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Phaseolus guilonardi n. sp., a new species of Phaseolidae (Bivalvia: Protobranchia) from the southern North Sea Basin

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Phaseolus guilonardi n. sp. is described from the southern North Sea Basin; the species is considered Recent and is known from beach drift and Holocene deposits in the SW. part of The Netherlands, a boring in the North Sea off the province of Noord-Holland, The Netherlands, and dredgings off Belgium and N. France.

Key words: Bivalvia, Protobranchia, Phaseolidae, *Phaseolus*, taxonomy, distribution, zoogeography, North Sea.

A few years ago De Bruyne, De Graaf & Hoeksema (1987) recorded a number of marine molluscs new for The Netherlands, which were found washed ashore at the beaches of Ouddorp (Goeree-Overflakkee, province of Zuid-Holland). One of the species was tentatively identified as *Phaseolus* cf. *tumidulus* Monterosato, 1880, awaiting the possibility to compare the shells with the type material of *P. tumidulus* in the Monterosato collection (De Bruyne et al., 1987: 71-72).

Recently Mrs. A. Gaglini gained access to the Monterosato collection. She is studying this collection and helped generously by sending photographs of syntypes of *P. tumidulus* and by giving valuable additional information (see also Gaglini, 1992: 168, 170 figs. 181-182, 171). On my request specimens of this species from the Mediterranean were kindly sent to me by Mr. G. di Paco and by Messrs. C. Bogi, M. Coppini and A. Margelli. The *Phaseolus* species from Ouddorp appears to be different and will be described as new to science in the present paper.

Abbreviations: RGD = Rijks Geologische Dienst, Haarlem; USNM = (United States) National Museum of Natural History, Washington; ZMA = Zoölogisch Museum, Universiteit van Amsterdam; NH = province of Noord-Holland, ZH = province of Zuid-Holland, and Z = province of Zeeland, The Netherlands.

Phaseolus guilonardi n. sp.
(figs. 1-4)

Nuculacea gen. et sp. indet. — Raven, 1979: 26, 30, 44-45 fig. 2a-b.
Anadarinae — Meijer, 1984: 149.
Phaseolus cf. *tumidulus* — De Bruyne, De Graaf & Hoeksema, 1987: 71-72, 74.

Description. — Shell minute, fragile, transparent, elongate elliptical, equivalve, slightly inequilateral.

Valves rather convex, closed along all sides. Umbones orthogyrate, broad, not prominent; beaks just behind the midline. All margins evenly curved, the posterior margin more strongly than the anterior margin. Lunule, escutcheon and nymph absent.

Each valve: hinge plate long, narrow, weak, with an interval under the umbo (probably the space for the internal ligament); anterior part of hinge plate almost twice as long as posterior part; no cardinal teeth; 3-4 anterior and 3-4 posterior lateral teeth, which are weak, irregular, oblique, lamelliform and are arranged more or less like roofing-tiles; the most proximal two teeth very weak (more or less thread-like); the two middle anterior teeth, as well as the two middle posterior ones, mostly connected by a low buttress.

Sculpture: generally an indistinct impression near margin of prodissoconch, growth lines and usually some concentric threads near the ventral margin. Muscular impressions, as well as pallial line, not clearly detectable.

Soft parts unknown.

The shells studied are 0.40-0.57 mm high, 0.58-0.80 mm long.

