Appendix 1

The recent fauna of shell-bearing molluscs in Danish waters as worked out by Jensen & Knudsen (1995) compared to the subfossil fauna in the Late Quaternary of Denmark.

Recent species

Class Polyplacophora
Order Neoloricata
Leptochiton asellus (Gmelin 1791)
Hanleya hanleyi (Bean 1844)
Callochiton septemvalvis (Montagu 1803)
Ischnochiton albus (Linnaeus 1767)
Lepidochitona cinereus (Linnaeus 1767)
Tonicella marmorea (Fabricius 1780)
Tonicella rubra (Linnaeus 1767)

Totals for order Neoloricata: 7 (2.5%)

Totals for Class Polyplacophora: 7 (2.5%)

Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Patella vulgata Linnaeus 1758
Helcion pellucidum (Linnaeus 1758)
Lepeta caeca (Müller 1776)
Iothia fulva (Müller 1776)
Acmaea tessulata (Müller 1776)
Acmaea virginea (Müller 1776)
Emarginula fissura (Linnaeus 1758)
Puncturella noachina (Linnaeus 1771)
Margarites helicinus (Phipps 1774)
Gibbula cineraria (Linnaeus 1758)
Gibbula tumida (Montagu 1803)
Jujubinus clelandi (W. Wood 1828)
Calliostoma formosa (Mighels 1842)
Calliostoma zizyphinum (Linnaeus 1758)
Skenea basistriata (Jeffreys 1877)
Theodoxus fluviatilis (Linnaeus 1758)

Totals for order Archaeogastropoda: 16 (5.8%)

Order Neotaenioglossa
Littorina littorea (Linnaeus 1758)
Melaraphe neritoides (Linnaeus 1758)
Littorina mariae Sacchi & Rastelli 1966
Littorina obtusata (Linnaeus 1758)
Littorina saxatilis (Olivi 1792)
Littorina tenebrosa (Montagu 1803)
Lacuna pallidula (da Costa 1778)
Lacuna crassior (Montagu 1803)
Lacuna parva (Montagu 1803)
Lacuna vincta (Montagu 1803)
Hydrobia neglecta Muus 1963
Hydrobia ulvae (Pennant 1777)
Hydrobia ventrosa (Montagu 1803)
Potamopyrgus antipodarum (Gray 1853)
Alvania abyssicola (Forbes 1850)
Alvania jeffreysi (Waller 1864)
Alvania punctura (Montagu 1803)
Cingula semistriata (Montagu 1808)
Cingula turgida (Jeffreys 1870)
Obtusella alderi (Jeffreys 1858)
Onoba aculeus (Gould 1841)
Onoba semicostata (Montagu 1803)
Onoba vitrea (Montagu 1803)
Rissoa albella Lovén 1846
Rissoa inconspicua Alder 1844
Rissoa membranacea (J. Adams 1800)
Rissoa parva (da Costa 1779)
Rissoa violacea Desmarest 1814
Assiminea grayana Fleming 1828
Caecum glabrum (Montagu 1803)
Bittium reticulatum (da Costa 1778)
Turritella communis Risso 1826
Aporrhais pespelicani (Linnaeus 1758)
Aporrhais serresianus (Michaud 1828)
Crepidula fornicata (Linnaeus 1758)
Capulus ungaricus (Linnaeus 1758)
Lamellaria perspicua (Linnaeus 1758)
Velutina plicatilis (Müller 1776)
Velutina velutina (Müller 1776)
Trivia arctica (Pulteney 1799)
Amauropsis islandicus (Gmelin 1791)
Lunatia alderi (Forbes 1838)
Lunatia catena (da Costa 1778)
Lunatia montagui (Forbes 1838)
Lunatia pallida (Broderip & Sowerby 1829)

Totals for order Neotaenioglossa: 45 (16.2%)

