Annotated checklist of Recent Ostracoda (Crustacea) of the Netherlands

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Abstract. More than seventy years ago Redeke & den Dulk (1940) published the first checklist of ostracods of the Netherlands, containing 77 species. A new updated and annotated checklist is presented here. This new list is mostly based on data from the literature and contains now 114 species (51 marine and 63 non-marine). For each species information on the distribution is given, and for some species details on the synonymy. When analyzing the data, it appears that especially the number of marine ostracods is remarkably low. Information on planktonic ostracods is completely lacking, but also the number of marine benthic species is low. This is not surprising because ostracods are only rarely used in ecological or biodiversity studies of the marine environment. The occurrences of marine species are largely based on the presence of empty valves and/or carapaces in sediment samples. The list is certainly not complete. Comparison with neighbouring countries and seas suggests that ca 20 supplementary fresh and brackish water and 40 marine species can still be expected. This would bring the total "guesstimated" number of Dutch ostracod species to somewhat more than 170.

Key words. Ostracoda, marine environment, fresh and brackish waters, distribution.

Introduction

Ostracods are microscopic crustaceans. The most important characteristic is the presence of a calcareous bivalved carapace which envelops the body and the limbs. Ostracods live in fresh water, in brackish and marine environments and very rarely on land, in moist conditions. Because the calcareous valves preserve well in sediments, ostracods are frequently used in micropalaeontological studies.

The history of investigations on the Recent ostracod fauna of the Netherlands dates back to the 19th century. The earliest papers were published by Burgersdijk (1853) (3 species) and Snellen van Vollenhoven (1861) (1 species). The first extensive contribution was published by Brady & Robertson in 1870. They listed 32 marine, brackish and freshwater species found in a sediment sample from the river Maas near Schiedam. The first checklist was published by Redeke & den Dulk (1940) with 77 species (23 marine and 54 non-marine). A very important contribution for the study of Dutch ostracods is the publication of Wagner (1957), in which he described and figured 38 marine and 15 non-marine species. This book, and two subsequent papers (Wagner 1960, 1964), are still corner stones for distributional studies on marine ostracods in the Netherlands.

Material and methods

The present checklist is largely based on data from the literature. Thirty-seven papers on Dutch Ostracoda have thus far been published. These are (in chronological order, with the number of species mentioned in the paper added between brackets): Burgersdijk (1853) (3 sp.), Snellen van Vollenhoven (1861) (1 sp.), Brady & Robertson 1870 (32 sp.), Bonnema 1916 (2 sp.), Havinga 1919 (6 sp.), Romijn 1919 (4 sp.), de Lint 1924 (16 sp.), Hofker 1928 (6 sp.), Beijerinck 1929 (1 sp.), Klie 1929 (5 sp.), Hofker 1932 (2 sp.), Redeke 1936 (12 sp.), 1938 (1 sp.), Redeke & den Dulk 1940 (77 sp.), de Vos 1946 (3 sp.), den Dulk 1951 (12

sp.), 1953 (5 sp.), de Vos 1953 (3 sp.), de Vos & Stock 1956 (3 sp.), Leentvaar 1957 (2 sp.), Wagner 1957 (53 sp.), 1960 (34 sp.), 1964 (18 sp.), du Saar 1967 (16 sp.), Leentvaar 1967 (1 sp.), van Harten 1975 (1 sp.), Sluys 1979 (2 sp.), 1981 (14 sp.), Mol 1984 (90 sp.), Wouters 1984 (1 sp.), Wouters & Bless 1986 (14 sp.), Wouters 2002 (1 sp.), Faasse 2004 (3 sp.), Scharf & Hollwedel 2010 (36 sp.). Wouters 2010a (1 sp.), Wouters 2010b (3 sp.), Wouters, 2017 (2 sp.). A small collection of Dutch ostracods preserved in the Royal Belgian Institute of Natural Sciences, Brussels (RBINS) was also used in this study.

For the identification, taxonomy and synonymy of the species the identification guides of Athersuch, Horne & Whittaker (1989) and Meisch (2000) were used, respectively for marine and non-marine ostracods. In the present list the localities of the different species are presented in chronological order and the species names are mentioned as they appear in the cited references or on the labels of collection specimens.

In his remarkable publication Wagner (1957) refers to sampling points along "coupes de travers" or transects. These transects are situated in the Wadden sea, between the isle of Schiermonnikoog and the mainland. Their locations are not further specified, but are visualized on a geographical map (fig. 13, p. 118). On the basis of this map the approximate coordinates were recalculated. Wagner studied material from three transects, indicated by roman numerals: transect I with orientation NE to SW, transect II with orientation E to W, and transect III with orientation NW to SE. In the list of species they will be mentioned as Wadden Sea (I, II, III).

Wadden Sea (I): between E. Schiermonnikoog and the coast of Groningen; approximate coordinates: from 53°27'52" N and 6°20'42" E to 53°27'52" N and 6°23'18" E.

Wadden Sea (II): between S.E. of Schiermonnikoog and the coast of Groningen; approximate coordinates: from 53°28'09" N and 6°28'47" E to 53°27'12"and 6°29'58" E.

Wadden Sea (III): between Veerdam (Schiermonnikoog) and Paesens (Friesland). Approximate coordinates: from 53°28'06" N and 6°12'09" E to 53°24'16" N and 6°05'09" E.

The species list

Class Ostracoda Latreille, 1806

Subclass Podocopa Sars, 1866

Order Podocopida Sars, 1866

Suborder Cytherocopina Baird, 1850

Superfamily Cytheroidea Baird, 1850

Family Cytheridae Baird, 1850

Cythere lutea O.F. Müller, 1785

Beaches of Kijkduin and Voorne, in the Schollen creek (Isle of Rozenburg), Wadden Sea (I) (Wagner 1957); Dollard, S. of Punt van Reide, Ems Estuary, Paap (Wagner 1960); Oude Wester Ems (Wagner 1964).

Cytheromorpha fuscata (Brady, 1869)

As *Cythere fuscata* in the river Maas near Schiedam (Brady & Robertson 1870); as *Cytheromorpha fuscata*, Kinselmeer and IJsselmeer near Diemen (Redeke & den Dulk 1940); beaches of Kijkduin and Voorne, Wadden Sea (III) (Wagner 1957); Dollard, S. of Punt van Reide, and Ems Estuary, Paap, (Wagner 1960); Ems Estuary, E. of Rottumeroog, Oude Wester Ems (Wagner 1964).

Microcytherura boulangei Rome, 1956

Cadzand, natural reserve "Het Zwin", at ca 45 m from the Belgian border; interstitial species, 29.06.1982 (Wouters 2010a).

Microcytherura fulva (Brady & Robertson, 1874)

Beach of Voorne, Schollen creek (Isle of Rozenburg), Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems Estuary, Paap (Wagner 1960); Ems Estuary, Oude Wester Ems (Wagner 1964).

Family Eucytheridae Puri, 1954

Eucythere declivis (Norman, 1865)

River Maas near Schiedam (Brady & Robertson 1870); beaches of Kijkduin and Voorne, Wadden Sea (I) (Wagner 1957).

