

**Marine molluscs new for The Netherlands, washed ashore at the beaches
of Ouddorp (Goeree-Overflakkee, Province of Zuid-Holland),
with some remarks on the occurrence of *Altenaeum dawsoni* (Jeffreys, 1864)**

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An investigation of small shells from the beach of Ouddorp on the island of Goeree-Overflakkee has yielded a number of species new to The Netherlands. Twenty-five species are enumerated and occasionally discussed in detail. According to potential derivation the species may be divided into four groups. These are (1) Lusitanian species (species having recently migrated from the south, nos. 2, 5-8, 11-15, 20, 21, possibly also 1 and 10), (2) Boreal species (species having migrated southward during a cold period, nos. 3, 18, 23, possibly also 1), (3) species which reached our coast as free-swimming larvae (possibly nos. 10 and 18), (4) Eocene species reworked from marine deposits (nos. 4, 9, 16, 17, 19, 22, 24, 25). *Altenaeum dawsoni* (no. 23) is considered to belong to group 2; this is in contrast to Spink (1973) and Van Dalsum (1986), who hold the opinion that the species had migrated northward into the North Sea.

Key words: Gastropoda Prosobranchia, Bivalvia, Condylordiidae, *Altenaeum*, zoogeography, Holocene, Eocene, The Netherlands.

When investigating small shell material sampled from the beaches of Ouddorp, a number of species was recognized as new for our country, i.e. not included in the list of Janssen (1975). These species are enumerated below. In addition there are some remarks on the possible origin of the shells.

De Bruyne and De Graaf collected on the beach west of Ouddorp in the years 1984-1985; these shells have been deposited in the collection of the first author. The other shells examined are kept in the collection of the third author and have been taken from the north-western beach of Ouddorp by Mr. W.F.A. Guilonard in the years 1974-1979. The methods used to sort out the shell sand have been described in a previous paper (De Bruyne et al., 1985). An annotated list of all interesting species found will be published in a supplementary paper in the *Correspondentieblad van de Nederlandse Malacologische Vereniging*.

The names of the species are followed by references to figures and descriptions in easily accessible literature; abbreviations: AMG = Van Aartsen et al. (1984); CP = Cossmann & Pissarro (1904-1906, 1910-1913); FG = Fretter & Graham (1976-1982);

GB = Glibert (1933, 1936, 1985); HW = Hubendick & Warén (1969-1976); RM = Rolan Mosquera (1983); TB = Tebble (1966). The numbers of specimens in the various collections are shown; abbreviations: DeBr = De Bruyne, Hoek = Hoeksema. During our investigation many of our newly found molluscs also became known, or even appeared to be already known, from the beaches of Het Zwin (west of Cadzand), De Kaloot (north-west of Borssele), Ritthem and Westkapelle-Domburg, all in the Province of Zeeland. All material known from Het Zwin has been summarized in a preliminary check-list (Van Nieulande, 1986). These records from Zeeland are added to our data of Ouddorp. If relevant the recent distribution of a species is also given.

1. *Scissurella crispata* Fleming, 1828.

FG, 1976: 2-4, figs 1-2; HW, 1974: 25-27, fig. 205; RM: 64, fig. 2.

A circumpolar species. In Europe *S. crispata* occurs from the coasts of Norway south to the Mediterranean. Except for the Orkneys, Shetlands, the Norwegian and Swedish coasts of the Skagerrak, it is absent from the North Sea and from the Channel (FG, 1976: 3).

Hoek: 2 juvenile specimens.

Two protoconchs, each with about $\frac{1}{8}$ whorl of the teleoconch, have been found. Another species, *Scissurella costata* D'Orbigny, 1823, is a well-known fossil in Zeeland (origin unknown). Our shells can easily be distinguished from specimens of that species, as the ribs on the teleoconch of our shells are finer and more close-set than those of *S. costata*.

2. *Dikoleps pusilla* (Jeffreys, 1847).

AMG: 12, 106, fig. 39; FG, 1977: 84-85, figs 62-63 (as *Skenea nitens*); RM: 101, fig. 41 (as *Tubiola nitens*).