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Order Heterogastropoda
Triphora adversa (Montagu 1803)
Cerithiella metula (Lovén 1846)
Cerithiopsis barleei Jeffreys 1867
Epitonium clathratulum (Kanmacher 1797)
Epitonium clathrus (Linnaeus 1758)
Epitonium trevelyanum (Johnston 1841)
Epitonium turtonis (Turton 1819)
Aclis ascaris (Turton 1819)
Aclis minor (Brown 1827)
Aclis walleri Jeffreys 1867
Eulima bilineata (Alder 1848)
Haliella stenostoma (Jeffreys 1858)
Polygireulima sinuosa (Sacco 1836)
Polygireulima monterosatoi (Monterosato 1890)
Vitreolina philippii (Rayneval & Ponzi 1854)
Melanella lubrica (Monterosato 1891)
Pelseneeria stylifera (Turton 1825)
Enteroxenos oestergreni Bonnevie 1902

Totals for order Heterogastropoda: 18 (6.5%)

Order Neogastropoda
Nucella lapillus (Linnaeus 1758)
Boreotrophon clathratus (Linnaeus 1767)
Boreotrophon truncatus (Ström 1768)
Ocenebra erinacea (Linnaeus 1758)
Trophonopsis barvicensis (Johnston 1825)
Buccinum undatum Linnaeus 1758
Colus gracilis (da Costa 1778)
Colus jeffreysianus (Fischer 1868)
Colus sabini (Gray 1824)
Liomesus ovum (Turton 1825)
Neptunea antiqua (Linnaeus 1758)
Turrisipho moebii (Dunker & Metzger 1874)
Hinia incrassata (Ström 1768)
Hinia pygmaea (Lamarck 1822)
Hinia reticulata (Linnaeus 1758)
Troschelia bernicensis (King 1846)
Cytharella coarctata (Forbes 1840)
Oenopota trevelliana (Turton 1834)
Oenopota turricola (Montagu 1803)
Bela exarata G.O.Sars 1818
Mangelia attenuata (Montagu 1803)
Mangelia brachystoma (Philippi 1844)
Mangelia nebula (Montagu 1803)
Raphitoma asperrima (Brown 1827)
Raphitoma leufroyi (Michaud 1821)
Raphitoma linearis (Montagu 1803)
Taranis borealis Bouchet & Warén 1980
Taranis moerchi (Malm 1861)
Admete viridula (Fabricius 1780)

Totals for order Neogastropoda: 29 (10.4%)

Totals for subclass Prosobranchia: 115 (41.4%)

Subclass Heterobranchia
Order Heterostropha
Omalogyra atomus (Phillippi 1841)
Brachystomia carozzai van Aartsen 1987
Brachystomia eulimoides Hanley 1844
Odostomia scalaris MacGillivray 1843
Chrysallida decussata (Montagu 1803)
Chrysallida indistincta (Montagu 1808)
Chrysallida obtusa (Brown 1827)
Chrysallida spiralis (Montagu 1803)
Ebala nitidissima (Montagu 1803)
Eulimella laevis (Brown 1827)
Eulimella scillae (Scacchi 1835)
Ondina divisa (J. Adams 1797)
Ondina diaphana (Jeffreys 1848)
Liostomia clavula (Lovén 1846)
Odostomia acuta Jeffreys 1848
Odostomia conoidea Winckworth 1932
Odostomia turrita Hanley 1844
Odostomia albella Lovén 1846
Odostomia plicata (Montagu 1803)
Turbonilla crenata (Brown 1827)
Turbonilla delicata (Monterosato 1874)
Turbonilla lactea (Linné 1758)

Totals for order Heterostropha: 22 (7.9%)

Totals for subclass Heterobranchia: 22 (7.9%)

Subclass Opisthobranchia
Order Bullomorpha
Acteon tornatilis (Linnaeus 1758)
Cylichna cylindracea (Pennant 1777)
Scaphander lignarius (Linnaeus 1758)
Scaphander punctostriatus (Mighels & Adams 1841)
Philine aperta (Linnaeus 1767)
Philine catena (Montagu 1803)
Philine denticulata (Adams 1800)
Philine punctata (Adams 1800)
Philine quadrata (S. Wood 1839)
Philine scabra (Müller 1776)
Philinoglossa helgolandica Hertling 1932

Totals for order Bullomorpha: 11 (4.0%)

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Order Anaspidea
Diaphana minuta Brown 1827
Retusa obtusa (Montagu 1803)
Retusa truncatula (Bruguière 1792)
Retusa umbilicata (Montagu 1803)
Rhizorus acuminatus (Bruguière 1792)
Akera bullata Müller 1776