Family Leptocytheridae Hanai, 1957

Callistocythere littoralis (G.W. Müller, 1894)

As *Cythere cicatricosa* Sars, 1866 (non *C. cicatricosa* Reuss, 1850), River Maas near Schiedam (Brady & Robertson 1870); as *Leptocythere crispata*, beach of Kijkduin, Isle of Rozenburg, Nieuwe Waterweg (Wagner 1957); Dollard, S. of Punt van Reide (Wagner 1960). *Cythere cicatricosa* Sars, 1866 (non Reuss 1850) and *Cythere crispata* Brady, sensu Brady, Crosskey & Robertson, 1874 (non *Cythere crispata* Brady, 1868) were synonymized with *Cythere littoralis* G.W. Müller, 1894 (now in the genus *Callistocythere*), a Mediterranean species, by Athersuch & Whittaker (1980)

Leptocythere castanea (Sars, 1866)

As *Cythere castanea*, River Maas near Schiedam (Brady & Robertson 1870); between Schokland and Ketel, 16.06.1921 (de Lint 1924) as *Leptocythere castanea*, Zuiderzee, Blankenham and near the Isle of Schokland, both on 15.06.1920, near the mouth of the River IJssel, 17.06.1920 (Klie 1929); coast of Enkhuizen, 1921 (Redeke 1936); Oosterschelde (Redeke & den Dulk 1940); Texel, Slufter, June and August 1951 (den Dulk 1953); Texel, in six samples, beaches of Kijkduin and Voorne, Isle of Rozenburg, Nieuwe Waterweg, Wadden Sea (III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems Estuary, Paap (Wagner 1960).

Leptocythere lacertosa (Hirschmann, 1912)

Texel, Slufter, June and August 1951 (den Dulk 1953); Texel, in eight samples (Wagner 1957), Dollard, S. of Punt van Reide, Ems Estuary, Paap (Wagner 1960); Ems Estuary, Oude Wester Ems (Wagner 1964);

Leptocythere pellucida (Baird, 1850)

As *Cythere pellucida*, River Maas near Schiedam (Brady & Robertson 1870); as *Leptocythere pellucida*, beaches of Kijkduin and Voorne, Isle of Rozenburg, Nieuwe Waterweg and Schollen creek, Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide (Wagner 1960); Grevelingen, Geul van Herkingen, leg.: K. Willems, 05.08.1976 (det. K.Wouters, coll. RBINS).

Leptocythere porcellanea (Brady, 1869)

As *Cythere porcellanea*, River Maas, near Schiedam (Brady & Robertson 1870); as *Leptocythere porcellanea*, Oosterschelde, Lodijkse gat, depth 1 m, leg. N. Smol, 14.06.1984 (det. K. Wouters, coll. RBINS)

Leptocythere psammophila Guillaume, 1976

Oosterschelde, Hammen, intertidal sample, leg. N. Smol, 23.05.1984 and Lodijkse gat, depth 1 m, leg. N. Smol, 14.06.1984 (det. K. Wouters, coll. RBINS). First record for the Netherlands.

Leptocythere tenera (Brady, 1868)

As *Cythere tenera*, River Maas near Schiedam (Brady & Robertson 1870); as *Leptocythere tenera*, Oosterschelde, Lodijkse gat, depth 1 m, leg. N. Smol, 14.06.1984 (det. K. Wouters, coll. RBINS).

Family Cytherideidae Sars, 1925

Cyprideis torosa (Jones, 1850)

As *Cytheridea torosa* (Jones) var. *teres*, River Maas near Schiedam (Brady & Robertson 1870); as *Cytheridea torosa* in the stomach of a perch from Geestmerambacht (de Lint 1924); as *Cyprideis littoralis* (Brady 1868): Oosterleek (15.07.1920), mouth of the river IJssel (17.07.1920), Hoornse Hop (15.03.1921), Blankenham (15.06.1921), Lemmer (15.07.1921), Isle of Urk (10.09.1920) and Isle of Schokland (16.06.1921) (de Lint 1924, Klie 1929); Zuiderzee, the coast near Enkhuizen (1921), Pampus (1928), het Spijk near Elburg (1928), near the Kop van Schokland (1928), near the Staart van Urk (1928), Lemster Hop (1928), near Kraggenburg (1929) (Redeke 1936); Biesbos (Aug. 1938) (den Dulk 1951); Texel, Slufter (June and Aug. 1951) (den Dulk 1953); Breede Water (12.12.1963-03.07.1963) (du Saar 1967). As *Cyprideis torosa*, Sever, Reeuwijkse plassen, Rozenburg, Texel, Goeree, Noord-Aa, beaches of Kijkduin and Voorne, Schollen creek, on

the Isle of Rozenburg, Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems Estuary, Paap and E. of Rottumeroog (Wagner 1960); Ems Estuary, Oude Wester Ems (Wagner 1964); Texel, De Bol, dammed creek (20.12.1972 and 07.09.1973), De Muy, ditch (20.12.1972), De Petten, shallow pond (20.12.1972), Hondsbossche Vaart, drainage channel (24.11.1972), de Putten near Camperduyn, shallow pond (24.11.1972), Vlieland, 3rd Kroonspolder, shallow lake (16.03.1973) (van Harten 1975); Texel, Zandkes claypit (01.05.1977) (Wouters 2002, 2017); Terschelling, four localities (Scharf & Hollwedel 2010).

Cytherissa lacustris (Sars, 1863)

Beach of Kijkduin (Wagner 1957); Ems Estuary, Paap (Wagner 1960).

Family Neocytherideidae Puri, 1957

Neocytherideis subulata (Brady, 1868)

As *Cytherideis subulata*, River Maas near Schiedam (Brady & Robertson 1870); as *Neocytherideis subulata*, beaches of Kijkduin and Voorne, Schollen creek on the Isle of Rozenburg, Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems Estuary, Paap and E. of Rottumeroog (Wagner 1960); Ems Estuary, Oude Wester Ems (Wagner 1964).

Sahnicythere retroflexa (Klie, 1936)

North Sea beach of Neeltje Jans, and near the Oranjemolen in Vlissingen (Faasse 2004).

Family Cushmanideidae Puri, 1974

Pontocythere elongata (Brady, 1868)

As *Cytheridea cornea* Brady, 1869, River Maas near Schiedam (Brady & Robertson 1870) (*C. cornea* was synonymized with *Cytheridea elongata* Brady 1868 by Brady & Norman 1889); as *Cytheridea elongata*: Middelgronden (02.01.1931) (Redeke 1936); as *Cytheridea angustata* (von Münster, 1850) (non *C. angustata* von Münster, 1830), northern part of the former Zuiderzee (Redeke & den Dulk 1940); as *Hemicytherideis elongata*: beaches of Kijkduin and Voorne, Schollen creek on the Isle of Rozenburg, Wadden Sea (I, II, III) (Wagner 1957); as *Pontocythere elongata*, Dollard, S. of Punt van Reide, Ems Estuary, Paap and E. of Rottumeroog (Wagner 1960); Ems Estuary, Oude Wester Ems (Wagner 1964); in the pond near the Topshuis on Neeltje Jans, near the Anna Frisopolder, near Vlissingen (Groen Licht, Buitenhaven and Schone Waardin), Fort Rammekens and the Kaloot, near the Westbout and Vlissingen (Oranje-Molen) (Faasse 2004); Grevelingen, Geul van Herkingen, leg.: K. Willems, 05.08.1976 (det.: K. Wouters, coll. RBINS); Oosterschelde, Lodijkse gat, depth 1 m, leg. N. Smol, 14.06.1984 and 23.05.1984 (det. K. Wouters, coll. RBINS).

