

Recent benthic foraminiferal assemblages from the Celtic Sea (South Western Approaches, NE Atlantic)

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Appendix 1 Taxonomic references

Acervulina inhaerens Schultze, 1854

Adercotryma glomerata (Brady) = *Lituola glomerata* Brady, 1878

Adercotryma wrighti Brönnimann and Whittaker, 1987

Ammobaculites agglutinans (d'Orbigny) = *Spirolina agglutinans* d'Orbigny, 1846

Ammodiscus catinus Höglund, 1947

Ammodiscus planorbis Höglund, 1947

Ammodiscus sp.

Ammoglobigerina shannoni (Brönnimann and Whittaker) = *Globotrochamminopsis shannoni* Brönnimann and Whittaker, 1988

Ammolagena clavata (Jones and Parker) = *Trochammina irregularis* (d'Orbigny) var. *clavata* Jones and Parker, 1860

Ammomassilina alveoliniformis (Milett) = *Massilina alveoliniformis* Milett, 1898

Ammonia batavus (Hofker) = *Streblus batavus* Hofker, 1951 = T3S of Hayward et al. (2004)

Ammonia falsobeccarii (Rouvillois) = *Pseudoeponides falsobeccarii* Rouvillois, 1974 = T3 of Hayward et al. (2004)

Ammoscalaria pseudospiralis (Williamson) = *Proteonina pseudospiralis* Williamson, 1858

Ammoscalaria tenuimargo (Brady) = *Haplophragmium tenuimargo* Brady, 1884

Ammosphaeroidina sphaeroidiniformis (Brady) = *Haplophragmium sphaeroidiniforme*

Brady, 1884

Amphicoryna scalaris (Batsch) = *Nautilus (Orthoceras) scalaris* Batsch, 1791

Anomalina ammonoides (Reuss) = *Rosalina ammonoides* Reuss, 1844

Astacolus crepidulus (Fichtel and Moll) = *Nautilus crepidula* Fichtel and Moll, 1798

Asterigerinata mamilla (Williamson) = *Rotalina mamilla* Williamson, 1858

Astrononion stelligerum (d'Orbigny) = *Nonionina stelligera* d'Orbigny, 1839

Bathysiphon capillare De Folin, 1886

Bigenerina nodosaria d'Orbigny, 1826

Biloculinella irregularis (d'Orbigny) = *Biloculina irregularis* d'Orbigny, 1839

Bolivina difformis (Williamson) = *Textularia variabilis* Williamson var. *difformis*

Williamson, 1858

Note: *Brizalina difformis* of Sturrock and Murray (1981) and Murray (2006)

Bolivina dilatata Reuss, 1850

Bolivina ordinaria Phleger and Parker, 1952

Bolivina pseudoplicata Heron-Allen and Earland, 1930

Bolivina pseudopunctata Höglund, 1947

Bolivina subaenariensis Cushman, 1922

Bolivina tongi Cushman, 1929

Bolivina variabilis (Williamson) = *Textularia variabilis* Williamson, 1858

Bolivina spp.

Note: there are seven different species under these spp.-taxa, but with uncertain designation

Bulimina gibba Fornasini, 1902

Bulimina marginata d'Orbigny, 1826

Bulimina striata mexicana (Cushman) = *Bulimina striata* d'Orbigny var. *mexicana* Cushman,

1922

Bulimina striata striata d'Orbigny, 1826

Buliminella elegantissima (d'Orbigny) = *Bulimina elegantissima* d'Orbigny, 1839

Note: *Bulimina elegantissima* of Heron-Allen and Earland (1913)

Buliminella minutissima (Wright) = *Bulimina minutissima* Wright, 1902

Note: *Bulimina minutissima* of Murray (2006)

Buzasina ringens (Brady) = *Trochammina ringens* Brady, 1879

Cancris auriculus (Fichtel and Moll) = *Nautilus auricula* Fichtel and Moll, 1798

Cassidulina crassa d'Orbigny, 1839

Cassidulina laevigata d'Orbigny, 1826

Note: *Cassidulina carinata* (Silvestri, 1896) of Murray et al. (1982) and Murray (2006)

Cassidulina minuta Cushman, 1933

Cassidulina neoteretis Seidenkrantz, 1995

Cassidulina obtusa Williamson, 1858

Cassidulina reniforme (Norvang) = *Cassidulina crassa* d'Orbigny var. *reniforme* Norvang,
1945

Cassidulina sp.