Totals for order Anaspidea: 6 (2.2%)

Order Thecosomata
Limacina retroversa (Fleming 1823)

Totals for order Thecosomata: 1 (0.4%)

Order Gymnosomata
Clione limacina (Phipps 1774)

Totals for order Gymnosomata: 1 (0.4%)

Totals for subclass Opisthobranchia: 19 (6.8%)

Subclass Pulmonata
Order Basommatophora
Ovatella myosotis (Draparnaud 1801)
Lymnaea peregra (Müller 1774)

Totals for order Basommatophora: 2 (0.7%)

Totals for subclass Pulmonata: 2 (0.7%)

Totals for Class Gastropoda: 151 (54.3%)

Class Scaphopoda
Cadulus subfusiforme (M. Sars 1865)
Antalis agile G.O. Sars 1878
Antalis entalis (Linnaeus 1758)

Totals for Class Scaphopoda: 3 (1.1%)

Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Nucula nitidosa Winckworth 1930
Nucula nucleus (Linnaeus 1767)
Nucula sulcata (Bronn 1831)
Nuculoma hanleyi Winckworth 1931
Nuculoma tenuis (Montagu 1808)
Nuculana minuta (Müller 1776)
Nuculana pernula (Müller 1776)
Yoldiella lucida (Lovén 1846)
Malletia obtusa (G.O. Sars 1872)

Totals for order Nuculoida: 12 (4.3%)

Totals for subclass Palaeotaxodonta: 12 (4.3%)

Subclass Pteriomorpha
Order Arcoida
Acar nodulosa (Müller 1766)
Bathyarca pectunculoides (Scacchi 1834)

Totals for order Arcoida: 2 (0.7%)

Order Mytiloida
Mytilus edulis Linnaeus 1758
Modiolula phaseolina (Philippi 1844)
Modiolus adriaticus (Lamarck 1819)
Modiolus modiolus (Linnaeus 1758)
Musculus discors (Linnaeus 1767)
Musculus niger (Gray 1824)
Modiolaria tumida (Hanley 1843)
Crenella decussata (Montagu 1803)
Adipicola simpsoni (Marshall 1900)

Totals for order Mytiloida: 9 (3.2%)

Order Pterioida
Aequipecten opercularis (Linnaeus 1758)
Chlamys varia (Linnaeus 1758)
Delectopecten vitreus (Gmelin 1791)
Palliolum striatum (Müller 1776)
Palliolum tigerinum (Müller 1776)
Pecten maximus (Linnaeus 1758)
Pseudamussium septemradiatum (Müller 1776)
Similipecten similis (Laskey 1811)
Pododesmus patelliformis (Linnaeus 1761)
Pododesmus squama (Gmelin 1791)
Heteranomia squamula (Linnaeus 1758)
Ostrea edulis Linnaeus 1758
Limaria hians (Gmelin 1791)
Limaria loscombi (Sowerby 1832)
Limatula subauriculata (Montagu 1808)

Totals for order Pterioida: 15 (5.4%)

Totals for subclass Pteriomorpha: 26 (9.4%)

Subclass Heterodonta
Order Veneroida
Lucinoma borealis (Linnaeus 1758)

