

On the identity of *Helix stagnorum* Gmelin, 1791,
and *Turbo ventrosus* Montagu, 1803
(Prosobranchia, Hydrobiidae)

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Despite the existence of an International Code of Zoological Nomenclature, regional scientific names still occur in a few cases. In English literature *Turbo ventrosus* Montagu, 1803, is considered a valid name, whereas Dutch authors consider it a junior synonym of *Helix stagnorum* Gmelin, 1791, a name based on the description of *Turbo stagnalis* by Baster, 1765a. With the present paper we hope to be able to terminate this situation.

Job Baster described "*Turbo Stagnalis*" (1765a: 77, 97) or, in Dutch (1765b: 81, 105), "het Dryf-Horentje", from the Kaaskenswater (fig. 9) north of the town of Zierikzee, province of Zeeland. Holthuis (1945) demonstrated that the nomen novum *Helix stagnorum* Gmelin, 1791, is the first valid name for this species, as Baster (1765a) did not apply the principles of binary nomenclature. No syntypes of *Helix stagnalis* are present in the Linnean collection (Dance, 1967: 22) although Baster did send specimens of his species to Linnaeus (Van Benthem Jutting & Van Hoorn, 1967: 46), and nothing is known about a Baster collection (Henrard & Koumans, 1936: 15). Therefore, and because the original descriptions and figures are rather vague, the interpretation of Gmelin's taxon must depend largely on material from the type locality, i.e., the brackish lake Kaaskenswater near Zierikzee (fig. 9).

Montagu (1803: 317) introduced the name *Turbo ventrosus* for shells from "the Kentish coast, at Folkstone and Sandwich". His description and figure are comparatively

clear, especially where the species is separated from "*T. ulvae*", now *Hydrobia ulvae* (Pennant, 1777). Nothing is said concerning the habitat. In the British Museum (Natural History) 13 syntypes, all from Sandwich, could be studied by Gittenberger. They proved to belong to a single hydrobiid species commonly found in brackish waters in The Netherlands and elsewhere.

During the last few years Bank and Butot visited several brackish habitats in The Netherlands, collecting many hydrobiids in order to contribute to the solution of the problems with *Hydrobia stagnorum* as delineated by Butot (1976). The Kaaskenswater (fig. 9), still existing but endangered now by urban expansion, was visited repeatedly. While sorting out the material from this locality, Bank discovered that apart from *Potamopyrgus jenkinsi* (E.A. Smith, 1889), two hydrobiid species could easily be distinguished on conchological characters; so far only a single common species had been recognized at brackish sites at the landside of the dikes in The Netherlands. Afterwards it turned out that the *T. ventrosus* syntypes belong to one of these species.

As the syntypes of *H. stagnorum* are lost, it remains uncertain on which of the two problematical hydrobiid species from the Kaaskenswater this nominal taxon has been based, i.e., what species was in fact described by Baster (1765a, b). Actually, Baster could have had at his disposal a mixture of the two forms. However, in his Latin (1765a: 77) as well as in his Dutch (1765b: 81) description, Baster states that the shell of his species is white, although it may seem to be greyish or greenish by the presence of a periostracum ("colorem fere candidum", "in der daad wit van couleur"). As Baster figured living animals, we know that he had fresh material at his disposal. Only one of the two species under consideration has white shells, also when fresh; therefore, we have accordingly selected a neotype for *H. stagnorum*. As a consequence, *H. stagnorum* and *H. ventrosa* become different species, for which the following synonymy and descriptions can be given.

Hydrobia stagnorum (Gmelin, 1791)
(figs. 1, 2)