Cassidulinoides bradyi (Norman) = *Cassidulina bradyi* Norman, 1881

Cassidulinoides sp.

Chilostomella ovoidea Reuss, 1850

Cibicidella variabilis (d'Orbigny) = *Truncatulina variabilis* d'Orbigny, 1826

Cibicides lobatulus (Walker and Jacob) = *Nautilus lobatulus* Walker and Jacob, 1798

Cibicides refulgens Montfort, 1808

Cibicides spp.

Note: there are two different species under these spp.-taxa, but with uncertain designation

Cibicidoides mollis (Phleger and Parker) = *Cibicides mollis* Phleger and Parker, 1951

Cibicidoides pachyderma (Rzehak) = *Truncatulina pachyderma* Rzehak, 1886

Cibicidoides sp.

Clavulina mexicana (Cushman) = *Clavulina humilis* Brady var. *mexicana* Cushman, 1922

Clavulina obscura Chaster, 1892

Cornuspira involvens (Reuss) = *Operculina involvens* Reuss, 1850

Cribrostomoides nitidus (Goes) = *Haplophragmium nitidum* Goes, 1896

Cristellaria acutaureolaris (Fichtel and Moll) = *Nautilus acutaureolaris* Fichtel and Moll, 1798

Crithionina albida (Schulze) = *Storthosphaera albida* Schulze, 1875

Crithionina goesi Höglund, 1947

Crithionina mamilla Goes, 1894

Crithionina sp.

Cuneata arctica (Brady) = *Reophax arctica* Brady, 1881

Cyclammia cancellata Brady, 1879

Dentalina communis (d'Orbigny) = *Nodosaria (Dentalina) communis* d'Orbigny, 1826

Dentalina sp.

Deuterammia (Deuterammia) balkwilli Brönnimann and Whittaker, 1983

Deuterammia (Deuterammia) rotaliformis (Heron-Allen and Earland) = *Trochammia rotaliformis* Heron-Allen and Earland, 1911

Deuterammia (Deuterammia) spp.

Note: there are two different species under these spp.-taxa, but with uncertain designation

Deuterammia (Lepidodeuterammia) mourai Brönnimann and Zaninetti, 1984

Deuterammia (Lepidodeuterammia) ochracea (Williamson) = *Rotalina ochracea* Williamson, 1858

Deuterammia (Lepidodeuterammia) sinuosa (Brönnimann) = *Asterotrochammia sinuosa* Brönnimann, 1978

Deuterammia (Lepidodeuterammia) spp.

Note: there are three different species under these spp.-taxa, but with uncertain designation

Discanomalina coronata (Parker and Jones) = *Anomalina coronata* Parker and Jones, 1857

Discanomalina semipunctata (Bailey) = *Rotalina semipunctata* Bailey, 1851

Discorbina polyrraphes (Reuss) = *Rotalina polyrraphes* Reuss, 1845

Note: *Rosalina polyrraphes* of Murray (2006)

Discorbina sp. juv.

Discorbinella bertheloti (d'Orbigny) = *Rosalina bertheloti* d'Orbigny, 1839

Dorothia bradyana Cushman, 1936

Eggerella europea (Christiansen) = *Verneuilina europeum* Christiansen, 1958

Eggerelloides medius (Höglund) = *Verneuilina media* Höglund, 1947

Eggerelloides scaber (Williamson) = *Bulimina scabra* Williamson, 1858

Elphidium complanatum (d'Orbigny) = *Polystomella complanata* d'Orbigny, 1839

Elphidium crispum (Linné) = *Nautilus crispus* Linné, 1758

Elphidium discoidale (d'Orbigny) = *Polystomella discoidalis* d'Orbigny, 1839

Elphidium earlandi Cushman, 1936

Elphidium excavatum (Terquem) = *Polystomella excavata* Terquem, 1875

Elphidium incertum (Williamson) = *Polystomella umbilicatula* (Walker) var. *incerta*
Williamson, 1858

Elphidium sp.