From Norway to the Mediterranean. Except for Norway this species is not known from continental North Sea coasts; it has been recorded from British coasts from Scarborough northwards. It is also unknown in the eastern Channel (FG, 1977: 85).

DeBr: 11 specimens, Hoek: 2 specimens.

Het Zwin: 4 specimens (1 shell shown to us by Mr. Th.W. de Boer; 3 young specimens recorded as *S. nitens* by De Bruyne & Wesselingh, 1984).

Van Aartsen et al. (1984) have elucidated the differences between the shells and the distribution of the species *D. pusilla* and *D. nitens* (Philippi, 1844). *D. nitens* appears to be restricted to the Mediterranean (AMG: 12).

3. *Moelleria costulata* (Möller, 1842).

FG, 1977: 93-95, figs 71-72; HW, 1975: 36-38, fig. 257.

A widespread Arctic species extending to lower latitudes at greater depths. In Europe it has been found on the Norwegian coast as far south as Bergen. Jeffreys recorded it alive from off Ireland. Further south it is found in deep water of the Bay of Biscay (FG, 1977: 93-94). Recently the species has been discovered in deep water of the Mediterranean (Bogi & Nofroni, 1986: 155).

DeBr: 1 juvenile specimen.

Het Zwin: 8 specimens (Van Nieulande, 1986).

4. *Tinostoma rotellaeforme* Deshayes, 1863.

CP, 1910-1913: fig. 16-3; GB, 1933: 7-8, fig. 1; GB, 1985: 317 (as *Tinostoma rotellaeforme* (Deshayes 1864)); Gougerot, 1967: 39-44, fig. 10.

DeBr: 1 specimen.

A thick pad of callus completely blocks the umbilical opening. The shell looks somewhat like *Tharsiella depressa* (Granata, 1876), but the extension of the callus to the base of the shell and the remnants of spiral and radial sculpture show that our shell does not belong to *Tharsiella* (cf. Oliverio, 1983: 8; Thiele, 1929: 61).

5. *Omalogyra atomus* (Philippi, 1841).

AMG: 16, 108, fig. 60; FG, 1978b: 221-223, figs 185-186; Gaglini et al., 1978: 209, fig. 1; HW, 1971 45-46, figs 96-98 (as *Homalogyra atomus*); RM: 126-127, fig. 70.

From New England, Greenland and Iceland to the Mediterranean and Azores. Absent from the eastern shores of the North Sea and from the Baltic (FG, 1978b: 222).

DeBr: 11 specimens, Hoek: 39 specimens.

Het Zwin: 2 juvenile specimens (De Bruyne); Westkapelle: 1 specimen (coll. De Vreede, Rijks Geologische Dienst, Haarlem).

6. *Ammonicera fischeriana* (Monterosato, 1869).

AMG: 16, 108, fig. 62; Gaglini et al., 1978: 213, fig. 5; RM: 127, fig. 71.

Probably about the same distribution as that of *Ammonicera rota* (Forbes & Hanley, 1850), i.e. from Norway to the Mediterranean. It is absent from the Danish shores of the Kattegat and from the continental coasts of the North Sea (cf. FG, 1978b: 224).

DeBr: 2 specimens, Hoek: 1 young specimen.

The three shells of *A. fischeriana* were found among dozens of shells of *A. rota*. They are uniformly brownish white, lack axial ribs and merely show some growth lines and a spiral groove on the upper side and the lower side of the protoconch. Whether or not *A. fischeriana* and *A. rota* are different species, is still not clear (AMG: 16).

7. *Cingula intersecta* (Wood, 1857).

AMG: 20, 110, fig. 79; FG, 1978b: 156-158, figs 133-134 (as *Cingula alderi*); HW, 1971: 43-44, figs 88-89 (as *C. alderi*); RM: 132, fig. 78 (as *Putilla alderi*); Verduin, 1984: 58-60, 76, fig. 23.

Atlantic coasts of Europe and Morocco, Mediterranean, Madeira (Verduin, 1984: 58). It is absent from the eastern shores of the North Sea and from the Baltic (FG, 1978b: 157).