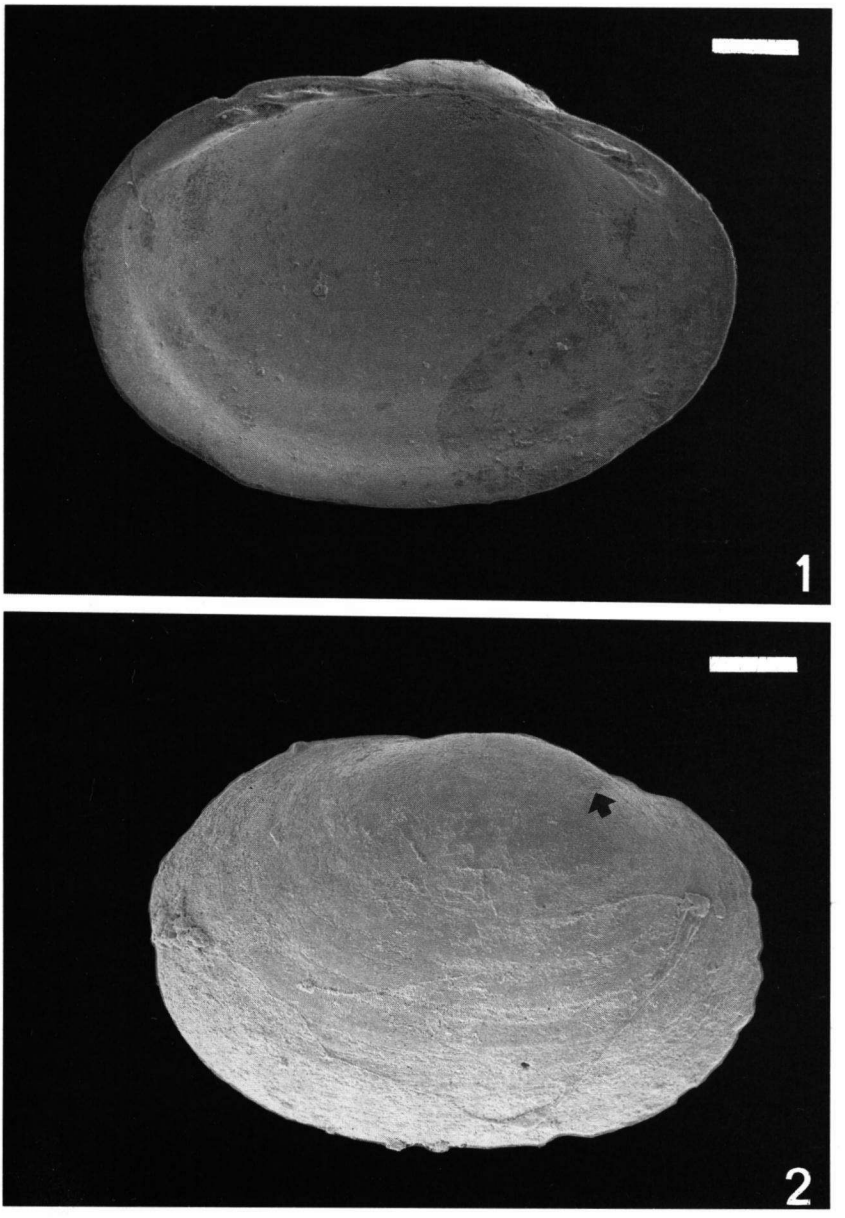
Type material. — Holotype: 1 right valve (fig. 1, ZMA Moll. 393031, leg. D.F. Hoeksema), NW. beach of Ouddorp, ZH, 5.III.1979. Paratypes: 2 left valves (ZMA Moll. 393032, leg. D.F. Hoeksema), NW. beach of Ouddorp, ZH, 7.V.1980 (fig. 2) and 5.III.1979; 1 left valve (figs. 3-4, ZMA Moll. 393033, leg. R. van Outryve), SE. Kwinte Bank, off Belgium, III.1988; 2 left valves and 2 right valves (ZMA Moll. 393034, leg. R. van Outryve), SE. Kwinte Bank, off Belgium, III.1988.

Additional material examined. — 1 valve, Holocene deposits, boring North Sea, off NH, 52°34′58″N 4°34′27″E, RGD; 7 valves, Holocene deposits, borings at Leyduin, SW. of Haarlem, NH, RGD; 1 valve, Holocene (Subboreal, Calais-IVb) deposits, Stevenshofjespolder, W. of Leiden, ZH, RGD (Meijer, 1984: 149, as Anadarinae); 1 valve, Holocene (Subboreal) deposits, exposure at Duivenvoorde, Leidschendam, ZH, coll. J.G.M. Raven (Raven, 1979: 26, 30, 44-45 fig. 2a-b, as Nuculacea gen. et sp. indet.); 1 valve, Holocene (Subboreal, Calais-IV) deposits, boring at Leidschendam, ZH, RGD; 2 valves, Holocene (Subboreal, Calais-III) deposits, excavation near Rijswijk, ZH, RGD; 2 valves, Holocene deposits, Portlandpolder, S. of Rotterdam, ZH, RGD; 3 valves, NW. beach of Ouddorp, ZH, 5.IX.1979, coll. D.F. Hoeksema (De Bruyne et al., 1987: 71-72, 74, as *P.* cf. *tumidulus*); 2 valves, W. beach of Ouddorp, ZH, 14-15.IV.1984, coll. R.H. de Bruyne (De Bruyne et al., 1987: 71-72, 74, as *P.* cf. *tumidulus*); 4 valves, Holocene (Subatlantic) deposits, excavation on the island of Neeltje Jans, Z, RGD; 24 valves, 1 juvenile complete specimen, SE. Kwinte Bank, North Sea off Belgium, III.1988, coll. R. van Outryve; 14 valves, 1 juvenile complete specimen, North Sea off Dunkirk (from gully leading to harbour), N. France, 1988, coll. R. van Outryve.