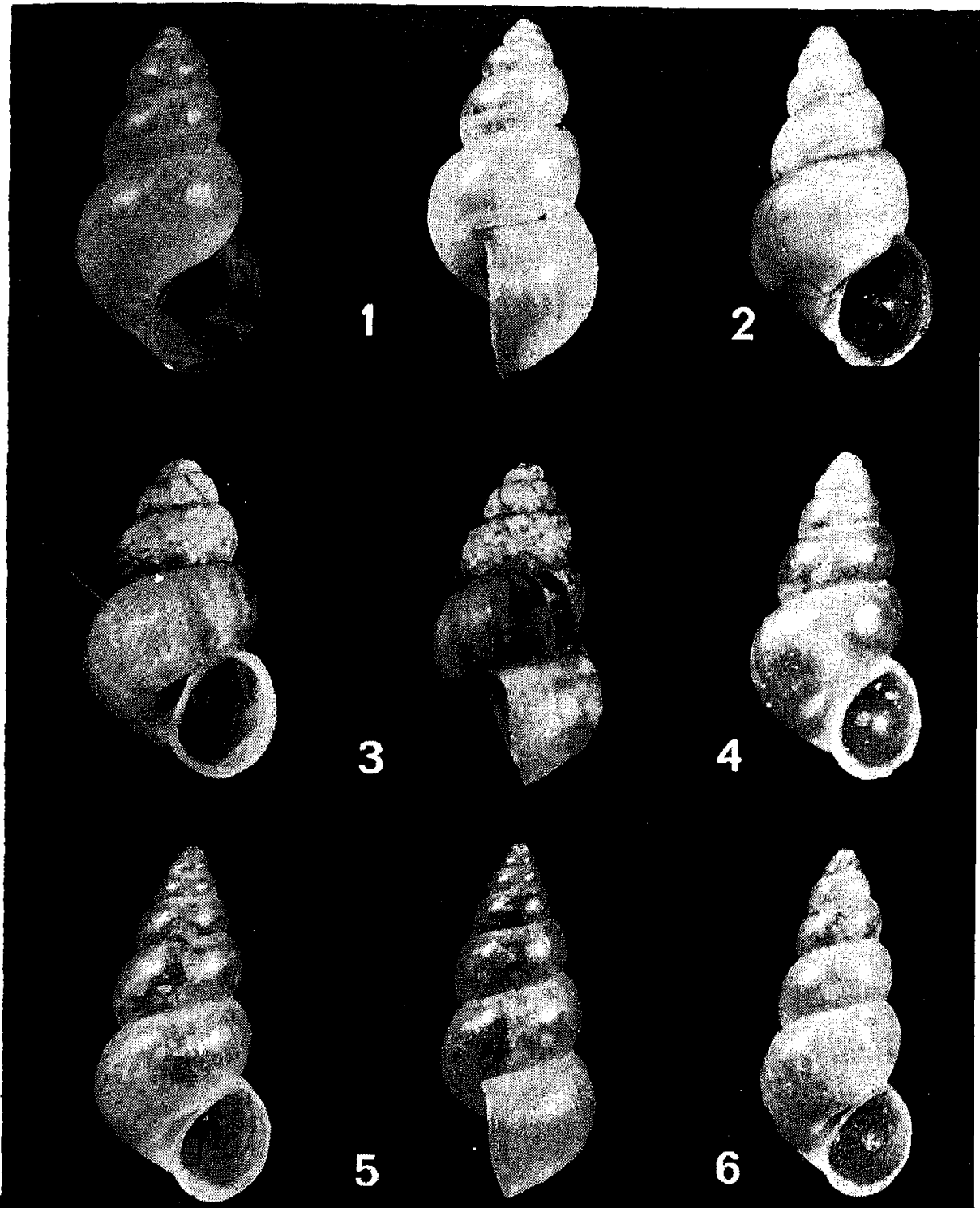
Turbo stagnalis Baster, 1765a: 77, 97, pl. 7 fig. 4. From the "Kaasjes-water .. proxime Ziricaeam".
Publication not valid (Holthuis, 1945).

Helix stagnalis Linnaeus, 1767: 1248 (with reference to Baster, 1765a). Not *Helix stagnalis* Linnaeus, 1758 (= *Lymnaea* s.). Neotype, design. nov.: Rijksmuseum van Natuurlijke Historie, Leiden, No. 55361 (fig. 1). Type locality: Kaaskenswater, north of Zierikzee, Zeeland.

Helix stagnorum Gmelin, 1791: 3653. Nomen novum for *Helix stagnalis* Linnaeus, 1767.

The shell of *H. stagnorum* is characterized by (a) the last whorl contacting the preceding one over a comparatively long distance, which causes a narrow, sometimes nearly closed umbilicus, (b) the white colour, even when fresh, (c) the complete absence of a thickened apertural lip, and (d) the more moderately inflated whorls as compared to those of *H. ventrosa*. In some of the specimens the periphery of the shell is situated somewhat below the middle of the whorls (fig. 2). The dimensions vary considerably: height 2.8 - 6.3 mm, width 1.7 - 2.9 mm. Whorls 4 3/4 - 6 3/4.

