1768), *Brachystomia eulimoides* (Hanley, 1844), and *Philine punctata* (J. Adams, 1800) (for details see Raven, 2020). Most of these are well known from the rocky shores of the British Isles (NBN-Atlas, 2018). The thousands of wrecks and increasing number of wind parks provide an excellent habitat for these species. It is likely they have previously been underreported as sampling focused on soft substrates and divers depend on visual observation and thus record only large species. Based on these data there is no evidence climate change plays a role, though it may help southern species from rocky habitats to also expand into the North Sea. Further sampling is therefore highly recommended.

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