Family Hemicytheridae Puri, 1953

Hemicythere villosa (Sars, 1866)

As *Cythere villosa*, River Maas near Schiedam (Brady & Robertson 1870); as *Hemicythere villosa*, beaches of Kijkduin and Voorne, Schollen creek on the Isle of Rozenburg, Wadden Sea (I, II) (Wagner 1957); Dollard, S. of Punt van Reide, Ems Estuary, E. of Rottumeroog (Wagner 1960); Ems Estuary, Oude Wester Ems (Wagner 1964).

Heterocythereis albomaculata (Baird, 1838)

As *Cythere albomaculata*, Oosterschelde (Redeke & den Dulk 1940); as *Hemicythere albomaculata*, beach of Kijkduin, Wadden Sea (I, II, III) (Wagner 1957); Ems Estuary, Paap (Wagner 1960).

Aurila convexa (Baird, 1850)

Beaches of Kijkduin and Voorne, Schollen creek on the isle of Rozenburg, Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems Estuary, E. of Rottumeroog (Wagner 1960); Ems Estuary, Oude Wester Ems (Wagner 1964).

Finmarchinella* (*Finmarchinella*) *finmarchica (Sars, 1866)

As *Cythere finmarchica*, river Maas near Schiedam (Brady & Robertson 1870).

Finmarchinella* (*Barentsovia*) *angulata (Sars, 1866)

As Hemicytherinae (?) *angulata*, beaches of Kijkduin and Voorne, Schollen creek on the Isle of Rozenburg, Wadden Sea (I, II, III) (Wagner 1957); as *Nereina angulata*, Dollard, S. of Punt van Reide, (Wagner 1960).

Urocythereis britannica Athersuch, 1977

As *Urocythereis oblonga* Brady, 1868, beaches of Kijkduin and Voorne, Schollen creek on the Isle of Voorne, Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems Estuary, E. of Rottumeroog (Wagner 1960); Ems Estuary, Oude Wester Ems (Wagner 1964). The species was long confused with the Mediterranean species *Urocythereis oblonga* Brady, 1868 (non *oblonga* Brady, 1866). Because the N.W. European species is distinct from the Mediterranean *U. oblonga*, Athersuch (1977) described the new species *Urocythereis britannica*.

Family Loxoconchidae Sars, 1925

Loxoconcha rhomboidea (Fischer, 1855)

As *Loxoconcha impressa* (Baird) (sensu Brady, 1868, non Baird, 1850) River Maas near Schiedam (Brady & Robertson 1870); as *Loxoconcha rhomboidea*, Zuiderzee and Texel, beaches of Kijkduin and Voorne (Wagner 1957); Dollard, S. of Punt van Reide, Ems-estuary, E. of Rottumeroog (Wagner 1960).

de Lint (1924) mentions *Loxoconcha viridis* O.F. Müller from several localities in the Zuiderzee. The material referred to in the publication of de Lint was identified by Klie. In a subsequent paper Klie (1929) lists the same material from the Zuiderzee under *Loxoconcha impressa*. This point of view is followed by Redeke (1936), although Redeke himself did not find specimens of *L. impressa* in the Zuiderzee. The taxonomy of *Loxoconcha* species at that time was rather confused, which is illustrated by the fact that Klie described the new species, *Loxoconcha gauthieri* Klie, 1929, and Redeke the new species *Loxoconcha emelwardensis* Redeke, 1936, both from brackish waters. The two species were later synonymized with *Loxoconcha elliptica*.

Loxoconcha elliptica Brady, 1868

River Maas near Schiedam (Brady & Robertson 1870); as *Loxoconcha emelwardensis* n. sp., ditch on the isle of Schokland, coast of Enkhuizen, in the middle of the Wieringermeer (Redeke 1936); as *Loxoconcha gauthieri* Klie, 1929, Isle of Schouwen (Redeke & den Dulk 1940); as *Loxoconcha elliptica*, Zuiderzee and Isle of Texel, beaches of Kijkduin and Voorne, Isle of Rozenburg, Nieuwe Waterweg and Schollen creek, Wadden Sea (I, II, III) (Wagner 1957), Dollard, S. of Punt van Reide, Ems estuary, Paap and E. of Rottumeroog (Wagner 1960); Ems estuary, Oude Wester Ems (Wagner 1964).

Elofsonia baltica (Hirschmann, 1909)

As *Loxoconcha baltica*, Texel, Slufter (June 1950 and Aug. 1951) (den Dulk 1953); as *Elofsonia baltica*, Schollen creek on the Isle of Rozenburg and Isle of Texel (Wagner 1957).

Elofsonia pusilla (Brady & Robertson, 1870)

Beach of Voorne, Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems estuary, Paap and E. of Rottumeroog (Wagner 1960); Ems estuary, Oude Wester Ems (Wagner 1964); Oosterschelde, Hammen, intertidal sample, leg. N. Smol, 23.05.1984 (det. K. Wouters, coll. RBINS).

Palmoconcha laevata (Norman, 1865)

As *Loxoconcha tamarindus* (Jones): river Maas near Schiedam (Brady & Robertson 1870); as *Hirschmannia tamarindus*: beaches of Kijkduin and Voorne, Isle of Rozenburg, Nieuwe Waterweg, Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems estuary, E. of Rottumeroog (Wagner 1960).

Loxoconcha tamarindus (Jones) sensu Brady, 1868, non Jones 1857, was synonymized with *Palmoconcha laevata* by Horne & Whatley (1985).

Hirschmannia viridis (O.F. Müller, 1785)

As *Cythere viridis*, river Maas near Schiedam (Brady & Robertson 1870); as *Hirschmannia viridis*, beaches of Kijkduin and Voorne, Isle of Rozenburg, Nieuwe Waterweg and Schollen creek, Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems estuary, Paap and E. of Rottumeroog (Wagner 1960); Ems estuary, Oude Wester Ems (Wagner 1964).

Family Cytheruridae G.W. Müller, 1894

Cytherura gibba (O.F. Müller, 1785)

As *Cytherura robertsoni* Brady, 1868, river Maas near Schiedam (Brady & Robertson 1870); as *Cytherura gibba*, Zuiderzee, mouth of the River IJssel (17.07.1920), Blankenham (15.06.1921), ditch on the isle of Schokland (16.06.1921) (de Lint 1924, Klie 1929); pool on Urk (1920), coast of Enkhuizen (1921) (Redeke 1936); Zuiderzee and beach of Kijkduin (Wagner 1957).

Hemicytherua cellulosa (Norman, 1865)

As *Cytherura cellulosa*, river Maas near Schiedam (Brady & Robertson 1870); as *Hemicytherura cellulosa*, Isle of Rozenburg, Nieuwe Waterweg and Schollen creek, Wadden Sea (II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems estuary, Paap and E. of Rottumeroog (Wagner 1960); Ems estuary, Oude Wester Ems (Wagner 1964); Oosterschelde, Lodijkse Gat, depth 1 m, leg. N. Smol, 14.06.1984 (det. K. Wouters, coll. RBINS).