Epistominella exigua (Brady) = *Pulvinulina exigua* Brady, 1884

Epistominella rugosa (Phleger and Parker) = ?*Pseudoparella rugosa* Phleger and Parker,
1951

Epistominella vitrea Parker, 1953

Eponides repandus (Fichtel and Moll) = *Nautilus repandus* Fichtel and Moll, 1798

Eponides repandus var. *concameratus* (Montagu) = *Serpula concamerata* Montagu, 1808

Fissurina clathrata (Brady) = *Lagena clathrata* Brady, 1884

Fissurina laevigata Reuss, 1850

Fissurina lagenoides (Williamson) = *Lagena lagenoides* Williamson, 1848

Fissurina marginata (Montagu) = *Vermiculum marginatum* Montagu, 1803

Fissurina orbignyana Seguenza, 1862

Fissurina piriformis (Buchner) = *Lagena piriformis* Buchner, 1940

Fissurina quadrata (Williamson) = *Entosolenia marginata* (Montagu) var. *quadrata* Williamson, 1858

Fissurina sp.

Gaudryina rudis Wright, 1900

Gavelinopsis caledonia Murray and Whittaker, 2001

Gavelinopsis praegeri (Heron-Allen and Earland) = *Discorbina praegeri* Heron-Allen and Earland, 1913

Glabratella chasteri (Heron-Allen and Earland) = *Discorbina chasteri* Heron-Allen and Earland, 1913

Globobulimina affinis (d'Orbigny) = *Bulimina affinis* d'Orbigny, 1839

Globobulimina sp. 324 after Schiebel (1992), plate 2, fig. 7

Globocassidulina subglobosa (Brady) = *Cassidulina subglobosa* Brady, 1881

Guttulina problema (d'Orbigny) = *Polymorphina (Guttulina) problema* d'Orbigny, 1826

Gyroidina neosoldanii Brotzen, 1936

Gyroidina umbonata (Silvestri) = *Rotalia soldanii* d'Orbigny var. *umbonata* Silvestri, 1898

Gyroidina sp. juv.

Hanzawaia boueana (d'Orbigny) = *Truncatulina boueana* d'Orbigny, 1846

Hanzawaia concentrica (Cushman) = *Truncatulina concentrica* Cushman, 1918

Hanzawaia nitidula (Bandy) = *Cibicidina basiloba* (Cushman) var. *nitidula* Bandy, 1953

Hanzawaia sp.

Haplophragmoides bradyi (Robertson) = *Trochammina bradyi* Robertson, 1891

Haplophragmoides fragile Höglund, 1947

Hoeglundina elegans (d'Orbigny) = *Rotalia (Turbinulina) elegans* d'Orbigny, 1826

Hormosinella guttifera (Brady) = *Lituola (Reophax) guttifera* Brady, 1881

Hyalinea balthica (Schröter) = *Nautilus balthicus* Schröter, 1783

Hyperammina fragilis Höglund, 1947

Hyperammina friabilis Brady, 1844

Hyperammina laevigata (Wright) = *Hyperammina elongata* Brady var. *laevigata* Wright, 1891

Jaculella obtusa Brady, 1882

Labrospira jeffreysii (Williamson) = *Nonionina jeffreysii* Williamson, 1858

Note: *Cribrostomoides jeffreysii* of Sturrock and Murray (1981), Murray et al. (1982) and Murray (2006)

Lagena hexagona (Williamson) = *Entosolenia squamosa* (Montagu) var. *hexagona* Williamson, 1848

Note: *Oolina hexagona* of Murray et al. (1982) and Murray (2006)

Lagena substriata Williamson, 1848

Lagena sulcata (Walker and Jacob) = *Serpula sulcata* Walker and Jacob, 1798

Lamarckina haliotidea (Heron-Allen and Earland) = *Pulvinulina haliotidea* Heron-Allen and Earland, 1911

Laryngosigma williamsoni (Terquem) = *Polymorphina williamsoni* Terquem, 1878

Lenticulina atlantica (Barker) = *Robulus atlanticus* Barker, 1960

Lenticulina gibba (d'Orbigny) = *Cristellaria gibba* d'Orbigny, 1839

Lenticulina rotulata (Lamarck) = *Lenticulites rotulata* Lamarck, 1804

Lenticulina spp.