H. ventrosa can be distinguished not only by the more evenly rounded, strongly inflated



Figs. 1, 2. *Hydrobia stagnorum* (Gmelin), border of the Kaaskenswater, east side, opposite the Schouwse Dijk, R.A. Bank leg., 28.III.1978. 1, neotype, Rijksmuseum van Natuurlijke Historie, Leiden, No. 55361 (height 3.7 mm); 2, specimen collected with the neotype (height 4.3 mm). Figs. 3-6. *Hydrobia ventrosa* (Montagu). 3, lectotype, Sandwich, Kent, Great Britain, British Museum (Natural History), No. 197872 (height 3.4 mm); 4-6, ditch along the Koning Gustaafweg, near the Kaaskenswater, R.A. Bank leg., 28.III.1978, Rijksmuseum van Natuurlijke Historie, Leiden (4: height 3.0 mm; 5: 4.2 mm; 6: 4.4 mm). Photographs: 3, by courtesy of the British Museum (Natural History); 1, 2, 4-6, H. Olivier, Leiden.

whorls, but also by the definitely wider umbilicus. Its aperture is more rounded as well, comparatively smaller, and bordered by a weakly developed lip, contrasting with the sharp edge found in *H. stagnorum*. The apical part of the shell is generally more acute. In *H. ulvae*, a species which is found only most exceptionally at the landside of the dikes, the shells are more solid, with the whorls much more flattened than in *H. stagnorum*. *H. neglecta* Muus, 1963, a species thought to be intermediate between *H. ulvae* and *H. ventrosa* (see Muus, 1963, for more details), is more slender than *H. stagnorum* and has a comparatively smaller aperture. Meijer (1974) reported on the fossil (Holocene) and dubious recent occurrence of this species in The Netherlands. *H. totteni* Morrison, 1954 (= *Turbo minutus* Totten, 1834, not Brown, 1818), is considered a separate species confined to the east coast of Northern America by Davis 1966). According to Óskarsson, Ingólfsson & Garðarsson (1977), however, *H. totteni* cannot be separated from *H. ventrosa*.

H. stagnorum is a rare species, at least in The Netherlands (fig. 7), where it was found in only 17 of the hundreds of samples with brackish water hydrobiids which were studied (see the legend to fig. 7). Only at its type locality the animal is certainly still living, although its habitat is most unfortunately endangered there by urban expansion. Butot collected three living *H. stagnorum* with 15 *H. ventrosa* at the south coast of Goeree, province of Zuid-Holland, in 1961. Here too the animals may still be present. All other localities of which material is known, have to be confirmed because the samples have been taken there too long ago. Serious marine inundations have occurred in the southwestern part of The Netherlands during the Second World War and after the 1953 floods, as a consequence of which changes in the aquatic fauna have certainly been induced. Additionally, the construction of the "Afsluitdijk" in 1932 changed the saline Zuiderzee into the fresh water lake IJsselmeer, which caused the extinction of brackish water hydrobiids, as can be seen most clearly on fig. 8.

Only one remarkable (because far inland) recent occurrence is known from outside The Netherlands, i.e., in a salt-lake near Halle an der Saale, D.D.R. (three fresh empty shells of *H. stagnorum* with dozens of *H. ventrosa*: Rijksmuseum van Geologie en Mineralogie, Leiden: from collection G. van Roon). We cannot, however, exclude the possibility that the species will turn up elsewhere. A single shell, undistinguishable from *H. stagnorum*, was found washed ashore at Le Grau-du-Roi, Bouches-du-Rhône, France (F.J. Janssen leg. 1965; Rijksmuseum van Geologie en Mineralogie, Leiden).

As may be concluded from the literature (Dollfus, 1911; Radoman, 1977) and from hydrobiid samples from the Kaaskenswater in various collections, *H. stagnorum* and *H. ventrosa* have not always been collected together there. At least both species have been collected in conspicuously varying percentages. We can only speculate as to the factors underlying this phenomenon. The fluctuating degree of salinity should probably be taken into account (see Berner, 1976). Monthly measurements during the period 1960-1976 show salinities between 2.57 and 8.06 ‰ Cl⁻. Dollfus (1911: 234, pl. 5 figs. 1-4) described and figured what should now be called *H. ventrosa* from the Kaaskenswater, using the name "*Hydrobia stagnalis* Baster" for this species and emphasizing the conspecificity with the English *T. ventrosus* Montagu. Obviously, also Radoman (1977: 204, 209, pl. 21 figs. 11-13) studied only *H. ventrosa* from the Kaaskenswater, using the name "*Ventrosia stagnorum*" for it. As a consequence, the type-species of *Ventrosia* Radoman, 1977, is *Turbo ventrosus* Montagu (= *Helix stagnorum* sensu Radoman, 1977, not Gmelin, 1791).