Hemicytherura clathrata (Sars, 1866)

Beaches of Kijkduin and Voorne, Isle of Rozenburg, Nieuwe Waterweg and Schollen creek (Wagner 1957); Dollard, S. of Punt van Reide, and Ems estuary, Paap (Wagner 1960).

Semicytherura acuticostata (Sars, 1866)

Beaches of Kijkduin and Voorne, Schollen creek on the Isle of Rozenburg, Wadden Sea (I) (Wagner 1957); Dollard, S. of Punt van Reide, and Ems estuary, E. of Rottumeroog (Wagner 1960).

Semicytherura angulata (Brady, 1868)

As *Cytherura angulata*, river Maas near Schiedam (Brady & Robertson 1870); as *Semicytherura angulata*, beach of Kijkduin, Isle of Rozenburg, Nieuwe Waterweg and Schollen Creek, Wadden Sea (I) (Wagner 1957); Ems Estuary, E. of Rottumeroog (Wagner 1960).

Semicytherura nigrescens (Baird, 1838)

As *Cytherura nigrescens*, river Maas near Schiedam (Brady & Robertson 1870); as *Semicytherura nigrescens*, beaches of Kijkduin and Voorne, Schollen reek on the Isle of Rozenburg; Wadden Sea (II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems estuary, Paap and E. of Rottumeroog (Wagner 1960); Ems estuary, Oude Wester Ems (Wagner 1964); Grevelingenmeer, Springersdiep, leg. K. Willems 09.07.1984 (det. K. Wouters, coll. RBINS).

Semicytherura sella (Sars, 1866)

As *Cytherura cuneata* Brady, 1868 and as *Cytherura flavescens* Brady, 1869: river Maas near Schiedam (Brady & Robertson 1870); as *Semicytherura sella*, Texel, beaches of Kijkduin and Voorne, Isle of Rozenburg, Brielse Maas, Nieuwe Waterweg en Schollen creek, Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems-estuary, Paap and E. of Rottumeroog (Wagner 1960); Ems estuary, Oude Wester Ems (Wagner 1964); Oosterschelde, Hammen, depth 1 m, leg. N. Smol, 23.05.1984 and Lodijkse Gat, depth 1 m, leg. N. Smol, 14.07.1984, (det. K. Wouters, coll. RBINS); Oosterschelde, near the Westbout, Anna Frisopolder, Kattendijke, Vlissingen (Oranjemolen) and the Kaloot, Veerse Meer, near Veere (Faasse 2004).

Semicytherua striata (Sars, 1866)

As *Cythere striata*, River Maas near Schiedam (Brady & Robertson 1870); as *Semicytherura striata*, beaches of Kijkduin and Voorne, Isle of Rozenburg, Nieuwe Waterweg and Schollen creek, Wadden Sea (I, III) (Wagner

1957); Dollard, S. of Punt van Reide, Ems estuary, Paap (Wagner 1960).

Semicytherura undata (Sars, 1866)

Beaches of Kijkduin and Voorne, isle of Rozenburg, Nieuwe Waterweg (Wagner 1957); Ems estuary, Paap and E. of Rottumeroog (Wagner 1960).

Cytheropteron depressum Brady & Norman, 1889

As *Cytheropteron subcircinatum* Sars sensu Brady, 1868 (non Sars 1866), river Maas near Schiedam (Brady & Robertson 1870).

Cytheropteron latissimum (Norman, 1865)

Beaches of Kijkduin and Voorne, isle of Rozenburg, Schollen creek, Wadden Sea (I, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems estuary, E. of Rottumeroog (Wagner 1960).

Cytheropteron nodosum Brady, 1868

Beaches of Kijkduin and Voorne, isle of Rozenburg, Brielse Maas and Schollen creek, Wadden Sea (III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems Estuary, Paap (Wagner 1960)

Family Limnocytheridae Klie, 1938

Limnocythere inopinata (Baird, 1843)

As *Limnicythere inopinata*, river Maas near Schiedam (Brady & Robertson 1870); in the lake of Rockanje (Bonnema 1916); as *Limnocythere inopinata*, Breede Water, Isle of Voorne (Hofker 1928, du Saar 1967); Biesbos, Kooigat (Aug. 1938) (den Dulk 1951); ditch in Den Haag, Sever, Brielse Maas, isle of Rozenburg, beach of Kijkduin (Wagner 1957); Quackjeswater and Vogelmeer, isle of Voorne (du Saar 1967); Lake Maarsseveen, Maarssen, 52°08'N, 05°02' E (1978) (Sluys 1981); Terschelling, 9 localities (Scharf & Hollwedel 2010).

Metacypris cordata Brady & Robertson, 1870

Near Zoeterwoud and Vreeland (Redeke & den Dulk 1940); Lake Maarsseveen, Maarssen, 52°08'N, 05°02' E (1978) (Sluys 1981).

Family Xestoleberididae Sars, 1928

Xestoleberis aurantia (Baird, 1838)

River Maas near Schiedam (Brady & Robertson 1870); Zuiderzee, near Lemmer (15.07.1921) (Klie 1929).

Xestoleberis depressa Sars, 1866

Beaches of Kijkduin and Voorne (Wagner 1957).

Aspidoconcha limnoriae de Vos, 1953

Zandvoort, found on the abdomen and legs of *Limnoria lignorum*, 30.05.1952, type locality (de Vos 1953); N. of Katwijk, 20.02.1949, on *L. lignorum*, Isle of Texel, North Sea shore, on *L. lignorum*, 30.04.1953, between Zandvoort and Bloemendaal, on *L. lignorum* and *L. quadripunctata*, 16.01.1954 (de Vos & Stock 1956).

Family Bythocytheridae Sars, 1866

Sclerochilus contortus (Norman, 1861)

River Maas near Schiedam (Brady & Robertson 1870): beach of Kijkduin, Wadden Sea (I) (Wagner 1957).

Pseudocythere caudata Sars, 1866

Beaches of Kijkduin and Voorne (Wagner 1957).

Family Paradoxostomatidae Brady & Norman, 1889

Paradoxostoma ensiforme Brady, 1868

River Maas near Schiedam (Brady & Robertson 1870).

Paradoxostoma normani Brady, 1868

Oosterschelde (Redeke & den Dulk 1940); beaches of Kijkduin and Voorne, Wadden Sea (III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems Estuary, E. of Rottumeroog (Wagner 1960); Ems estuary, Oude Wester Ems (Wagner 1964).

Paradoxostoma variabile (Baird, 1835)

River Maas near Schiedam (Brady & Robertson 1870); isle of Texel (Wagner 1957); Ems estuary, E. of Rottumeroog (Wagner 1960).

Cytherois arenicola Klie, 1929

Oosterschelde, Hammen, intertidal sample (core, in sediment 0-5 mm), leg. N. Smol, 23.05.1984 (det. K. Wouters, coll. RBINS). First record for the Netherlands.