DeBr: 22 specimens.

Het Zwin: 4 specimens (De Bruyne).

Verduin (1984) pointed out that *Cingula intersecta* is the correct name for this rather common European species.

8. *Parastrophia asturiana* De Folin, 1870.

Van Aartsen & Fehr-De Wal, 1975; Panetta, 1980: 279-280, 292-293, 296-297, pl. I fig. 1, pl. III fig. 3 (as *Parastrophia mediterranea*); RM: 171, fig. 126.

From S.W. France to the Mediterranean (Van Aartsen & Fehr-de Wal, 1975).
DeBr: 2 juvenile specimens, Hoek: 6 juvenile specimens.
Only protoconchs have been found, one only with a small part of the teleoconch.

9. ? *Semibittium* cf. *cancellatum* (Lamarck, 1804).

CP, 1910-1913: fig. 142-12; GB, 1933: 52-53, pl. III fig. 8.

DeBr: 1 specimen, 1 fragment.

Het Zwin: 3 badly preserved specimens (Van Nieulande, 1986).

10. *Metaxia metaxa* (Delle Chiaje, 1828).

AMG: 30, 115, fig. 135; FG, 1982: 369-371, figs 260-261 (as *Cerithiopsis metaxa*); Thiriot Quiévreux & Rodriguez Babio, 1975: 142, pl. V: I, J, K (as *C. metaxae*).

Shells have been found as far north as Shetland. Essentially this is a more southern species extending to the Mediterranean (FG, 1982: 370).

Hoek: 1 juvenile specimen.

Only one protoconch, with about $\frac{1}{4}$ whorl of the teleoconch has been found.

11. *Cima minima* (Jeffreys, 1858).

Van Aartsen, 1981: 117-119, fig. 2; FG, 1982: 408-410, fig. 294.

From the British Isles to the Mediterranean (FG, 1982: 409; Van Aartsen, 1981).

Hoek: 2 young specimens.

See also below under *Cima* spec.

12. *Cima cylindrica* (Jeffreys, 1856).

Van Aartsen, 1981: 117-119, fig. 1.

From S.W. France to the Mediterranean (Van Aartsen, 1981).

DeBr: 1 young specimen, Hoek: 2 young specimens.

See also below under *Cima* spec.

Cima spec.

DeBr: 13 juvenile specimens, Hoek: 39 juvenile specimens.

Many juvenile specimens with only two or three whorls have been found. Most of these show remarkable axial furrows on the protoconch between $\frac{1}{2}$ and $1\frac{1}{2}$ whorls from the top. These grooves are distinct and straight; they start somewhat below the upper suture, reach their largest width and depth at the periphery and fade away at some distance above the lower suture. Rolan Mosquera (1983: 192, fig. 158) seems to be the first who figured this phenomenon. The sinuous axial riblets, which may appear after the second whorl and range from suture to suture, are altogether different.

Mr. H.J. Hoenselaar and Mrs. T. Keukelaar-Van den Berge kindly lent us some samples of *Cima*, which had been collected near Laredo, N. Spain, and containing many adult specimens. Indeed, many of the hundreds of shells show the furrows on the protoconch. This feature appears to be limited to the more slender shells, some of which in addition possess a delicate spiral sculpture, clearest visible on the abapical

part of the lower whorls. Van Aartsen (personal communication) confirmed this observation, also as regards *Cima* material from other localities. Consequently we provisionally consider all specimens with straight, vertical grooves on the protoconch as belonging to *C. cylindrica*, including the specimen figured by Rolan Mosquera (1983: 192, fig. 158).