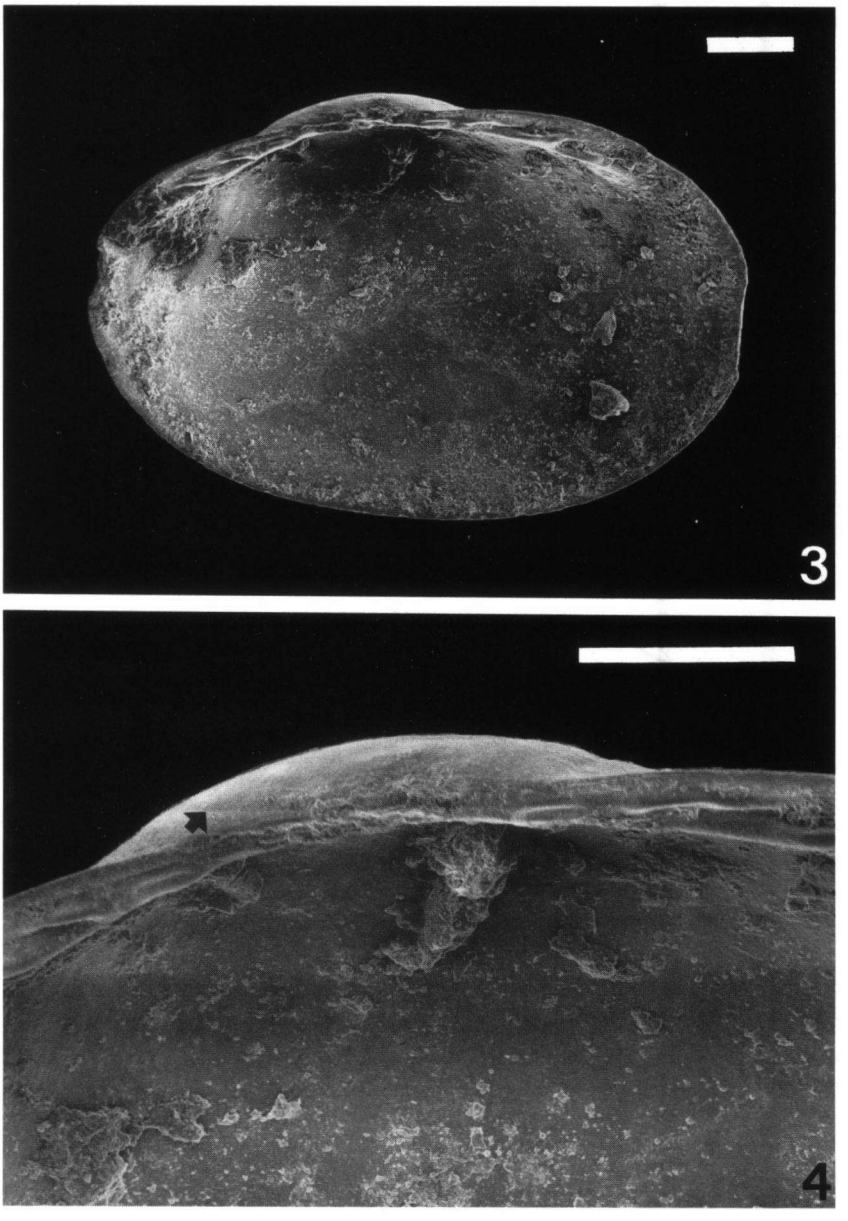
Discussion. — The present species fits best in *Phaseolus* Seguenza, 1877, ex Jeffreys ms. (not Monterosato, 1875, ex Jeffreys ms., see also Warén, 1980: 12), by Allen & Hannah (1986: 231) redefined as follows: "Shell very small, oval, equilateral or almost so, rounded anteriorly, slightly angulate posteriorly, transparent, glossy; 3-4 lamelliform hinge teeth on each side of umbo, form of gut as yet unknown." The correct family name is Phaseolidae Scarlato & Starobogatov, 1971 (Scarlato & Starobogatov, 1985: 17, 33; Maxwell, 1988: 90, 95).