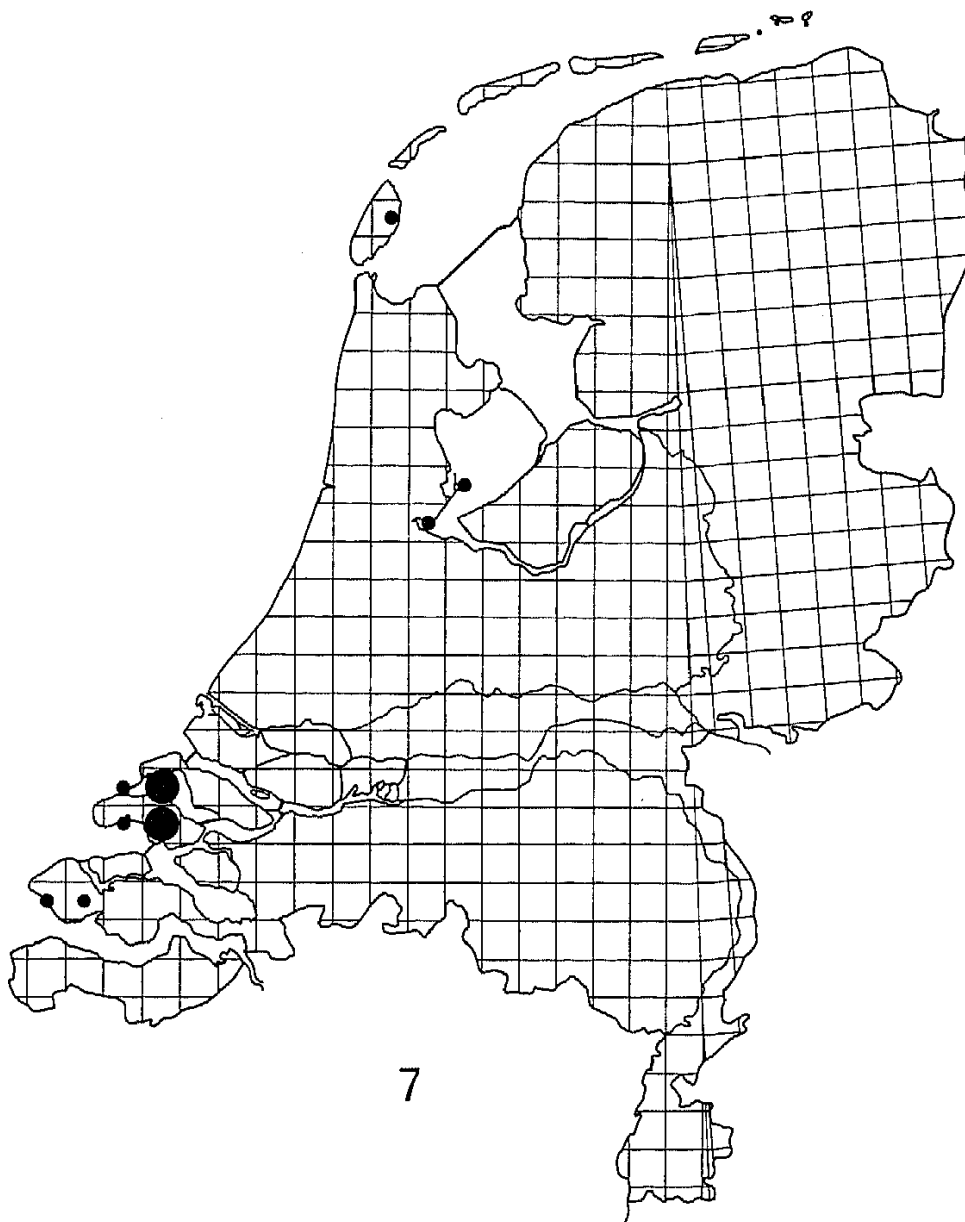


Fig. 7. Dutch records of *H. stagnorum* (Gmelin), plotted on 10-km squares (large dots, collected alive, 1950 onwards; small dots, before 1950, or empty shells only), after material in the following collections: R.A. Bank, Haarlem (RBH); L.J.M. Butot, Leersum (LBL); T. Meijer, Amsterdam (TMA); Rijksmuseum van Natuurlijke Historie, Leiden (RMNH); Zoölogisch Museum, Amsterdam (ZMA). In the following list of samples the number of specimens (collected alive if not stated otherwise) is indicated after the collection code; the number of accompanying *H. ventrosa* (*H. v.*) is recorded if this species was found in the same sample.

