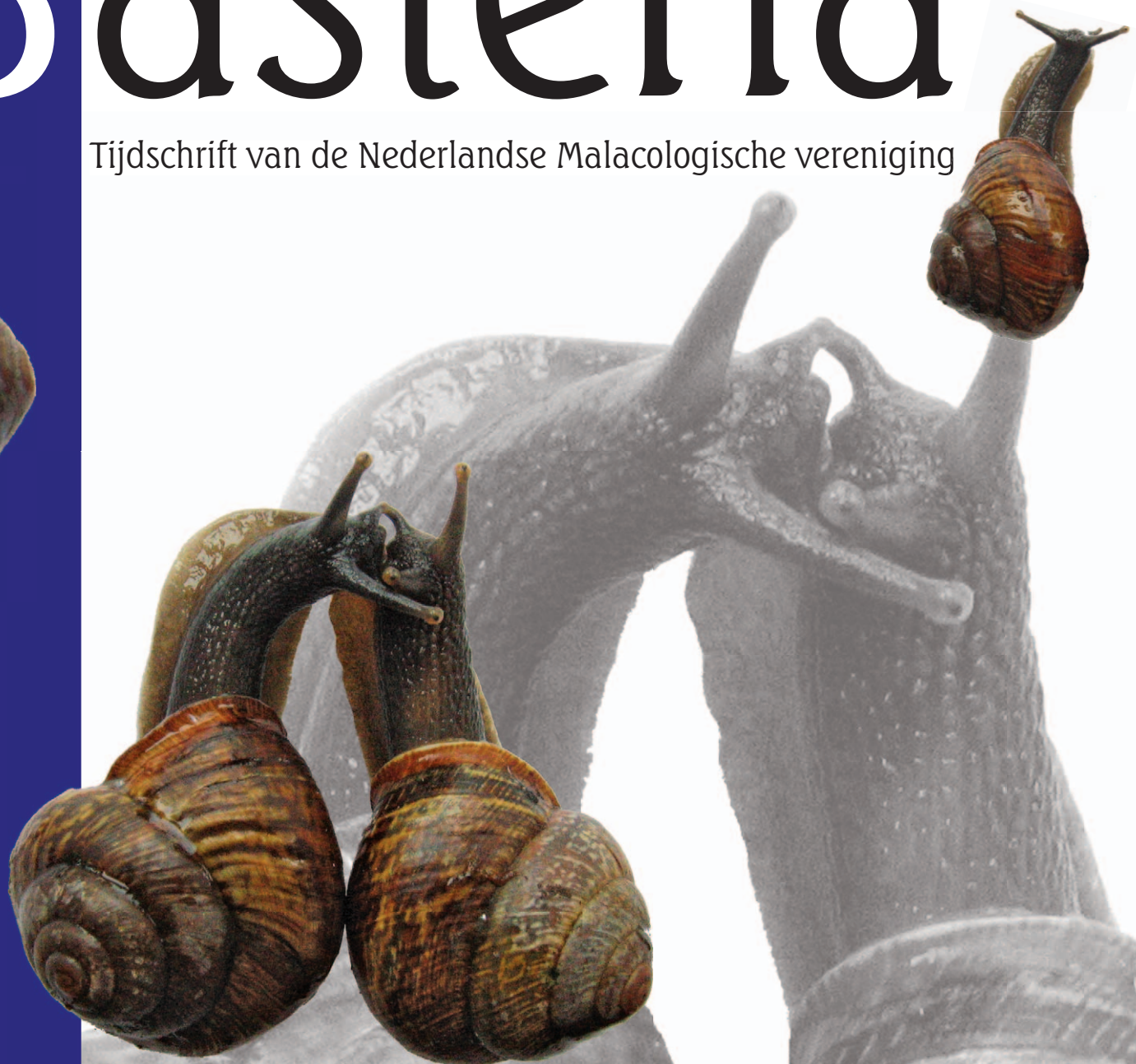


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First record of *Xandarovula patula* (Pennant, 1777) in the Dutch North Sea (Gastropoda, Ovulidae)