According to Van Aartsen (1981: 117-118) specimens of *C. minima* have a height/breadth ratio of between 2.0 and 2.5 when they are 1-1.25 mm high, whereas shells of *C. cylindrica* with a height of more than 1 mm have a ratio of more than 3.0. Measuring the shells from Laredo, we found smooth specimens *and* shells with grooves *and/or* spiral sculpture, with a height of 1-1.25 mm and a height/breadth ratio of between 2.5 and 3.0. One 1.03 mm high shell with grooves *and* spiral sculpture, even has a ratio of 2.4. So *C. minima* and *C. cylindrica* cannot be separated entirely on account of their height/breadth ratio, as has been suggested by Van Aartsen (1981: 117, 119). This makes it very difficult to identify smooth and rather slender specimens of *Cima*, as for example the one shown by Fretter & Graham (1982) in fig. 293. For the time being it seems to be impossible to determine the identity of smooth immature specimens.

13. *Aclis ascaris* (Turton, 1819).

FG, 1982: 400-401, figs 284-285; HW, 1972: 47-48, figs 140-142; RM: 189, fig. 153.

From S. Norway to the Mediterranean. Probably absent from the eastern half of the Channel and the southern parts of the North Sea (FG, 1982: 401).

DeBr: 1 juvenile specimen, Hoek: 1 specimen, 1 fragment.

De Kaloot: 1 specimen (shown to us by Mr. A. Rijken).

14. *Chrysallida* cf. *decussata* (Montagu, 1803).

Nordsieck, 1972: 98-99, pl. PII fig. 8; Van Aartsen, 1974; Fasseaux, 1974: 122-123, figs 5-6; Van Aartsen, 1977: 54-55, 61, pl. 2 fig. 10; RM: 294, fig. 287.

From the British Isles to the Mediterranean (Nordsieck, 1972: 98).

DeBr: the last 2.5 whorls of a grey and worn specimen.

In 1972 Nordsieck introduced the name *Chrysallida sarsi* for a rather common, but still undescribed species. As far as we know all shells recorded from the Dutch coasts under the name of *C. decussata* appeared to belong to this new species (fide Van Aartsen, 1974: 234; Hoeksema, 1977: 628-629). Our Ouddorp specimen is badly preserved, incomplete and totally smooth. Because of the relatively high whorls and the high elongated aperture we think we have found a specimen of the real *C. decussata*.

15. *Phaseolus* cf. *tumidulus* Monterosato, 1880.

Raven, 1979: 44-45, fig. 2 (as *Nuculacea* gen. et spec. indet.); Bogi et al., 1986: 27 (as *Phaseolus ovatus*).

In deep water of the Mediterranean (Monterosato, 1875, 1880; Bogi et al., 1986: 27).

DeBr: 2 left valves; Hoek: 2 left and 2 right valves, 2 complete specimens.

All specimens measure about 0.80 mm × 0.55 mm. The few remarkable lateral, oblique, lamellar teeth, almost parallel to the upper margin of the shell, led us to the genus *Phaseolus* Monterosato, 1875 (see also Thiele, 1934: 789; Bowden & Heppell,

1966: 113; Allen & Hannah, 1986). The name *P. ovatus* Jeffreys in Seguenza, 1877 is not correct for our shells, as that species may reach a length of about 2.5 mm, is somewhat wedge-shaped posteriorly and has its beaks situated near the midline (see Seguenza, 1877: 1182, 1200-1201, fig. 29, and Thiele, 1934: 789).

The only possible name left for our specimens seems to be *P. tumidulus* Monterosato, 1880. In 1875 Monterosato (p. 4) wrote about this species: "Una microscopica specie di *Phaseolus* l'ho dragato a 210 metri presso Palermo. Essa è una delle più piccole bivalvi e la sue dimensione eccede appena quella della *Argiope capsula*, Jeffr., un estremamente piccolo Brachiopode dei mari d'Inghilterra." *A. capsula* measures 0.75 mm × 0.50 mm (Jeffreys, 1864: 21). Five years later Monterosato (1880: 56) described *P. tumidulus* as follows: "Piccolissima specie, liscia, lucida, trasparente, cornea, tumida con un lato subtroncato." This description matches our shells, but is rather poor and not accompanied by figures. We were not able to study the type material of this species. The description of Bogi et al. (1986: 27) fits, except for the number of teeth; in our shells we can see two, not three, lateral teeth at each side in each valve. The number of teeth, however, is probably connected with the size of the shells. Our shells have a length of about 0.80 mm, whereas those of Bogi et al. (1986: 27) measure about 1.00 mm, so that our specimens may be immature. Provisionally we consider our shells to be *P. tumidulus*, but they may turn out to be something else.