Cytherois fischeri (Sars, 1866)

As *Paradoxostoma fischeri*, river Maas near Schiedam (Brady & Robertson 1870); as *Cytherois fischeri*, Oosterschelde (Redeke & den Dulk 1940); Texel, Slufter, June 1950 and Aug. 1951 (den Dulk 1953); isle of Texel, beaches of Kijkduin and Voorne, Schollen creek, Isle of Rozenburg, Wadden Sea (I, II, III) (Wagner 1957); Dollard, S. of Punt van Reide, Ems estuary, Paap and E. of Rottumeroog (Wagner 1960); Ems estuary, Oude Wester Ems (Wagner 1964).

Paracytherois arcuata (Brady, 1868)

As *Paradoxostoma arcuatum*, river Maas near Schiedam (Brady & Robertson 1870).

Paracytherois flexuosa (Brady, 1867)

As *Paradoxostoma flexuosum*, river Maas near Schiedam (Brady & Robertson 1870).

Redekea perpusilla de Vos, 1953

Zandvoort, found living on *Limnoria lignorum*, usually at the base of the legs, 30.05.1952, type locality (de Vos 1953); between Zandvoort and Bloemendaal, on *L. lignorum* and *L. quadripunctata*, 16.01.1954 (de Vos & Stock 1956).

Suborder Cypridocopina Baird, 1845

Superfamily Cypridoidea Baird, 1845

Family Candonidae Kaufmann, 1900

Paracandona euplectella (Robertson, 1889)

Polder Veerstalblok near Gouda (Redeke & den Dulk 1940); Lake Maarsseveen, Maarssen, 52°08' N, 05°02' E (1978) (Sluys 1981).

Candona angulata G.W. Müller, 1900

Little lake near Rockanje (Bonnema 1916); ditch on Schokland, in connection with the Zuiderzee (Redeke 1936); Sever, Texel, Goeree, Zuiderzee (Wagner 1957); Texel, Roggesloot, near the Postweg, leg. K. Wouters, 01.05.1977 (det. K.Wouters, coll. RBINS); Terschelling, 7 localities (Scharf & Hollwedel 2010).

Candona candida (O.F. Müller, 1776)

Near The Hague, Utrecht and Vreeland (Redeke & den Dulk 1940); the Keeggat, on the isle of Ameland (18.08.1945) (de Vos 1946); Quackjeswater, Breede Water and Vogelmeer (03.07.1963) (du Saar 1967); Lakes Maarsseveen, Maarssen, 52°08' N, 05°02' E (1978). Males of *C. candida* are extremely rare; in one of the lakes (lake 1) a male specimen was collected. This was the first record of a male of this species in the Netherlands (Sluys 1979, 1981); Soerendonk, pool, leg. H. van Dam, 08.12.1982, a male specimen (second record of a male in the Netherlands) (det. K.Wouters, coll. RBINS); Terschelling, 14 localities (Scharf & Hollwedel 2010).

Candona neglecta Sars, 1887

Near Leiden and Vreeland, in a ditch at Hichtum, Harbour of Blokzijl, IJsselmeer (Redeke & den Dulk 1940); Biesbos, Kooigat (Aug. 1938) (den Dulk 1951); ditch in The Hague, Noord Aa, Sever, Reeuwijkse plassen (Wagner 1957); little lake near Rockanje, 51°52' N, 04°04' E (18.10.1977), near Simonshaven, 51°49' N, 04°17' E, 25.1.1977 (Sluys 1977); Lake Maarsseveen, Maarssen, 52°08'N, 05°02' E (1978) (Sluys 1981); Terschelling, 1 locality (Scharf & Hollwedel 2010).

Candona weltneri Hartwig, 1899

Ditch in The Hague, Scheveningen (Wagner 1957); Terschelling, 2 localities (Scharf & Hollwedel 2010).

Fabaeformiscandona acuminata (Fischer, 1851)

As *Candona acuminata*, near The Hague and Leerdam (Redeke & den Dulk 1940); ditch at The Hague (Wagner 1957); as *Fabaeformiscandona acuminata*, Soerendonk, ditch, leg.: H. van Dam, 24.11.1982 (det.: K. Wouters, coll. RBINS).

Fabaeformiscandona balatonica (Daday, 1894)

As *Candona balatonica*, Kagerplassen near Leiden (Redeke & den Dulk 1940); in pools on the isle Oude Kooi, Kagerplassen (den Dulk 1951).

Fabaeformiscandona fabaeformis (Fischer, 1851)

As *Candona fabaeformis*, near Leiden and Vreeland (Redeke & den Dulk 1940); Gelderwoudse Polder (Wagner 1957).

Fabaeformiscandona hyalina (Brady & Robertson, 1870)

As *Candona hyalina*, Scheveningen, Veur, Utrecht (Redeke & den Dulk 1940); ditch in The Hague (Wagner 1957); Quackjeswater (12.12.1962 – 03.07.1963) (du Saar 1967); Lake Maarsseveen, Maarssen, 52°08'N, 05°02' E (1978) (Sluys 1981).

Fabaeformiscandona protzi (Hartwig, 1898)

As *Candona protzi*, near Veur and on the isle of Schouwen (Redeke & den Dulk 1940); Lake Maarsseveen, Maarssen, 52°08'N, 05°02' E (1978) (Sluys 1981).

Pseudocandona albicans (Brady, 1864)

As *Candona albicans*, river Maas near Schiedam (Brady & Robertson 1870); as *Candona parallela* G.W. Müller, 1900, Zoeterwoude, Tienhoven, in a ditch near Gorssel (Redeke & den Dulk 1940).

Pseudocandona compressa (Koch, 1838)

As *Candona compressa*, near The Hague, Utrecht and Vreeland, in a ditch at Bolsward (Redeke & den Dulk 1940); Deil, ditch in The Hague, Scheveningen, Gelderwoudse Polder (Wagner 1957); Quackjeswater (12.12.1962 – 03.07.1963) (du Saar 1967); Lakes Maarsseveen, Maarssen, 52°08'N, 05°02' E (1978) (Sluys 1979, 1981); as *Pseudocandona compressa*, Heerlen, Welten, Weltervijver, southern branch (03.09.1985) (Wouters & Bless 1986); Terschelling, 4 localities (Scharf & Hollwedel 2010).

Pseudocandona hartwigi (G.W. Müller, 1900)

As *Candona hartwigi*, near The Hague, Gouda, IJsselstein and Vreeland, along the river Linge and in a rupture basin near Rijswijk (Redeke & den Dulk 1940); Deil, ditch in The Hague, Scheveningen, Reeuwijkse Plassen (Wagner 1957).

Pseudocandona insculpta (G.W. Müller, 1900)

As *Candona insculpta*, ditches and flood plain of the river Linge, in material collected by Redeke near Blauwkapel, and in the Biesbos, osier bed S.E. of Kooigat (den Dulk 1951); Deil (Wagner 1957).

Pseudocandona lobipes (Hartwig, 1900)

As *Candona lobipes*, Zoeterwoude near Leiden (Redeke & den Dulk 1940); ditch at the edge of the Nieuwe Gelderwoudse Polder (den Dulk 1951); Gelderwoudse Polder (Wagner 1957).

Pseudocandona marchica (Hartwig, 1899)

As *Candona marchica*, near The Hague and Vreeland (Redeke & den Dulk 1940); Gelderwoudse Polder (Wagner 1957).