Zeeland. — Walcheren: ditch around the fortress "De Nolle" at the west side of Vlissingen (Flushing), W.C. van Heurn leg., II.1918, ZMA/16 empty shells (with 150 *H. v.*); crossing of Welzingse and Mannezeesche Watergang, 2 km SE. of Middelburg, P. de Bruyne leg., 3.VIII.1920, ZMA/54 (with *H. v.*, less common).

Schouwen-Duiveland: Kaaskenswater, immediately north of Zierikzee, R.A. Bank & L.J.M. Butot leg., 17.VIII.1977, RBH, LBL & RMNH/190 (with 214 *H. v.*) and 2.VIII.1978, RBH, LBL & RMNH/986 (with 304 *H. v.*); do., M.M. Schepman leg., XII.1913, ZMA/7 (with 15 *H. v.*); Diepe Gat, 3 km SE. of Zierikzee, R.A. Bank & L.J.M. Butot leg., 28.III.1978, RBH, LBL & RMNH/very many empty shells, no living animals seen (with living *H. v.*; see Meijer, 1974: pl. 19 figs. 37-43 "*Hydrobia ulvae*, "kommervorm"" = *H. stagnorum*); Heertjesinlaag, was situated ca. 1.5 km S. of Serooskerke (destroyed in 1953), P. de Bruyne leg., VII.1926, ZMA/4 empty shells (with ca. 4000 *H. v.*); Flauwers-

continued on p. 56

inlaag near Moriaanshoofd, 3 km SE. of Serooskerke, T. Meijer leg., 1964, TMA/2 empty shells (R.A. Bank and L.J.M. Butot revisited this locality on 2.VIII.1978 and found only *H. ventrosa*, alive and washed up with *H. ulvae*); canal along the sea-dike at Schelphoek, was situated ca. 1.5 km S. of Serooskerke (destroyed in 1953), P. de Bruyne leg., 4.VII.1928, ZMA/3 (with 10 *H. v.*); ditch near Ellemeeet, ? leg., 20.VI.1912, RMNH/17 empty shells (with ca. 1000 *H. v.*).

Zuid-Holland. — Goeree: brackish creek at the landside of the dike near pile 20, 2.5 km SE. of Ouddorp, W. Vervoort leg., 1936, RMNH/1; idem, L.J.M. Butot leg., 29.VI.1961, LBL/3 (with 15 *H. v.*).

Noord-Holland. — Oranjesluizen near Amsterdam, G. Monnickendam leg., before 1950, ZMA/ca. 150 empty shells (with very many *H. v.*); island Texel, ditch near Yzeren Kaap (= Oostkaap), E. of Oosterend, G. Monnickendam leg., before 1950, ZMA/2 (with *H. v.*); island Texel, polder Het Noorden, N. of Oosterend, W.C. van Heurn leg., VI.1909, RMNH/1 (with ca. 300 *H. v.*); northern tip of the island Marken, near pile 72, T. Meijer leg., 16.IX.1978, TMA/1 empty shell, washed up from the IJsselmeer; southwestern part of the island Marken, in ditch near pile 8, L.J.M. Butot leg., 15.V.1959, LBL/3 empty shells (with ca. 200 *H. v.*).