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Myrtea spinifera (Montagu 1803)
Thyasira croulinensis (Jeffreys 1847)
Thyasira flexuosa (Montagu 1803)
Thyasira sarsi (Philippi 1845)
Mysella bidentata (Montagu 1803)
Mysella tumidula (Jeffreys 1867)
Mysella dawsoni (Jeffreys 1864)
Montacuta substriata (Montagu 1803)
Tellimya ferruginosa (Montagu 1803)
Lepton nitidum (Turton 1822)
Lepton squamosum (Montagu 1803)
Devonia perrieri (Malard 1904)
Kellia suborbicularis (Montagu 1803)
Astarte sulcata (da Costa 1778)
Tridonta borealis Schumacher 1817
Tridonta elliptica (Brown 1827)
Tridonta montagui (Dillwyn 1817)
Acanthocardia echinata (Linnaeus 1758)
Parvicardium exiguum (Gmelin 1791)
Parvicardium ovale (Sowerby 1840)
Parvicardium scabrum (Philippi 1844)
Parvicardium minimum (Philippi 1836)
Cerastoderma edule (Linnaeus 1758)
Cerastoderma glaucum (Poiret 1789)
Laevicardium crassum (Gmelin 1791)
Mactra stultorum (Linnaeus 1758)
Lutraria lutraria (Linnaeus 1758)
Spisula elliptica (Brown 1827)
Spisula solida (Linnaeus 1758)
Spisula subtruncata (da Costa 1778)
Solecurtus chamasolen (da Costa 1778)
Solecurtus scopula (Turlok 1822)
Ensis arcuatus (Jeffreys 1865)
Ensis ensis (Linnaeus 1758)
Ensis siliqua (Linnaeus 1758)
Phaxas pellucidus (Pennant 1777)
Angulus tenuis (da Costa 1778)
Arcopagia crassa (Pennant 1778)
Fabulina fabula (Gmelin 1791)
Tellina pygmaea (Lovén 1846)
Macoma balthica (Linnaeus 1758)
Macoma calcarea (Gmelin 1791)
Donax vittatus (da Costa 1778)
Gari fervensis (Gmelin 1791)
Gari tellinella (Lamarck 1818)
Scrobicularia plana (da Costa 1778)
Abra alba (Wood 1802)
Abra nitida (Müller 1776)
Abra prismatica (Montagu 1803)
Arctica islandica (Linnaeus 1767)
Kelliella miliaris (Philippi 1844)
Glossus humanus (Linnaeus 1758)
Chamelea striatula (da Costa 1778)
Clausinella fasciata (da Costa 1778)
Timoclea ovata (Pennant 1777)
Venerupis rhomboides (Pennant 1777)
Venerupis pullastra (Montagu 1803)
Dosinia exoleta (Linnaeus 1758)
Dosinia lincta (Montagu 1803)
Mysia undata (Pennant 1777)

Totals for order Veneroida: 61 (21.9%)

Order Myoida
Mya arenaria Linnaeus 1758
Mya truncata Linnaeus 1758
Corbula gibba (Olivi 1792)
Hiatella arctica (Linnaeus 1758)
Hiatella rugosa (Linnaeus 1758)
Saxicavella jeffreysi Winckworth 1930
Panomya arctica (Lamarck 1818)
Barnea candida (Linnaeus 1758)
Pholas dactylus Linnaeus 1758
Zirfaea crispata (Linnaeus 1758)
Xylophaga dorsalis Turton 1822
Teredo navalis Linnaeus 1758
Nototeredo norvegica (Spengler 1792)
Psiloteredo megotara (Forbes & Hanley 1848)

Totals for order Myoida: 14 (5.0%)

Totals for subclass Heterodonta: 75 (27.0%)

Subclass Anomalodesmata
Order Pholadomyoida
Lyonsia norvegica (Gmelin 1791)
Cochlodesma praetenue (Pulteney 1799)
Thracia convexa (Wood 1815)
Thracia phaseolina (Lamarck 1818)
Thracia gracilis (Jeffreys 1865)
Thracia villosiuscula (MacGillivray 1827)
Cupidaria cuspidata (Olivi 1792)

Totals for order Pholadomyoida: 7 (2.5%)

Totals for subclass Anomalodesmata: 7 (2.5%)

Totals for Class Bivalvia: 117 (42.1%)

Totals for list 278

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Subfossil species

Class Polyplacophora
Order Neoloricata
Tonicella marmorea (Fabricius 1780)

Totals for order Neoloricata: 1 (0.4%)

Totals for Class Polyplacophora: 1 (0.4%)

Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Scissurella crispata Fleming 1828
Patella vulgata Linnaeus 1758
Helcion pellucidum (Linnaeus 1758)
Iothia fulva (Müller 1776)
Acmaea tessulata (Müller 1776)
Acmaea virginea (Müller 1776)
Margarites helicinus (Phipps 1774)
Gibbula cineraria (Linnaeus 1758)
Gibbula tumida (Montagu 1803)
Skenea serpuloides (Montagu 1808)
Skenea basistriata (Jeffreys 1877)
Theodoxus fluviatilis (Linnaeus 1758)

Totals for order Archaeogastropoda: 12 (4.9%)