Note: there are two different juvenile species under these spp.-taxa, but with uncertain designation

Leptohalysis scottii (Chaster) = *Reophax scottii* Chaster, 1892

Liebusella cf. *goesi* (Höglund) = *Liebusella goesi* Höglund, 1947

Marsipella cylindrica Brady, 1882

Marsipella elongata Norman, 1878

Marsipella spiralis Heron-Allen and Earland, 1912

Massilina secans (d'Orbigny) var. *tenuistriata* Earland, 1905

Melonis barleeaanum (Williamson) = *Nonionina barleeana* Williamson, 1858

Melonis sp.

Miliolinella elongata (Kruit) = *Miliolinella circularis* (Bornemann) var. *elongata* Kruit, 1955

Note: *Miliolinella circularis* var. *elongata* of Sturrock and Murray (1981) and Murray (2006)

Miliolinella oblonga (Montagu) = *Vermiculum oblongum* Montagu, 1803

Note: *Quinqueloculina oblonga* of Sturrock and Murray (1981) and Murray (2006)

Miliolinella subrotunda (Montagu) = *Vermiculum subrotundum* Montagu, 1803

Miliolinella valvularis (Reuss) = *Triloculina valvularis* Reuss, 1851

Miliolinella sp. juv.

Miniacina miniacea (Pallas) = *Millepora miniacea* Pallas, 1766

Mississippina concentrica (Parker and Jones) = *Pulvinulina concentrica* Parker and Jones, 1864

Neoconorbina millettii (Wright) = *Discorbina millettii* Wright, 1911

Note: *Discorbinoides millettii* of Murray (2006)

Neoconorbina terquemi (Rzehak) = *Discorbina terquemi* Rzehak, 1888

Neoconorbina williamsoni (Chapman and Parr) = *Discorbis williamsoni* Chapman and Parr, 1932

Note: *Rosalina williamsoni* of Sturrock and Murray (1981), Murray et al. (1982) and Murray (2006)

Neolenticulina peregrina (Schwager) = *Cristellaria peregrina* Schwager, 1866

Nonion pauperatus (Balkwill and Wright) = *Nonionina pauperata* Balkwill and Wright, 1885

Nonionella atlantica Cushman, 1947

Nonionella auricula Heron-Allen and Earland, 1930

Nonionella iridea Heron-Allen and Earland, 1932

Nonionella turgida (Williamson) = *Rotalina turgida* Williamson, 1858

Nonionella sp. juv.

Nonionellina labradorica (Dawson) = *Nonionina labradorica* Dawson, 1860

Nouria sp. after Mendes (2010), plate 1, fig. 2

Nuttallides pusillus (Parr) = *Eponides pusillus* Parr, 1950

Ophthalmidium balkwilli Macfadyen, 1939

Note: *Cornuloculina balkwilli* of Sturrock and Murray (1981), Murray et al. (1982) and Murray (2006)

Ophthalmidium sp.

Osangularia sp. juv.

Parafissurina lateralis (Cushman) = *Lagena lateralis* Cushman, 1913

Paratrochammina (*Lepidoparatrochammina*) *haynesi* (Atkinson) = *Trochammina haynesi* Atkinson, 1969

Paratrochammina (*Paratrochammina*) *tricamerata* (Earland) = *Trochammina tricamerata* Earland, 1934

Paratrochammina (*Paratrochammina*) *wrighti* Brönnimann and Whittaker, 1983

Patellina corrugata Williamson, 1858

Placopsilina confusa Cushman, 1920

Placopsilina sp.

Planispirinoides bucculentus (Brady) = *Miliolina bucculenta* Brady, 1884

Planorbulina distoma Terquem, 1876

Planorbulina mediterraneensis d'Orbigny, 1826

Planulina ariminensis d'Orbigny, 1826

Prinaella nitidula (Chaster) = *Pulvinulina nitidula* Chaster, 1892

Note: *Eoeponidella nitidula* of Murray et al. (1982) and Murray (2006)

Polymorphina compressa d'Orbigny, 1846

Polymorphinindae spp.