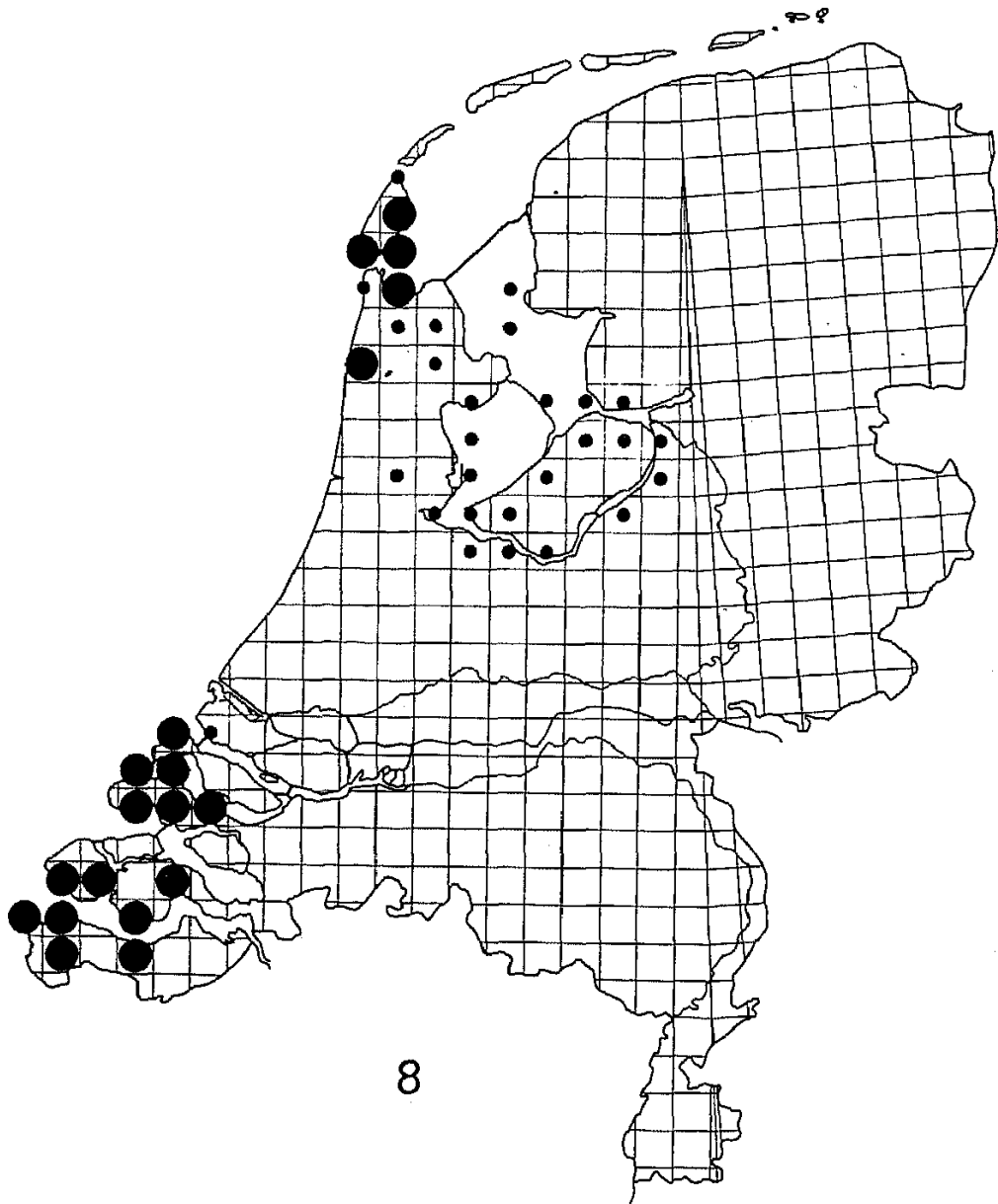


Fig. 8. Dutch distribution of *H. ventrosa* (Montagu), after live collected specimens, plotted on 10-km squares (large dots, 1950 onwards; small dots, before 1950 only). Data from the collections mentioned in the legend to fig. 7.

Hydrobia ventrosa (Montagu, 1803)
(figs. 3-6)

Turbo ventrosus Montagu, 1803: 317, pl. 12 fig. 13. Lectotype, design. nov.: British Museum (Natural History), No. 197872 (fig. 3) (with 12 paralectotypes, No. 197873). Type locality, restr. nov.: "Sandwich", Kent, Great Britain.
Ventrosia stagnorum: Radoman, 1977: 209, not *Helix stagnorum* Gmelin, 1791.

The shell of *H. ventrosa* is characterized by (a) the last whorl contacting the preceding one over only a small distance, which causes a comparatively wide umbilicus, (b) the pale yellow colour, (c) the strongly inflated whorls, and (d) the more rounded aperture. As in *H. stagnorum*, the dimensions vary considerably: height 2.6-6.2 mm, width 1.5-3.0 mm. The whorls vary in number between 5 and 7. See also the description and the remarks concerning *H. stagnorum*.