Combining Bowden & Heppell (1966: 101, 113), Allen & Sanders (1973), and Sabelli, Giannuzzi-Savelli & Bedulli (1990: 275), it becomes clear that so far only two *Phaseolus* species were known: *P. ovatus* Seguenza, 1877, ex Jeffreys ms. and *P. tumidulus* (Monterosato, 1880).

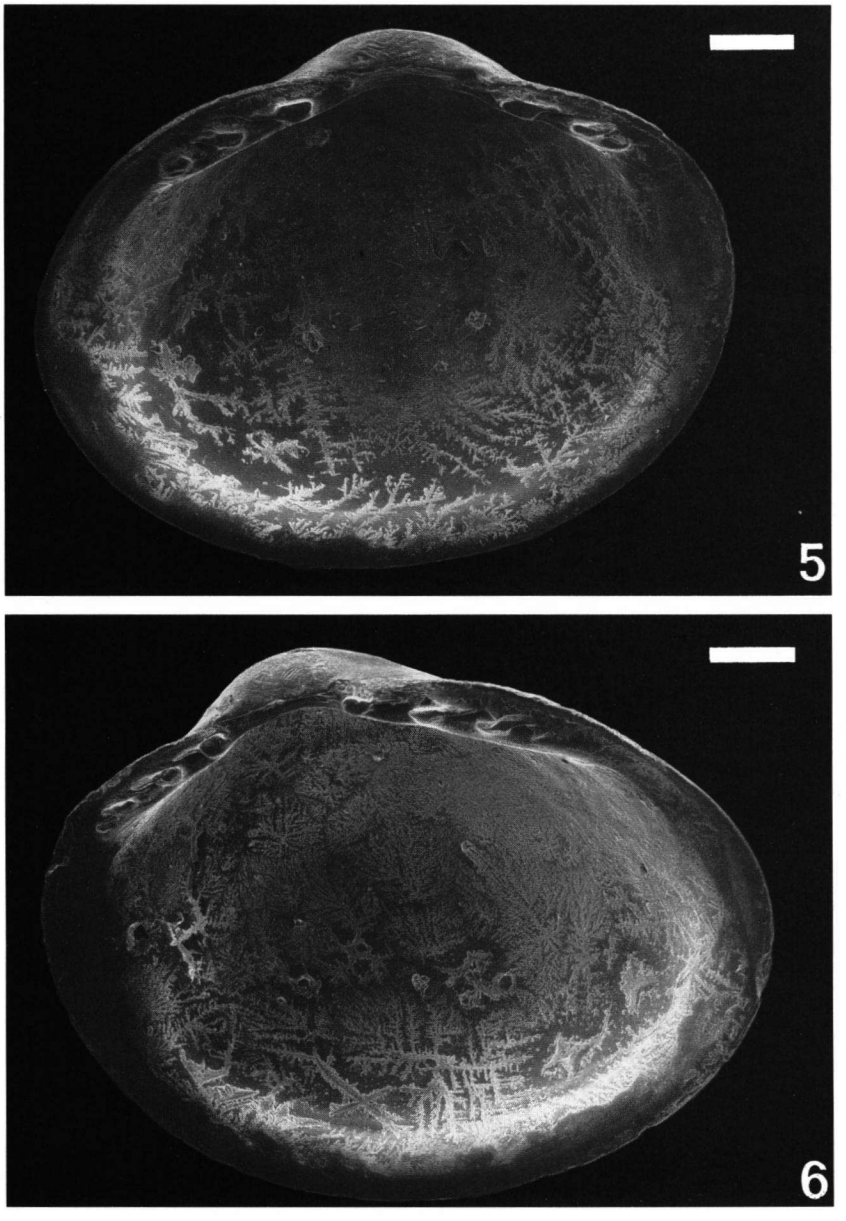
De Bruyne et al. (1987: 72) pointed out some important differences between *P. guilonardi* n. sp. (as "*P. tumidulus*") and *P. ovatus*; see for *P. ovatus* also Allen & Sanders, 1973: 266 fig. 2, and Gaglini, 1992: 152 figs. 153-154, 167-168.