Order Neotaenioglossa
Littorina littorea (Linnaeus 1758)
Littorina obtusata (Linnaeus 1758)
Littorina saxatilis (Olivi 1792)
Littorina tenebrosa (Montagu 1803)
Lacuna pallidula (da Costa 1778)
Lacuna parva (Montagu 1803)
Lacuna vincta (Montagu 1803)
Hydrobia ulvae (Pennant 1777)
Hydrobia ventrosa (Montagu 1803)
Skeneopsis planorbis (Fabricius 1780)
Barleeia unifasciata (Montagu 1803)
Alvania abyssicola (Forbes 1850)
Alvania lactea (Michaud 1830)
Alvania cimicoides (Forbes 1844)
Alvania punctura (Montagu 1803)
Alvania cruenta Odhner 1915
Alvania scrobiculata (Möller 1842)
Alvania jan mayeni (Friele 1886)
Cingula semistriata (Montagu 1808)
Cingula turgida (Jeffreys 1870)
Onoba semicostata (Montagu 1803)
Onoba proxima (Forbes & Hanley 1850)
Onoba vitrea (Montagu 1803)
Rissoa albella Lovén 1846
Rissoa inconspicua Alder 1844
Rissoa membranacea (J. Adams 1800)
Rissoa parva (da Costa 1779)
Rissoa violacea Desmarest 1814
Caecum glabrum (Montagu 1803)
Bittium reticulatum (da Costa 1778)
Turritella communis Risso 1826
Turritella erosa Couthouy 1838
Aporrhais pespelicani (Linnaeus 1758)
Trivia monacha (da Costa 1778)
Lunatia alderi (Forbes 1838)
Lunatia catena (da Costa 1778)
Lunatia montagui (Forbes 1838)
Lunatia pallida (Broderip & Sowerby 1829)
Natica affinis (Gmelin 1790)

Totals for order Neotaenioglossa: 39 (15.8%)

Order Heterogastropoda
Triphora adversa (Montagu 1803)
Cerithiopsis barleei Jeffreys 1867
Cerithiopsis tubercularis (Montagu 1803)
Epitonium clathrus (Linnaeus 1758)
Epitonium trevelyanum (Johnston 1841)
Epitonium turtonis (Turton 1819)
Aclis ascaris (Turton 1819)
Aclis minor (Brown 1827)
Aclis walleri Jeffreys 1867
Polygireulima sinuosa (Sacco 1836)
Vitreolina collensi (Sykes 1903)
Vitreolina philippii (Rayneval & Ponzi 1854)
Graphis albida (Kanmacher 1798)
Melanella lubrica (Monterosato 1891)
Melanella alba (da Costa 1778)
Hemiaclis ventrosa (Jeffreys MS Fricle 1874)

Totals for order Heterogastropoda: 16 (6.5%)

Order Neogastropoda
Nucella lapillus (Linnaeus 1758)
Boreotrophon clathratus (Linnaeus 1767)
Buccinum undatum Linnaeus 1758
Buccinum cyaneum Bruguière 1792
Neptunea antiqua (Linnaeus 1758)
Neptunea despecta (Linnaeus 1758)
Hinia incrassata (Ström 1768)
Hinia pygmaea (Lamarck 1822)
Hinia reticulata (Linnaeus 1758)
Cytharella coarctata (Forbes 1840)

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Oenopota incisula (Verrill 1882)
Oenopota trevelliana (Turton 1834)
Oenopota turricola (Montagu 1803)
Oenopota violacea (Mighels & Adams 1842)
Bela exarata G.O.Sars 1818
Mangelia brachystoma (Philippi 1844)
Raphitoma purpurea (Montagu 1803)
Raphitoma linearis (Montagu 1803)
Admete viridula (Fabricius 1780)

Totals for order Neogastropoda: 19 (7.7%)

Totals for subclass Prosobranchia: 87 (35.2%)