It should be realised that after the present designation of type specimens for *Helix stagnorum* and *Turbo ventrosus* most if not all records of "*H. stagnorum*" in the literature in fact apply to *H. ventrosa*.

In the present paper the classical genus *Hydrobia* is not subdivided into subgenera or split up into separate genera. Other authors most probably will do so as soon as sufficient anatomical data will be available. Meanwhile we have the impression that not all of the many new hydrobiid genera and subgenera recently introduced are founded on a solid basis, viz., on larger and smaller groups of synapomorphic characters. Incidentally, Dr. F. Giusti (Siena) has found significant anatomical differences between *H. stagnorum* and *H. ventrosa*.

The Kaaskenswater, which belongs to the scientific inheritance of the famous Zierikzee citizen Dr. Job Baster, deserves to be fully protected because of its natural beauty. It also preserves the memory of the Dutch war of independence against Spain (Pot, 1925). As a type locality the scientific importance of the brackish lake (Butot, 1977, 1978) underlines the necessity of conservation. As far as we know it is the only locality where Baster's *Turbo Stagnalis*, now placed on a solid taxonomic basis for the first time since 1765, may be studied effectively in its original habitat.

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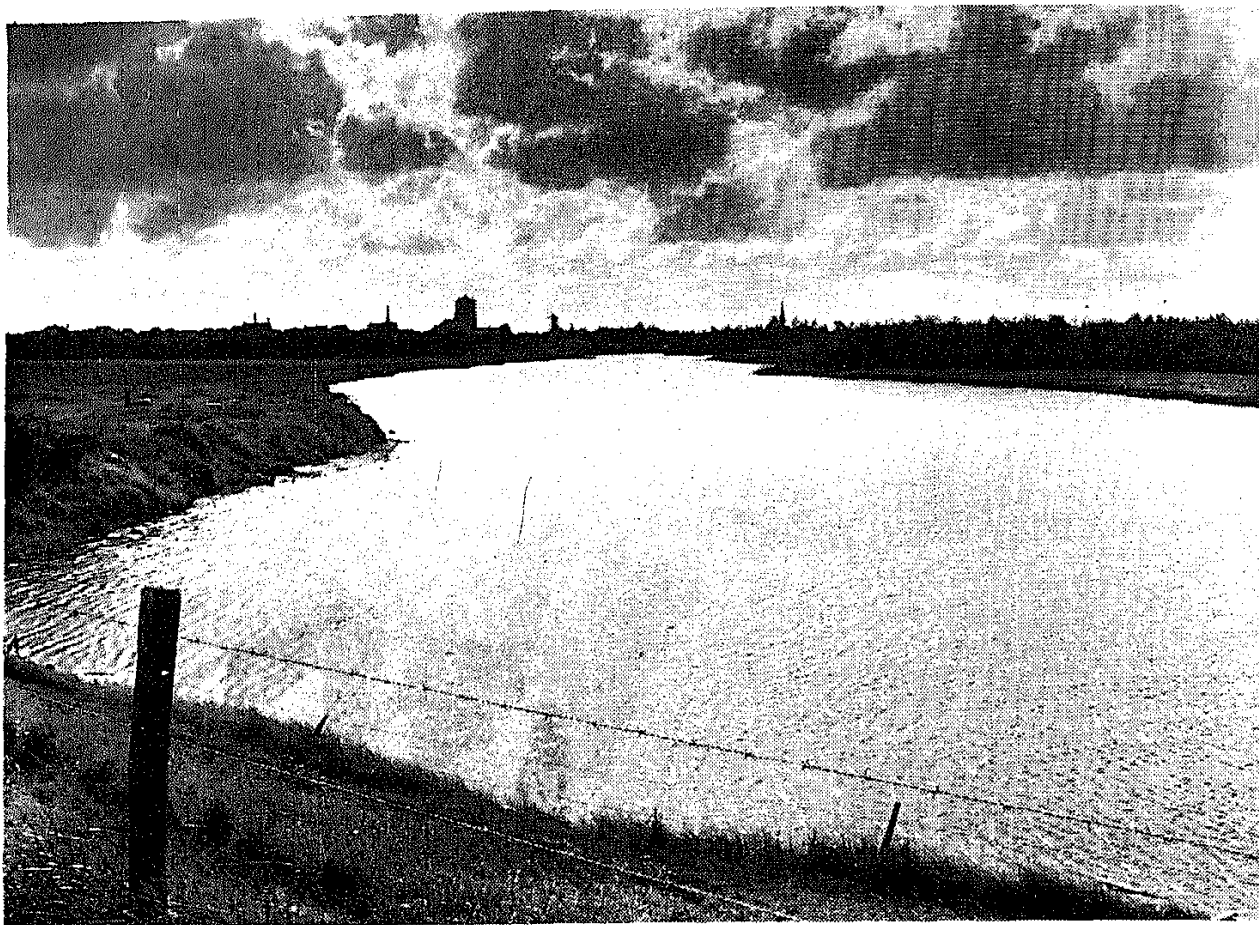