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The ovulid gastropod *Xandarovula patula* (Pennant, 1777) was found 14.vi.2011 on the soft coral *Alcyonium digitatum* Linnaeus, 1758 (Dead man's fingers) during a dive in the central North Sea on the wreck 'Jeanette Kristina' on the Dutch Dogger Bank. Later on additional specimens were found, sometimes with egg-capsules, on *A. digitatum* again, at two locations on the Dutch Cleaver Bank. The species has previously been recorded from the Atlantic coast of southern Spain to the western end of The English Channel, with scattered records from the west coasts of Ireland and Britain, as far north as the Orkney's. More recently it has been reported from most Irish coasts, several parts of the Scottish coast and also from some places in the North Sea. We here present the first record of *X. patula* for the Dutch part of the continental shelf. The specimens and their egg-capsules from both the Dogger Bank and Cleaver Bank, indicate that this species is autochthonous in the central North Sea.

Key words: *Xandarovula*, *Simnia patula*, Ovulidae, Ovulinae, Simniinae, Dogger Bank, Dutch fauna, Cleaver Bank

INTRODUCTION

For a long time, *Xandarovula patula* (Pennant, 1777) has been referred to as *Simnia patula* (e.g. Reijnen et al., 2010), regardless of the fact that Cate (1973) designated this species as the type species of a new genus *Xandarovula* Cate, 1973. Dolin & Ledon (2002), Fehse (2007) and Høisæter et al. (2011) even support the view that the genera *Xandarovula* and *Simnia* Risso, 1826, are not closely related, i.e. belong to different subfamilies. Fehse (2007) places *Simnia* in the Simniinae Schilder, 1925, and *Xandarovula* in the Ovulinae Fleming, 1828. This is not supported by the molecular phylogeny reconstruction published by Reijnen et al (2010: Fig. 3), however. According to that phylogeny '*Simnia patula*' belongs to a clade with species of the genera *Cyphoma* Röding, 1798, *Simnialena* Cate, 1973, *Cymbovula* Cate, 1973, and *Neosimnia* Fischer, 1884, all of which belong to the Simniinae according to Fehse (2007). Apparently, *Xandarovula patula* should not be classified with the clade of the Ovulinae, to which the genera *Ovula* Bruguière, 1789, *Phenacovolva* Iredale, 1930, and *Volva* Röding, 1798, belong (after Fehse, 2007). Referring to the results of the molecular analyses of Reijnen et al.

(2010: Fig. 3), we here conclude that *Xandarovula patula* belongs to the Simniinae instead of the Ovulinae.

Xandarovula patula used to be common along the coasts of Ireland, south-western England, and the Atlantic coast of France (Fretter & Graham, 1981). In recent years its distribution extends throughout the North Sea, from the east coast of England to Sweden, Norway and Denmark (Høisæter et al., 2011; Rowley, 2008). Here we report the first sightings on the Dutch part of the continental shelf and describe how this species appears to be increasingly common in the North Sea, since its first record in 2003, along the east coast of England and in Norway.

MATERIAL AND METHODS

The specimens of *Xandarovula patula* were observed during an expedition to the Dogger Bank and the Cleaver bank in June 2011 with the marine vessel cdt Fourcault. During this expedition, shipwreck sites, natural hard substrates and the surrounding soft bottoms were investigated by scuba-divers. Twelve dives were made in total, at depths between 22.2 and 43 meters, with between 30 and 48 minutes dive time. Some snails were photographed in situ (Figs 2-3) and five specimens, with a size of 20.0, 19.5, 19.0, 18.3 and 17.3 mm, respectively, were collected for further determination and preservation. The specimens and egg-capsules that were collected were preserved on 96% ethanol. They will be deposited in the collection of the NCB Naturalis in Leiden, The Netherlands.