Figs. 1-2. *Phaseolus guilonardi* n. sp., NW. beach of Ouddorp, province of Zuid-Holland, The Netherlands; scales 0.10 mm. 1, Holotype, right valve (ZMA Moll. 393031), 5.III.1979; 2, paratype, left valve (ZMA Moll. 393032), 7.V.1980, the arrow indicates the demarcation between prodissoconch and postlarval shell.



Figs. 3-4. *Phaseolus guilonardi* n. sp., paratype, left valve (ZMA Moll. 393033), SE. Kwinte Bank, off Belgium, III.1988; scales 0.10 mm. In fig. 4 the arrow indicates the demarcation between prodissoconch and postlarval shell



Figs. 5-6. *Phaseolus tumidulus* (Monterosato, 1880), SW. of the island of Capraia, Toscano, Italy, V-VI.1985, coll D.F. Hoeksema, leg. G. di Paco; scales 0.10 mm. 5, Left valve; 6, right valve.

P. guilonardi differs from *P. tumidulus* (figs. 5-6; Bogi et al., 1986: 27 fig., as "*P. ovatus*"; Gaglini, 1992: 168, 170 figs. 181-182, 171) in being less solid and more elongate. The umbones are less prominent. The beaks are situated behind, instead of before, the midline. The differences between the hinges are most conspicuous. The hinge of *P. guilonardi* is weak, the teeth are weak and more or less evenly lamelliform. The hinge of *P. tumidulus* is solid; the inner part of the teeth is large and protruding, but the outer part is slender and less prominent (seen from the inside, the teeth look like tadpoles).

Distribution. — See fig. 7.

As most of the shells are transparent and fresh-looking, *P. guilonardi* is considered a Recent species. It is not known from Pleistocene or older deposits. In the Holocene