Fig. 9. The Kaaskenswater near Zierikzee. Photograph J.D.C. Berrevoets, courtesy of Mr. J.W.C. Berrevoets, Brouwershaven.

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SAMENVATTING

Over de identiteit van *Helix stagnorum* Gmelin, 1791, en *Turbo ventrosus* Montagu, 1803

De naam *Helix stagnorum* Gmelin, 1791, is gebaseerd op Basters "*Turbo Stagnalis*" (1765a: 77, 97) of "Dryf-Horentje" (1765b: 81, 105) uit het brakke Kaaskenswater bij Zierikzee. Na meer dan twee eeuwen is er nog steeds geen eensgezindheid wat betreft de interpretatie van Basters beschrijvingen en afbeeldingen. Vooral Nederlandse auteurs hebben de naam *Hydrobia stagnorum* gebruikt voor een algemeen binnendijks in brak water levend slakje. Dezelfde soort werd in Engelse literatuur daarentegen als *Hydrobia ventrosa* (Montagu, 1803) aangeduid, waarbij Basters werk als te onduidelijk en daardoor onbruikbaar werd afgedaan. Het laatste kan gezien de bestaande regels niet worden goedgekeurd. Daarbij komt dat het Kaaskenswater nog steeds bestaat. Daardoor is het mogelijk om na te gaan welke soort Baster hoogstwaarschijnlijk voor zich had. Toen Bank onlangs vaststelde dat er in het Kaaskenswater niet één maar twee *Hydrobia*-achtige soorten voorkomen, die Baster wellicht niet heeft kunnen onderscheiden, werd de zaak nog aanzienlijk verwarrender. Om aan deze situatie een einde te maken, werd voor *Helix stagnorum* een neotype vastgelegd, terwijl uit de syntypen van *Turbo ventrosus* Montagu een lectotype werd gekozen. Hierdoor kunnen we nu met recht zeggen dat er in het Kaaskenswater naast *Potamopyrgus jenkinsi* (E.A. Smith, 1889) een slakje met bolle omgangen en een wijde navel voorkomt dat *Hydrobia ventrosa* (Montagu) (fig. 3-6) moet heten en daarnaast een soort die we *Hydrobia stagnorum* (Gmelin) (fig. 1, 2) moeten noemen, meer wittig van kleur, met minder bolle omgangen, één nauwe tot bijna gesloten navel en een minder regelmatig afgeronde, naar verhouding wat grotere, mondopening, die begrensd wordt door een opvallend scherpe mondrand. Een voorlopig onderzoek door Dr. F. Giusti bracht ook essentiële anatomische verschillen aan het licht. Het is dan ook mogelijk dat de geslachtsnaam *Hydrobia* niet voor beide soorten kan worden gehandhaafd.

H. ventrosa is in Nederland (fig. 8) en elders niet zeldzaam. *H. stagnorum* is daarentegen een zeer zeldzame soort, die in Nederland na 1950 alleen nog maar ten zuidoosten van Ouddorp en (herhaaldelijk) in het Kaaskenswater levend werd vastgesteld (fig. 7). Uit het buitenland kennen we slechts één recent monster, uit een zoutmeer bij Halle an der Saale (D.D.R.).

Moge dit artikel ertoe bijdragen dat het fraaie Kaaskenswater (fig. 9) dat niet alleen landschappelijk en historisch, maar als typelocaliteit en vindplaats van een uiterst zeldzame diersoort ook wetenschappelijk van grote betekenis is, voor de toekomst veilig gesteld wordt.