SYSTEMATICS

Family *Ovulidae* Fleming, 1828
Subfamily *Simniinae* Schilder, 1925

Xandarovula patula (Pennant, 1777)

Bulla patula Pennant, 1777
Simnia patula auct.
NL: Stiefelslak

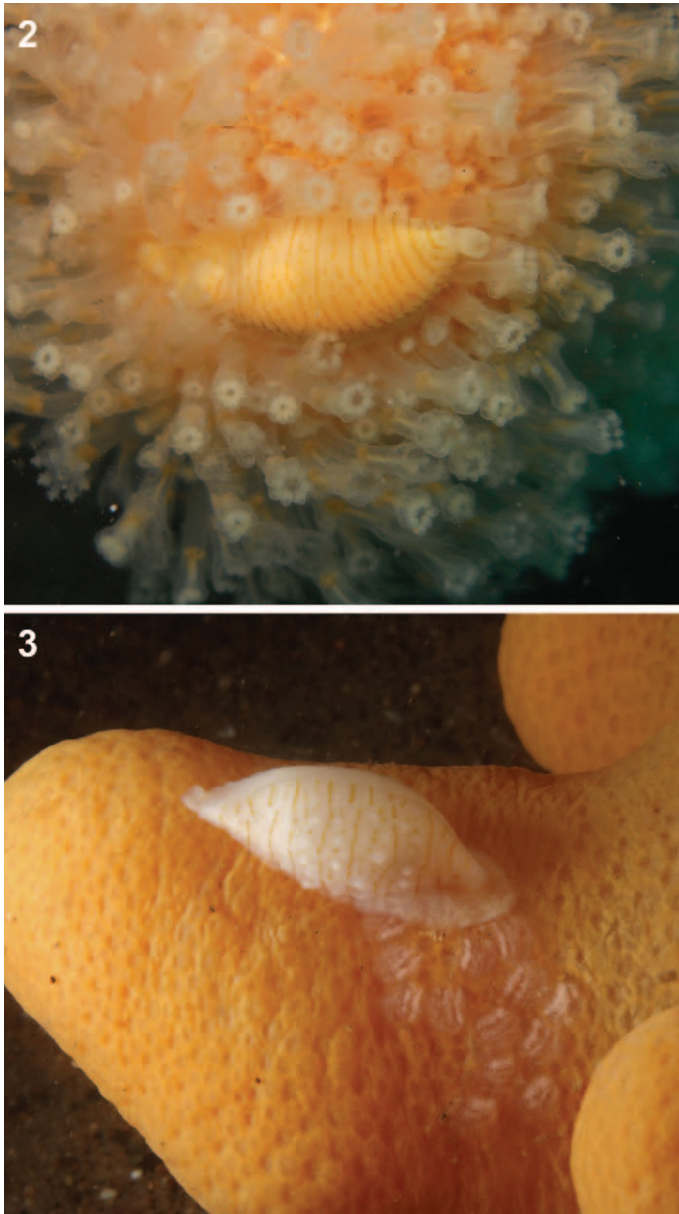
Diagnosis. — The specimens were identified as *Xandarovula*



Fig. 1. Records of *Xandarovula patula* in the North Sea (Rowley, 2008; Høisæter et al., 2011; Staal, 2005; Taekema, 2005). The dots indicate the records in The Netherlands; the circles represent records elsewhere in the North Sea.

patula on the basis of their white shell and the typical colour pattern of yellowish lines and dots on the mantle (Figs 2-3). This identification is supported by the fact that *X. patula* is known to be an obligate predator of cnidarians among which *Alcyonium digitatum* Linnaeus, 1758 (Høisæter et al., 2011), on which all the specimens were found.