16. *Barbatia* cf. *appendiculata* (J. Sowerby, 1820).

CP, 1904-1906: fig. 110-16; GB, 1933: 120-121, pl. VII fig. 10; GB, 1936: 21-23, pl. I fig. 4; GB, 1985: 269-270.

DeBr: 1 small right valve.

17. *Trigonodesma lissa* (Bayan, 1873).

CP, 1904-1906: fig. 110-57; GB, 1933: 122; GB, 1936: 25-27; GB, 1985: 271.

DeBr: 1 left and 1 right valve.

Het Zwin: 1 valve (Van Nieulande, 1986).

18. *Crenella decussata* (Montagu, 1808).

TB: 38, 48, fig. 19a.

Widely distributed in the Northern Hemisphere, in Europe from low Arctic regions south to northern Great Britain (TB: 48).

DeBr: 6 fragments, 11 valves, 4 double valved specimens; Hoek: 9 valves, 11 double valved specimens.

Het Zwin: 19 valves (De Boer, personal communication; De Bruyne; Van Nieulande, 1986).

Some of the specimens only consist of the larval shell. These prodissoconchs, being symmetrical and almost circular, smooth at the outside and provided with about 20 vertical, lamellar, lateral teeth (10 anterior and 10 posterior) on the inside, show great resemblance to mature specimens of *Crenella pellucida* (Jeffreys, 1859). The larval shells of *C. decussata*, however, show some clear concentric growth lines, which are absent on adult shells of *C. pellucida* (see also Van Aartsen & Carrozza, 1981). When the initial part of the postlarval shell of *C. decussata* is visible, identification becomes easy.

19. *Parvilucina latebrosa* (Deshayes, 1857).

CP, 1904-1906: fig. 82-63; GB, 1985: 278, pl. II fig. 3.

DeBr: 2 left valves.

20. *Lepton squamosum* (Montagu, 1803).

TB: 85, fig. 38a.

From the Norwegian Sea to the Mediterranean and the Atlantic coast of Morocco (TB: 85).

DeBr: 1 juvenile left valve.

Ritthem: 3 damaged valves (coll. De Vreede, Rijks Geologische Dienst, Haarlem).

21. *Epilepton clarkiae* (Clark, 1852).

AMG: 65-66, 127, fig. 330; TB: 87-88, fig. 41; Warén, 1983: 163, pl. 8 figs 1-2.

From the British Isles to the Mediterranean (TB: 88).

DeBr: 4 left and 8 right valves, 1 complete specimen; Hoek: 4 right valves.

Het Zwin: 1 left valve (De Bruyne).

This species can be separated from juvenile specimens of *Mysella bidentata* (Montagu, 1803) by the more circular and flat valves, each with a third (cardinal) tooth. *E. clarkiae* looks somewhat like *Montacuta substriata* (Montagu, 1808), but that species lacks cardinal and posterior lateral teeth. *E. clarkiae* has also been confused with *Altenaeum dawsoni* (Jeffreys, 1864), which has a much larger prodissoconch and quite a different hinge (see the references under no. 23, below).

22. *Venericardia sulcata aizyensis* (Deshayes, 1858).

CP, 1904-1906: fig. 97-11 (as *Cardita aizyensis*); GB, 1985: 288-290, pl. III fig. 3.

DeBr: 2 left valves, 1 right valve.

Het Zwin: 8 valves probably belonging to this subspecies (Van Nieulande, 1986).

23. *Altenaeum dawsoni* (Jeffreys, 1864).

Backeljau et al., 1984: 205-209, figs 2d-3; Spaink, 1972: 143-148, figs 1-2 (as *A. nortoni*); Spaink, 1973b 60-66, figs 1-2 (as *A. nortoni*); Warén, 1980: 46, pl. 8 figs 3-4 (as *Montacuta dawsoni*).