Pseudocandona pratensis (Hartwig, 1901)

As *Candona pratensis*: along the river Linge, in a ditch near Gorssel, lagoon on the North Holland coast of the IJsselmeer, harbour of Blokzijl (Redeke & den Dulk 1940); Deil (Wagner 1957).

Pseudocandona rostrata (Brady & Robertson, 1889)

As *Candona rostrata*, near Zoeterwoude, lagoon on the North Holland coast of the IJsselmeer (Redeke & den Dulk 1940).

Pseudocandona sarsi (Hartwig, 1899)

As *Candona sarsi*, in a pool near Langenaar (de Lint 1924); in the Biesbos (Redeke & den Dulk 1940); Biesbos, osier bed S.E. of Kooigat (Aug. 1938) (den Dulk 1951).

Pseudocandona zschokkei (Wolf, 1920)

Geulhem, in groundwater pumped near the entrance of the Kloostergroeve (leg. Biospeleologische Werkgroep Nederland, 27.03.1982 and 20.08.1982) (Wouters & Bless 1986).

Candonopsis kingsleii (Brady & Robertson, 1870)

Near Leiden and Vreeland, along the river Linge (Redeke & den Dulk 1940); Deil (Wagner 1957); Terschelling, 1 locality (Scharf & Hollwedel 2010).

Cypria exsculpta (Fischer, 1855)

Near Utrecht, Zeist, Vreeland, canal at Eerbeek (Redeke & den Dulk 1940).

Cypria ophtalmica (Jurine, 1820)

Zuidlaarder Meer (Havinga 1919); in the Kingbeek in Limburg, in the Vecht, Het Spaarne, Geestmerambacht, in the polder Het Woud near Krommenie, in the Noorscharwouder Polder, in a ditch on Schokland (de Lint 1924); Biesbos, Kooigat (Aug. 1938) (den Dulk 1951); ditch in The Hague, Scheveningen, Gelderwoudse Polder, Sever, Reeuwijkse Plassen (Wagner 1957); Quackjeswater, Breede Water, Vogelmeer (12.12.1962 – 03.07.1963) (du Saar 1967); Lakes Maarsseveen, Maarssen, 52°.08' N, 05°02' E (1978), small lake near Rockanje, 51°494 N, 04°04' E (18.10.1977), Simonshaven, 51°49' N, 04°17' E (25.10.1975) (Sluys 1979); Heerlen, Welten, Weltervijver, southern branch (03.09.1985), Heerlen, Benzenrade, widening of the brook (03.09.1985), 't Rooth-Margraten, toad pool and old pool near the (former) Nekami quarry (19.10.1985), Cadier en Keer, concrete cattle drinking trough in the meadow near "De Fontein" (19.10.1985), Kunderberg, Voerendaal, old toad pool (19.10.1985) (Wouters & Bless 1986); Terschelling, 26 localities (Scharf & Hollwedel 2010).

Cypria subsalsa Redeke, 1936

As *Cypria ophtalmica* (Jur.) var. *subsalsa* nov. var., ditch on Schokland, type locality (Redeke 1936); Zuiderzee (Wagner 1957); as the new combination *Cypria subsalsa*, based on material in the collections of the "Instituut voor Taxonomische Zoölogie (Zoölogisch Museum)", University of Amsterdam (collections now in Naturalis, Leiden): Schellingwoude, 09.09.1928, det. H. Redeke and 19.07.1939, det. A. de Vos, North Sea Canal, 02.06.1951, 12.11.1951, 19.06.1952, 28.09.1952 and 12.10.1952, leg. J. Stock, det. A. de Vos (Wouters 1984).

Physocypria kraepelini G.W. Müller, 1900

In a lagoon named Hoogendijkerbraak on the North Holland coast of the IJsselmeer (Redeke & den Dulk 1940); as *Physocypria kliei* Schäfer, 1934, Lakes Maarsseveen, Maarssen, 52°08' N, 05°02' E (1978) (Sluys 1979, 1981).

Cyclocypris laevis (O.F. Müller,1776)

Zuidlaarder Meer (Havinga, 1919), Quackjeswater (Hofker 1928, Hofker 1932); Scheveningen, Gelderwoudse Polder (Wagner 1957); Terschelling, 1 locality (Scharf & Hollwedel 2010).

Cyclocypris ovum (Jurine, 1820)

Quackjeswater, Breede Water (12.12.1962 – 03.07.1963) (du Saar 1967); Heerlen, Ben-

zenrade, widening of the brook (03.09.1985) (Wouters & Bless 1986); Terschelling, 17 localities (Scharf & Hollwedel 2010).

Family Ilyocyprididae Kaufmann, 1900

Ilyocypris bradyi Sars, 1890

Zuidwillemsvaart (Romijn 1919); near Reeuwijk (Redeke & den Dulk 1940); Heerlen, Benzenrade, widening of the brook (03.09.1985) (Wouters & Bless 1986); Terschelling, 2 localities (Scharf & Hollwedel 2010).

Ilyocypris decipiens Masi, 1905

Rather common in the IJsselmeer and certain lagoons along its coast, in a rupture basin near Rijswijk (Redeke & den Dulk 1940); ditch in The Hague, Reeuwijkse Plassen (Wagner 1957).

Ilyocypris gibba (Ramdohr, 1808)

Zuidwillemsvaart (Romijn 1919); Zuidlaarder Meer (Havinga 1919); Mecheler Beek and Kingbeek in Limburg (de Lint 1924); near The Hague, Leiden and Gouda (Redeke & den Dulk 1940); Biesbos, Kooigat (Aug. 1938) (den Dulk 1951); ditch in The Hague, Noord Aa, Sever, Reeuwijkse Plassen (Wagner 1957); Heerlen, Welten, Weltervijver (03.09.1985), 't Rooth-Margraten, toad pool near (former) Nekami quarry (19.10.1985), Kunderberg, Voerendaal, old toad pool (19.10.1985) (Wouters & Bless 1986).

Family Notodromadidae Kaufmann, 1900

Notodromas monacha (O.F. Müller, 1776)

Zuidlaarder Meer (Havinga 1919); Biesbos, osier bed S.E. of Kooigat (Aug. 1938) (den Dulk 1951); in plankton from Huneplak, Terschelling (Aug. 1956) (Leentvaar 1967); Heerlen, Benzenrade, widening of the brook (03.09.1985) (Wouters & Bless 1986); Terschelling, 8 localities (Scharf & Hollwedel 2010).

Cyprois marginata (Straus, 1821)

In a pool near Winterswijk, Kagerplassen (Redeke & den Dulk 1940); in pools on the isle Oude Kooi, Kagerplassen (den Dulk 1951).

Family Cyprididae Baird, 1845

Cypris pubera O.F. Müller, 1776

Along the river IJssel near Gorssel (Redeke & den Dulk 1940); Vogelmeer (12.12.1962 – 03.07.1963) (du Saar 1967); Cadier en Keer, concrete cattle drinking trough in the meadow near "De Fontein" (19.10.1985) (Wouters & Bless 1986).

Eucypris elliptica (Baird, 1846)

Soerendonk, pool, leg.: H. van Dam, 07.03.1983 (det.: K. Wouters, coll. RBINS), First record for the Netherlands.

Eucypris pigra (Fischer, 1851)

Zuidwillemsvaart (Romijn 1919).