Distribution (Table 1; Fig. 1). — *Xandarovula patula* is distributed throughout the north-eastern Atlantic waters, where it is most commonly found along the coasts of Ireland and south-western England, with scattered records from the western British coasts and the Atlantic coast of France (Fretter & Graham, 1981). In recent years, the species was also



Figs 2-3. *Xandarovula patula* (Pennant, 1777). 2, The first specimen of *Xandarovula patula*, discovered 14.vi.2011 in The Netherlands, crawling on the soft coral *Alcyonium digitatum*, which grew on the wreck 'Jeanette Kristina' on the Dutch part of the continental shelf. Photograph by N. Schrieken. 3, *Xandarovula patula* on *Alcyonium digitatum* with egg-capsules, Dutch Cleaver Bank, 16.vi.2011. Photograph by A. Gittenberger.

recorded from various places in the North Sea (Fig. 1), i.e. the coasts of England, Sweden, Norway and Denmark (Høisæter et al., 2011; Rowley, 2008).

Reijnen et al. (2010) mention *X. patula* specimens from the Dutch continental shelf, i.e. the Cleaver Bank. However, by checking the geographical coordinates of the location where their specimens were collected, it turned out that this was in the UK part of the continental shelf (locations 4-5 in Fig. 1). Another record of this species in allegedly Dutch waters was mentioned on the website of the ANEMOON Foundation (www.anemoon.org). This refers to a questionable sighting, however, as the exact geographical coordinates were unknown. The specimen was found 80 miles northeast of Den Helder, which is actually in German waters.

Here we present the first, confirmed records of *X. patula* in The Netherlands. During the expedition we found one specimen of *X. patula* on the wreck 'Jeanette Kristina' on the Dutch Dogger Bank (location 1 in Fig. 1: 055° 17.116' N / 3° 26.972' E), and more specimens at two sites on the Dutch Cleaver Bank (locations 2-3 in Fig. 1: 054° 0.219' N / 3° 10.486' E and 054° 2.475' N / 3° 16.979' E).

Habitat. — Like all members of the family Ovulidae, *Xandarovula patula* is regarded as an obligate predator of various cnidarians, like *Alcyonium digitatum*, *Eunicella verrucosa* and *Tubularia indivisa* (Fretter, 1951; Fretter & Graham, 1981; Høisæter et al., 2011; Rowley, 2008). Of these hosts only *A. digitatum* and *T. indivisa* are well-known from Dutch waters. During the expedition *X. patula* was found between 30.2 and 33.8 meter depth, exclusively on the soft coral species *A. digitatum* (Dead man's fingers). Although only one specimen was found on the Dutch Dogger Bank, the species was found to be common on the Dutch Cleaver Bank where several specimens were found, some of which laying egg-capsules (Fig. 3).

Dutch common name etymology. — We here propose the Dutch common name "Stiefelslak", which refers to Ben Stiefelhagen, who initiated the Dogger Bank expedition. Two Dutch common names for the species groups to which *Xandarovula patula* belongs, are "gepocheerd ei" and "gorgoonslakje". These names refer to the resemblance of the shell to a poached egg, and the favourite food of many of the ovulid species, i.e. gorgonians.

#	Date	Depth (m)	Location	Geographical coordinates	Country
1	6/14/11	30.2	Wreck Jeanette Kristina	055° 17.116' N / 3° 26.972' E	Netherlands
2	6/16/11	32.9	Cleaver Bank	054° 0.219' N / 3° 10.486' E	Netherlands
3	6/16/11	33.8	Cleaver Bank	054° 2.475' N / 3° 16.979' E	Netherlands
4	2/20/05	-	Cleaver Bank	054° 8.000' N / 2° 40.000' E	England
5	9/19/03	35	Dogger Bank	054° 20.000' N / 2° 20.000' E	England
6	-	-	Eastcoast England	054° 34.000' N / 0° 47.000' E	England
7	-	-	Eastcoast England	055° 0.000' N / 1° 18.000' E	England
8	2005	65	Denmark	057° 10.000' N / 7° 50.000' E	Denmark
9	8/1/09	20-55	Swedish Skagerrak	058° 21.000' N / 11° 12.000' E	Sweden
10	5/1/10	-	West Norway	060° 27.000' N / 4° 53.000' E	Norway

Table 1. Records of *Xandarovula patula* in the North Sea (Høisæter et al., 2011; Rowley, 2008).

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