A northern species, in Europe living along the Norwegian coast and probably near northern Great Britain and Ireland (Bowden & Heppell, 1968: 247, 265; Backeljau et al., 1984: 208).

DeBr: 20 valves, Hoek: 8 left and 3 right valves.

Het Zwin: about 50 valves (De Bruyne, 1983; De Bruyne & Wesselingh, 1984; Van Dalsum, 1986; Van Nieulande, 1986); Westkapelle-Domburg: 25 valves (Van Dalsum, 1986). The species has also been found in the northern parts of the Netherlands, viz. on the islands of Vlieland, 1 fragment, and Ameland, 2 valves (De Bruyne, 1986: 200).

This species is not new to our country; it has already been mentioned by Janssen (1975: 125, s.n. *A. nortoni*). Backeljau et al. (1984) and Van Dalsum (1986) have

discussed the correct name for this species. We will supply additional comments on its occurrence below.

24. *Lutetia* cf. *parisiensis* Deshayes, 1860.

CP, 1904-1906: fig. 100-2; GB, 1936: 93-94.

DeBr: 1 left and 1 right valve.

25. *Caryocorbula* cf. *striata* (Lamarck, 1806).

GB, 1933: 162-163, pl. X fig. 8 (as *Corbula lamarcki* Deshayes, 1857); Janssen et al., 1984: 146, pl. 86 fig. 214; GB, 1985: 312, pl. IV fig. 9.

DeBr: 1 fragment of a left valve.

Het Zwin: 4 valves (Van Nieulande, 1986), Domburg: ? (Janssen et al., 1984: 146).

None of the species mentioned in the list above appears to live in the southern parts of the North Sea (see Seaward, 1982). Most of the shells are uniformly brownish or greyish white. Some of the shells, nevertheless, are remarkably fresh-looking (specimens of *Cingula intersecta*, *Phaseolus tumidulus*, *Crenella decussata* and *Epilepton clarkiae*). We have found specimens of more species on the beaches of Ouddorp, which never have been found alive in the southern North Sea, but of which the shells still appear to be transparent and fresh, e.g. *Alvania lactea* (Michaud, 1830).

In 1973 Spaink described a molluscan fauna with a Lusitanian character found in Holocene sediments in the eastern part of the southern North Sea. This fauna occurs along the Belgian and Dutch coasts as far north as the Wadden Islands; it is best preserved and most abundant in the south and vanishes in the north. This fauna is called the *Angulus pygmaeus* fauna, after the bivalve *Angulus pygmaeus* (Lovén, 1846), one of the more common representatives and in the North Sea basin only known from the Holocene. It is assumed that this fauna migrated into the North Sea from the south, in the Boreal or the early Atlantic period, after the Strait of Dover had become established. Sedimentation of the sand in which the fauna is preserved probably occurred simultaneously. About 200 species have been found in this fauna, among them many small gastropods. Some of the shells are remarkably fresh (Spaink, 1973a; Spaink & Sliggers, 1983; Spaink, personal communication).

We presume that of our species listed above *Scissurella crispata* (?), *Dikoleps pusilla*, *Omalogyra atomus*, *Ammonicera fischeriana*, *Cingula intersecta*, *Parastrophia asturiana*, *Cima minima*, *C. cylindrica*, *Aclis ascaris*, *Crenella decussata*, *Phaseolus tumidulus*, *Lepton squamosum* and *Epilepton clarkiae* are constituents of this *Angulus pygmaeus* fauna. It is possible that some of the shells with a fossil appearance date from the Eemian period.

It is difficult to explain the presence of *Moelleria costulata*, *Chrysallida decussata* and *Altenaeum dawsoni*. Except for some of the shells of *C. decussata*, our shells look fossilized. They are all three cold water species. For that reason we suppose that these species have invaded the North Sea from the north, during periods when the North Sea basin had only partly been filled with water and in which the climate was cold. Perhaps *Scissurella crispata* also (in part) followed this route. Therefore on this point we disagree with Spaink (1973b: 62) and Van Dalsum (1986: 10), who thought that *Altenaeum dawsoni* had migrated from the south. Most likely these migrations have taken place in

periods like the Boreal, the early Eemian or the late Eemian, but it may have happened earlier. Without an exchange of water through the Channel, the climate in the whole of the North Sea basin must have been relatively cold.