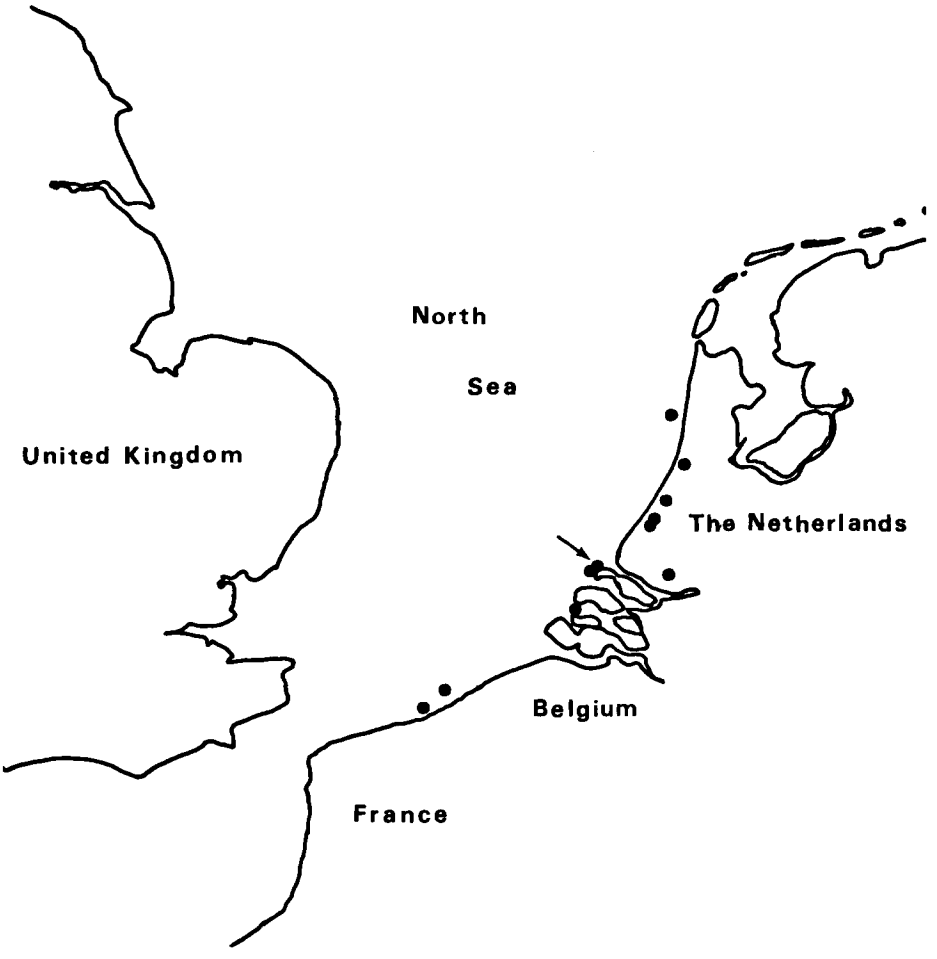


Fig. 7. The distribution of *Phaseolus guilonardi* n. sp.; the sites are mentioned in the text; the arrow points to the type locality.

deposits on the island of Neeltje Jans it was found together with young shells of *Petricola pholadiformis* Lamarck, 1818 (Meijer, 1991 in litt.), an immigrant bivalve occurring in Dutch waters only after about 1900 (Van Benthem Jutting, 1943: 279; Wouters, 1993: 11-12).

Unlike *P. ovatus* and *P. tumidulus* (Monterosato, 1875: 11), *P. guilonardi* is only known from relatively shallow waters.

Remarks. — De Bruyne et al. (1987: 72) mentioned two lateral teeth on each side in each valve of *P. guilonardi*, but that incorrect observation is due to the lack of the right equipment.

The outer side of the teeth of *P. guilonardi* and *P. tumidulus* is directed outwards (the teeth are more or less arranged like roofing-tiles), whereas the outer side of the teeth of *P. ovatus* is directed inwards.

Dr. J.J. van Aartsen (1990, in litt.) informed me that the Jeffreys collection in the USNM contains a sample with a single valve very much resembling the specimens from Ouddorp; this sample, USNM no. 197407, is labelled '*Phaseolus ovatus* Jeffr./Palermo/Sicily/Monterosato [J.C.]' (see also Warén, 1980: 41), but according to Van Aartsen the valve certainly does not belong to *P. ovatus*. Dr. J.A. Allen (1991, in litt.) sent to me, independently of Van Aartsen, the same information; he enclosed a rough drawing of the specimen. In my opinion this drawing makes clear that sample USNM no. 197407 almost certainly contains a valve of *P. tumidulus*. As the original labels of the Jeffreys collection are lost, it is impossible to determine if and how Monterosato labelled the specimen (Warén, 1991 in litt.).

Etymology. — The new species is named after Mr. W.F.A. Guilonard, who built up an outstanding collection of small molluscs from Ouddorp (now in my possession) and drew my attention to this interesting unknown bivalve.

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SAMENVATTING

Phaseolus guilonardi n. sp., een nieuwe soort uit de familie Phaseolidae (Bivalvia: Protobranchia) uit het zuidelijke deel van het Noordzeebekken.

Op grond van recente informatie over *Phaseolus tumidulus* (Monterosato, 1880) (Gaglini, 1992: 168, 170 fig. 181-182, 171; dit artikel fig. 5-6) kon bepaald worden dat de schelpjes die door De Bruyne et al. (1987: 71-72) voorlopig *Phaseolus* cf. *tumidulus* werden genoemd tot een nog onbeschreven soort horen. De nieuwe soort wordt beschreven onder de naam *Phaseolus guilonardi* n. sp.

P. guilonardi (fign. 1-4) wordt als recent beschouwd. De soort is alleen bekend van relatief ondiep water en is gevonden in strandmateriaal en Holocene afzettingen in ZW.-Nederland, in Holoceen materiaal van een boring voor de kust van Noord-Holland en in materiaal van zandopzuigingen voor de kust van België en N.-Frankrijk (fig. 7).