Eucypris virens (Jurine, 1820)

Near Amsterdam, near The Hague and Leiden, along the river Linge and river IJssel near Gorssel (Redeke & den Dulk 1940); Deil (Wagner 1957); Terschelling, 1 locality (Scharf & Hollwedel 2010).

Tonnacypris lutaria (Koch, 1838)

As *Herpetocypris strigata* (Ramdohr, 1805), a single specimen in the Lunterse Beek (de Lint 1924); as *Eucypris lutaria*, along the river Linge (Redeke & den Dulk 1940); Deil (Wagner 1957).

Bradleycypris obliqua (Brady, 1868)

As *Cypricercus obliquus*, Quackjeswater (12.12.1962 – 03.07.1963) (du Saar 1967); Lakes Maarsseveen, Maarssen, 52°08' N, 05°02' E (1978) (Sluys 1981).

Bradleystrandesia fuscata (Jurine, 1820)

As *Cypricercus fuscatus*, very common in a pool near Horn, also in Panheelder Beek, the Wijde Blik and the Loenderveense Plassen (de Lint 1924); Deil (Wagner 1957).

Bradleystrandesia reticulata (Zaddach, 1844)

As *Cypricercus affinis* (Fischer 1851) near Vreeland, along the river Linge, common in ditches at Gorssel and in a pool at Winterswijk (Redeke & den Dulk 1940); pool in the Kroonpolder, Terschelling (Aug. 1956) (Leentvaar 1957); Deil (Wagner 1957); as *Bradleystrandesia reticulata*, Texel, temporary pool near the Pompevlak, leg. K. Wouters, 02.05.1977 (det. K. Wouters, coll. RBINS); Terschelling, 2 localities (Scharf & Hollwedel 2010).

Herpetocypris chevreuxi (Sars, 1896)

On the isles of Voorne and Terschelling, coast of the IJsselmeer (Redeke & den Dulk 1940); isle of Rozenburg (Wagner 1957); pool in the Kroonpolder, Terschelling (Aug. 1956) (Leentvaar 1957); Quackjeswater, Breede Water and Vogelmeer (12.12.1962 – 03.07.1963) (du Saar 1967); Terschelling, 5 localities (Scharf & Hollwedel 2010).

Herpetocypris reptans (Baird, 1853)

In the "Godenbron", one of the springs of the Eijserbeek near Gulpen, Barneveldse Beek, Eem, the Wijde Blik (de Lint 1924); Zuidlaarder Meer (Havinga 1919); Breede Water and Quackjeswater (Hofker 1928, Hofker 1932); Deil, ditch in The Hague, Scheveningen, Gelderwoudse Polder (Wagner 1957); Breede Water, Quackjeswater, Vogelmeer (du Saar 1967); Texel, Moksloot, near the road to the Mokbaai and the Geul, leg. K. Wouters, 02.05.1977 (det. K. Wouters, coll. RBINS); Lake Maarsseveen, Maarssen, 52°08' N, 05°02' E (1978) (Sluys 1981); Terschelling, 10 localities (Scharf & Hollwedel 2010).

Psychrodromus olivaceus (Brady & Norman, 1889)

Heerlen, Welten, Putberg, spring and spring brook (03.09.1085) (Wouters & Bless 1986).

Heterocypris incongruens (Ramdohr, 1808)

As *Cypris fusca* Strauss, without locality (Snellen van Vollenhoven, 1861, p. 33). As *Cyprinotus incongruens*, in a ditch in the dunes of West Terschelling (de Lint 1924); in ditches at Wijster (Beijerinck 1929); small pools in the Nieuwe Gelderwoudse Polder near Zoeterwoude (den Dulk 1951); as *Heterocypris incongruens*, Heerlen, Benzenrade, Keverberg, in a concrete cattle drinking trough (03.09.1985), Cadier en Keer, in a concrete cattle drinking trough in the meadow near "De Fontein" (19.10.1985); Kunderberg, Voerendaal, old toad pool (19.10.1985) (Wouters & Bless 1986).

Heterocypris salina (Brady, 1868)

As *Cyprinotus salinus*, in a ditch on Schokland (de Lint 1924); as *Heterocypris fretensis*, coast of the IJsselmeer at Spakenburg, estuary of the River IJssel near Kampen (Redeke & den Dulk 1940); the Keeggat on the isle of Ameland (18.08.1945) (de Vos 1946); as *Cyprinotus salinus*, Isle of Rozenburg Brielse Maas, Goeree, Zuiderzee (Wagner 1957); as *Heterocypris salina*, Terschelling, 6 localities (Scharf & Hollwedel 2010).

Dolerocypris fasciata (O.F. Müller, 1776)

Breede Water, Isle of Voorne (Hofker 1928); Polder Veerstalblok near Gouda (Redeke & den Dulk 1940).

Isocypris beauchampi (Paris, 1920)

As *Isocypris arnoldi* Dubowsky, 1927, N. of Schokland, near Leiden (Redeke 1938); as *Isocypris priomena* G.W. Müller, 1908, Kagerplassen and Loosdrechtse plassen, Westeinder Plas, coast of the IJsselmeer, stomachs of ruffe and perch caught in the IJsselmeer, in a lagoon near Kuinre (Redeke & den Dulk 1940); as *Isocypris beauchampi*, Terschelling, 3 localities (Scharf & Hollwedel 2010).

Cypridopsis vidua (O.F. Müller, 1776)

Zuidlaarder Meer (Havinga, 1919); Barneveldse Beek, Loenderveldse polder, Wijde Blik (de Lint 1924); Breede Water, Isle of Voorne (Hofker 1924); as *Cypridopsis parva* (G.W. Müller, 1900), estuary of the River IJssel near Kampen (Redeke & den Dulk 1940); as *Cypridopsis vidua*, ditch in

the Hague, Gelderwoudse Polder, isle of Rozenburg (Wagner 1957); Quackjeswater, Breede Water, Vogelmeer (12.12.1963) (du Saar 1967); Lakes Maarsseveen, Maarssen, 52°08' N, 05°02' E (1978) (Sluys 1981); Heerlen, Welten, Weltervijver, southern branch (03.09.1985), Heerlen, Benzenrade, widening of the brook (03.09.1985) (Wouters & Bless 1986); Terschelling, 17 localities (Scharf & Hollwedel 2010).

Cavernocypris subterranea (Wolf, 1920)

Heerlen, Welten, Putberg, spring and spring brook (03.09.1985) (Wouters & Bless 1986).

Plesiocypridopsis newtoni (Brady & Robertson, 1870)

As *Cypridopsis newtoni*, near Zoeterwoude, in a ditch at Hichtum, IJsselmeer and lagoons along the coast (Redeke & den Dulk 1940); Vogelmeer (12.12.1962 – 03.07.1963 (du Saar 1967); in a little lake near Rockanje, 51°52' N, 04°04' E (18.10.1977), Simonshaven, 51°49' N, 04°17' E (25.10.1977) (Sluys 1979); as *Plesiocypridopsis newtoni*, Terschelling, 7 localities (Scharf & Hollwedel 2010).