Note: the number of species under these spp.-taxa from Sturrock and Murray (1981) is unknown

Polystomammia nitida (Brady) = *Trochammia nitida* Brady, 1881

Polystomammia sp. juv.

Portatrochammia murrayi Brönnimann and Zaninetti, 1984

Note: *Trochammia globigeriniformis* var. *pygmaea* of Sturrock and Murray (1981)

Portatrochammia pacifica (Cushman) = *Trochammia pacifica* Cushman, 1925

Procerolagena clavata (d'Orbigny) = *Oolina clavata* d'Orbigny, 1846

Psammosphaera fusca Schultze, 1875

Pyrgo depressa (d'Orbigny) = *Biloculina depressa* d'Orbigny, 1826

Pyrgo fornasinii Chapman and Parr, 1935

Pyrgo lucernula (Schwager) = *Biloculina lucernula* Schwager, 1866

Pyrgo oblonga (d'Orbigny) = *Biloculina oblonga* d'Orbigny, 1839

Pyrgo sp.

Quinqueloculina angulata (Williamson) = *Miliolina bicornis* (Walker and Jacob) var.

angulata Williamson, 1858

Quinqueloculina bicornis (Walker and Jacob) = *Serpula bicornis* Walker and Jacob, 1798

Quinqueloculina cliarensis (Heron-Allen and Earland) = *Miliolina cliarensis* Heron-Allen and Earland, 1930

Quinqueloculina dunkerquiana (Heron-Allen and Earland) = *Miliolina dunkerquiana* Heron-Allen and Earland, 1930

Quinqueloculina lamarckiana d'Orbigny, 1839

Quinqueloculina lata Terquem, 1876

Quinqueloculina pygmaea Reuss, 1850

Quinqueloculina seminulum (Linné) = *Serpula seminulum* Linné, 1758

Quinqueloculina spp.

Note: there are three different species under these spp.-taxa, but with uncertain designation

Recurvoides trochamminiformis (Höglund) = *Recurvoides trochamminiforme* Höglund, 1947

Remaneica helgolandica Rhumbler, 1938

Reophax bilocularis Flint, 1899

Reophax calcareous (Cushman) = *Proteonina diffflugiformis* (Brady) var. *calcareus* Cushman, 1947

Reophax curtus Cushman, 1920

Reophax diffflugiformis Brady, 1879

Reophax micaceus Earland, 1934

Reophax moniliformis (Siddall) = *Reophax moniliforme* Siddall, 1886

Reophax scorpiurus Montfort, 1808

Reophax sp.

Reussoolina globosa (Montagu) = *Vermiculum globosum* Montagu, 1803

Rhabdammina abyssorum Sars, 1869

Rhizammina algaeformis Brady, 1879

Robertina arctica d'Orbigny, 1846

Robertina subcylindrica (Brady) = *Bulimina subcylindrica* Brady, 1881

Robertinoides bradyi (Cushman and Parker) = *Robertina bradyi* Chushman and Parker, 1936

Robertinoides normani (Goes) = *Bulimina normani* Goes, 1894

Robertinoides suecicum Höglund, 1947

Robertinoides spp.

Note: there are two different juvenile species from our samples and an unknown number of species from a sample of Sturrock and Murray (1981) under these spp.-taxa, but with uncertain designation

Rosalina anglica (Cushman) = *Discorbis globularis* (d'Orbigny) var. *anglica* Cushman, 1931

Rosalina anomala Terquem, 1875

Rosalina bradyi (Cushman) = *Discorbis globularis* (d'Orbigny) var. *bradyi* Cushman, 1915

Rosalina globularis d'Orbigny, 1826

Rosalina neapolitana (Hofker) = *Neoconorbina neapolitana* Hofker, 1951

Rosalina obtusa d'Orbigny, 1846

Rosalina spp.