Van Dalsum (1986: 10) argues that *A. dawsoni* cannot be dated from the Eemian period because this species has not been found in the rich marine Eemian molluscan fauna of the sandy building sites in Amsterdam-West. To us this argument does not seem to be valid. More of the cold water species known from the Eemian period have not been found near Amsterdam, e.g. *Trophon truncatus* (Ström, 1768) and *Tridonta montagui* (Dillwyn, 1817) (cf. Spaink, 1958 and 1963). When the Eemian Sea reached the area where Amsterdam is situated today, most of the northern species probably already had become extinct because of the warmer climate.

Metaxia metaxa may be part of the *Angulus pygmaeus* fauna, but a free-swimming larva may also have taken the protoconch directly to our coasts. Perhaps some prodissoconchs of *Crenella decussata* have recently been transported in the same way.

Without any doubt *Tinostoma rotellaeforme*, *Semibittium cancellatum*, *Barbatia appendiculata*, *Trigonodesma lissa*, *Parvilucina latebrosa*, *Venericardia sulcata aizyensis*, *Lutetia parisisis* and *Caryocorbula striata* are reworked fossils from Eocene deposits.

We are grateful to Mr. W.F.A. Guilonard, whose outstanding collection of small molluscs from Ouddorp we were allowed to study. Our thanks are also due to many other persons: Dr. J.J. van Aartsen commented on *Cima*, *Phaseolus*, *Crenella* and identified *Dikoleps pusilla*; Mr. Th.W. de Boer and Mr. A. Rijken gave us permission to publish some of their interesting records; Mrs. T. Keukelaar-Van den Berge and Mr. H.J. Hoenselaar lent us samples of *Cima*; Mr. F.A.D. van Nieulande identified the Eocene species; Mr. G. Spaink (Rijks Geologische Dienst, Haarlem) put some internal reports at our disposal, identified *Scissurella crispata* and *Aclis ascaris* and made valuable remarks; Dr. A. Warén (University of Göteborg) gave his opinion on *Phaseolus*.

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SAMENVATTING

Mariene mollusken nieuw voor Nederland, aangespoeld op de stranden van Ouddorp (Goeree-Overflakkee, Zuid Holland), met enige opmerkingen over het voorkomen van *Altenaeum dawsoni* (Jeffreys, 1864)

Bij een onderzoek van klein schelpenmateriaal van het strand bij Ouddorp werd een aantal voor Nederland nieuwe molluskensoorten gevonden. In dit artikel worden deze opgesomd; bij elke soort worden literatuurverwijzingen gegeven naar beschrijvingen en afbeeldingen. De wijze van verzamelen is beschreven in een eerder artikel in het Correspondentieblad (De Bruyne et al., 1985). De genoemde soorten zijn op grond van hun vermoedelijke afkomst in vier groepen te verdelen:

I. Lusitanische soorten. Soorten die in een mogelijk vrij recent verleden vanuit het zuiden gemigreerd zijn. Dit zijn de soorten genummerd 1(?), 2, 5, 6, 7, 8, 10(?), 11, 12, 13, 14, 15, 20 en 21.

II. Boreale soorten. In een koude periode in het verleden vanuit het noorden gemigreerde soorten: 1 (?), 3, 18 en 23. *Altenaeum dawsoni* wordt gerekend tot groep II. Hiermee wijken de auteurs af van de mening van Spaink (1973b: 62) en Van Dalsum (1986: 10), die veronderstelden dat deze soort vanuit het zuiden het Noordzeebekken binnentrok.

III. Soorten die als vrij zwemmende larven naar onze kust zijn getransporteerd: 10(?) en 18(?).

IV. Eocene soorten. Opgespoelde soorten uit Eocene lagen in de zeebodem: 4, 9, 16, 17, 19, 22, 24 en 25.