Sarscypridopsis aculeata (Costa, 1847)

As *Cypridopsis aculeata*, in the Kerkmeer near Akersloot, in a ditch on Schokland (de Lint 1924); Vogelmeer (12.12.1962) (du Saar 1967); Brielse Maas, Rozenburg, Texel, Zuiderzee (Wagner 1957); in a little lake near Rockanje, 51°52' N, 04°04' E (18.10.1975), Simonshaven, 51°09' N, 04°17' E (25.10.1977) (Sluys 1979); as *Sarscypridopsis aculeata*, Terschelling, 7 localities (Scharf & Hollwedel 2010).

Potamocypris arcuata (Sars, 1903)

Terschelling, 2 localities (Scharf & Hollwedel 2010).

Potamocypris smaragdina (Vavra, 1891)

Terschelling, 3 localities (Scharf & Hollwedel 2010).

Potamocypris unicaudata Schäfer, 1943

As *Potamocypris vanoyei* n. sp., the Keeggat on the Isle of Ameland, 18.08.1945, type locality (de Vos, 1946); as *P. vanoyei*, Quackjeswater, Breede Water and Vogelmeer (12.12.1962 – 03.07.1963) (du Saar 1967); as *Potamocypris unicaudata*, little lake of Rockanje on the Isle of Voorne, 51°52' N, 04°04' E (18.10.1977) (Sluys 1979); Terschelling, 7 localities (Scharf & Hollwedel 2010).

Potamocypris variegata (Brady & Norman, 1889)

As *Paracypridopsis variegata*, Breede Water on the isle of Voorne (Hofker 1928).

Potamocypris villosa (Jurine, 1820)

Heerlen, Benzenrade, Keverberg, concrete cattle drinking trough in meadow (03.09.1985), Kunderberg, Voerendaal, old toad pool (19.10.1985) (Wouters & Bless 1986).

Potamocypris zschokkei (Kaufmann, 1900)

Heerlen, Welten, Putberg, spring and spring brook (03.09.1985) (Wouters & Bless 1986).

Suborder Darwinulocopina Sohn, 1988

Superfamily Darwinuloidea Brady & Norman, 1889

Family Darwinulidae Brady & Norman, 1989

Darwinula stevensoni (Brady & Robertson, 1870)

Zuidwillemsvaart (Romijn 1919); near Vreeland and Leiden, various lagoons on the coast of the IJsselmeer (Redeke & den Dulk 1940); ditch in The Hague, Noord Aa, Sever (Wagner 1957); Terschelling, 2 localities (Scharf & Hollwedel 2010).

Discussion

1. The checklist of Ostracoda of the Netherlands contains now 114 species, belonging to 61 genera. Of these 51 are marine species, and 63 non-marine. In comparison, the

annotated list of Redeke & den Dulk (1940) contained 77 species and Mol (1984) listed 90 species.

2. The five most common species of the Dutch ostracod fauna are (type of environment and number of localities between brackets): *Cypria ophtalmica* (freshwater, 52), *Cyprideis torosa* (brackish, 47), *Loxoconcha elliptica* (brackish, 36), *Cypridopsis vidua* (freshwater, 33), *Pontocythere elongata* (marine, 24).

3. The number of marine species (51) in the present list is remarkably low. Redeke & den Dulk (1940) listed only 21 marine species, and emphasized (p. 140) that "our knowledge of marine forms is still quite insufficient". Only seven papers are exclusively dealing with marine Ostracoda of the Netherlands, namely: Brady & Robertson (1870), de Vos (1953), de Vos & Stock (1957), Wagner (1957, 1960, 1964) and Faasse (2004). Up to now 29 species have been recorded from the Wadden Sea, 12 from the Oosterschelde, 3 from lake Grevelingen and 1 from lake Veere, all known to be biodiversity-rich environments. These low numbers are not surprising. Ostracods are only rarely used in ecological or biodiversity studies of the marine environment. In the foreword to the fauna of Angel (1993), Doris M. Kermack wrote (p. vii): "Most aquatic biologists can recognise an ostracod as such but, we suspect, comparatively few have managed to identify one to species. Consequently, this numerically important group of crustaceans has been sadly neglected by scientists."

4. The present checklist is comparable with the checklist of Belgian ostracods (Wouters 1989, 2010a). The total number of ostracods in Belgium amounts to 129, of which 72 are non-marine and 57 marine. The Dutch ostracod fauna consists of 114 species, with 63 non-marine and 51 marine species. As for Belgium, the marine ostracods of the Netherlands are only poorly known. In both cases the occurrences of marine species are largely based on the presence of empty valves and/or carapaces in sediment samples. Information on the real occurrences of the species actually living in the Dutch and Belgian part of the North Sea is very often lacking.

5. In the present list three species are added to the Dutch ostracod fauna, namely *Leptocythere psammophila* from the Oosterschelde, *Cytherois arenicola*, a very rare sand dwelling species, also from the Oosterschelde, and *Eucypris elliptica*, a freshwater species, from a pool in Soerendonk in the river basin of the Strijper Aa.

6. Three species in the list are originally described from the Netherlands. *Aspidoconcha limnoriae* de Vos,1953, type locality: Zandvoort, epibiont on *Limnoria lignorum*; *A. limnoriae* is also the type species of the genus *Aspidoconcha* de Vos, 1953. *Redekea perpusilla* de Vos, 1953, type locality: Zandvoort, epibiont on *Limnoria lignorum*; *R. perpusilla* is also the type species of the genus *Redekea* de Vos, 1953. *Cypria ophtalmica* (Jur.) var. *subsalsa* nov. var. Redeke, 1936, raised to the rank of species by Wouters (1984), type locality: ditch on the isle of Schokland.

Two other species were also described from the Netherlands, but were later synonymized. *Loxoconcha emelwardensis* Redeke, 1936, type locality: ditch on the isle of Schokland; the species was later synonymized with *Loxoconcha elliptica* Brady, 1968 by Wagner (1957) and *Potamocypris vanoyei* de Vos, 1946, type locality: the Keeggat on the isle of Ameland; the species was later synonymized with *Potamocypris unicaudata* Schäfer, 1943 by Sluys (1977).

7. The here presented list is certainly not complete any many species have still to be found in fresh and brackish waters and in the Dutch part of the North Sea and in the Delta area. The fauna of Meisch (2000) mentions 149 non-marine species in Western and Central Europe (against 63 in the Netherlands). It is likely that not all of these species occur in the Netherlands, but if it is assumed that half of them do, or somewhat more, then the number of non-marine ostracods could increase with ca 20 species. For the marine species the list is even more incomplete. Angel (1993) mentions 84 species of marine ostracods of the orders Halocyprida and Myodocopa. Not a single species of these two orders is present on the list. The fauna of Athersuch et al. (1989) contains 116 marine species, but in this

fauna the orders Halocyprida and Myodocopa are not dealt with either. Therefore, the list of Holmes et al. (1997) is more appropriate. This list, which includes the orders Halocyprida and Myodocopa, contains 183 marine species of the British Isles and the surrounding seas (against 51 in the Netherlands). If it is assumed that half of these species could also be present in the Netherlands, then the number of Dutch marine ostracods could amount to 90 species. Circa 20 supplementary fresh and brackish water species and 40 marine would bring the total "guesstimated" number of Dutch ostracods to somewhat more than 170, as already suggested by Wouters (2010b).

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