Note: there are two different species under these spp.-taxa, but with uncertain designation

Rotaliammina concava (Seiglie) = *Tiphotrocha concava* Seiglie, 1964

Rotaliammina siphonata (Seiglie) = *Polysiphotrocha siphonata* Seiglie, 1964

Saccamina sphaerica Brady, 1871

Saccorhiza ramosa (Brady) = *Hyperammia ramosa* Brady, 1879

Seabrookia earlandi Wright, 1891

Sigmoilopsis schlumbergeri (Silvestri) = *Sigmoilina schlumbergeri* Silvestri, 1904

Siphonina bradyana Cushman, 1927

Siphotextularia bermudezi Mikhalevich, 1978

Siphotextularia caroliniana (Cushman) = *Textularia flintii* (Cushman) var. *caroliniana* Cushman, 1922

Siphotextularia cf. *occidentalis* (Cushman) = *Textularia foliacea* Heron-Allen and Earland var. *occidentalis* Cushman, 1922

Siphotextularia concava (Karrer) = *Plecanium concavum* Karrer, 1868

Siphotextularia curta (Cushman) = *Textularia flintii* Cushman var. *curta* Cushman, 1922

Siphotextularia flintii (Cushman) = *Textularia flintii* Cushman, 1911

Siphotextularia heterostoma (Fornasini) = *Textularia heterostoma* Fornasini, 1896

Siphotextularia sp.

Sphaeroidina bulloides d'Orbigny, 1826

Spirillina vivipara Ehrenberg, 1843

Spirillina wrightii Heron-Allen and Earland, 1930

Spiroloculina depressa d'Orbigny, 1826

Spiroloculina excavata d'Orbigny, 1846

Spiroplectinella sagittula (Defrance) = *Textularia sagittula* Defrance, 1824

Note: *Textularia sagittula* of Sturrock and Murray (1981), Murray et al. (1982) and Murray (2006); *Spiroplectamina wrightii* (Silvestri, 1903) of Murray (2006)

Stainforthia concava (Höglund) = *Virgulina concava* Höglund, 1947

Stainforthia fusiformis (Williamson) = *Bulimina pupoides* d'Orbigny var. *fusiformis* Williamson, 1858

Textularia bigenerinoides Lacroix, 1932

Textularia earlandi Parker, 1952

Textularia pseudogramen Chapman and Parr, 1937

Textularia skagerakensis Höglund, 1947

Textularia sp.

Tholosina vesicularis (Brady) = *Placopsilina vesicularis* Brady, 1879

Tolypammia vagans (Brady) = *Hyperammia vagans* Brady, 1879

Tolypammia sp.

Trifarina angulosa (Williamson) = *Uvigerina angulosa* Williamson, 1858

Trifarina bradyi Cushman, 1923

Trifarina fornasinii (Selli) = *Angulogerina fornasinii* Selli, 1948

Trifarina pauperata (Heron-Allen and Earland) = *Uvigerina angulosa* (Williamson) var. *pauperata* Heron-Allen and Earland, 1932

Triloculina tricarinata d'Orbigny, 1826

Triloculina williamsoni Terquem, 1878

Triloculina sp.

Tritaxis conica (Parker and Jones) = *Valvulina triangularis* d'Orbigny var. *conica* Parker and Jones, 1865

Tritaxis fusca (Williamson) = *Rotalina fusca* Williamson, 1858

Trochammina advena Cushman, 1922

Trochammina astrifica (Rhumbler) = *Trochammina squamata* Heron-Allen and Earland var. *astrifica* Rhumbler, 1938

Trochammina squamata Jones and Parker, 1860

Trochammina spp.

Note: there are six different species from our samples and four different species from samples of Sturrock and Murray (1981) and Murray et al. (1982) under these spp.-taxa, but with uncertain designation

Trochamminopsis pusilla (Höglund) = *Trochammina pusilla* Höglund, 1947

Tumidotubus albus Gooday and Haynes, 1983

Uvigerina auberiana d'Orbigny, 1839

Uvigerina cf. *bifurcata* (d'Orbigny) = *Uvigerina bifurcata* d'Orbigny, 1839

Uvigerina mediterranea Hofker, 1932

Vaginulina spp.

Note: there are two different juvenile species under these spp.-taxa, but with uncertain designation

Valvulineria spp.

Note: there are two different species under these spp.-taxa, but with uncertain designation

Vulvulina pennatula (Batsch) = *Nautilus (Orthoceras) pennatula* Batsch, 1791