Subclass Heterobranchia
Order Heterostropha
Omalogyra atomus (Phillippi 1841)
Brachystomia eulimoides Hanley 1844
Odostomia scalaris MacGillivray 1843
Chrysallida decussata (Montagu 1803)
Chrysallida eximia (Jeffreys 1849)
Chrysallida indistincta (Montagu 1808)
Chrysallida obtusa (Brown 1827)
Chrysallida spiralis (Montagu 1803)
Ebala nitidissima (Montagu 1803)
Eulimella laevis (Brown 1827)
Eulimella scillae (Scacchi 1835)
Ondina divisa (J. Adams 1797)
Ondina diaphana (Jeffreys 1848)
Odostomia acuta Jeffreys 1848
Odostomia conoidea Winckworth 1932
Odostomia turrita Hanley 1844
Odostomia albella Lovén 1846
Odostomia plicata (Montagu 1803)
Odostomia umbilicaris (Malm 1863)
Turbonilla crenata (Brown 1827)
Turbonilla delicata (Monterosato 1874)
Turbonilla lactea (Linné 1758)
Turbonilla sinuosa (Jeffreys 1884)

Totals for order Heterostropha: 23 (9.3%)

Totals for subclass Heterobranchia: 23 (9.3%)

Subclass Opisthobranchia
Order Bullomorpha
Acteon tornatilis (Linnaeus 1758)
Haminoea navicula (da Costa 1778)
Cylichna cylindracea (Pennant 1777)
Cylichna alba (Brown 1827)
Cylichna occulta (Mighels 1841)
Philine aperta (Linnaeus 1767)
Philine catena (Montagu 1803)
Philine punctata (Adams 1800)

Totals for order Bullomorpha: 8 (3.2%)

Order Anaspidea
Diaphana minuta Brown 1827
Retusa obtusa (Montagu 1803)
Retusa truncatula (Bruguière 1792)
Retusa umbilicata (Montagu 1803)
Akera bullata Müller 1776

Totals for order Anaspidea: 5 (2.0%)

Order Thecosomata
Limacina retroversa (Fleming 1823)

Totals for order Thecosomata: 1 (0.4%)

Order Gymnosomata
Clione limacina (Phipps 1774)

Totals for order Gymnosomata: 1 (0.4%)

Totals for subclass Opisthobranchia: 15 (6.1%)

Subclass Pulmonata
Order Basommatophora
Lymnaea peregra (Müller 1774)

Totals for order Basommatophora: 1 (0.4%)

Totals for subclass Pulmonata: 1 (0.4%)

Totals for Class Gastropoda: 125 (50.6%)

Class Scaphopoda
Cadulus subfusiforme (M. Sars 1865)
Siphonodentalium lobatum (Sowerby 1860)
Entalina tetragona (Brocchi 1814)
Antalis entalis (Linnaeus 1758)
Dentalium vulgare da Costa 1778

Totals for Class Scaphopoda: 5 (2.0%)

Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Nucula nitidosa Winckworth 1930
Nucula nucleus (Linnaeus 1767)

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Nucula sulcata (Bronn 1831)
Nuculoma tenuis (Montagu 1808)
Nuculana minuta (Müller 1776)
Nuculana pernula (Müller 1776)
Yoldia hyperborea Lovén 1859
Portlandia arctica (Gray 1824)
Yoldiella lucida (Lovén 1846)
Yoldiella lenticula (Möller 1842)
Yoldiella frigida (Torell 1859)
Yoldiella philippiana (Nyst 1845)

Totals for order Nuculoida: 17 (6.9%)

Totals for subclass Palaeotaxodonta: 17 (6.9%)

Subclass Pteriomorpha
Order Arcoida
Bathyarca glacialis (Gray 1824)

Totals for order Arcoida: 1 (0.4%)

Order Mytiloida
Mytilaster lineatus (Gmelin 1791)
Mytilaster solidus (Poli 1795)
Mytilus edulis Linnaeus 1758
Modiolula phaseolina (Philippi 1844)
Modiolus adriaticus (Lamarck 1819)
Modiolus modiolus (Linnaeus 1758)
Musculus discors (Linnaeus 1767)
Musculus laevigatus (Gray 1824)
Musculus niger (Gray 1824)
Modiolaria tumida (Hanley 1843)
Crenella decussata (Montagu 1803)

Totals for order Mytiloida: 11 (4.5%)

Order Pterioida
Chlamys islandica (O.F.Müller 1776)
Aequipecten opercularis (Linnaeus 1758)
Chlamys varia (Linnaeus 1758)
Delectopecten vitreus (Gmelin 1791)
Palliolum greenlandicum (Sowerby 1842)
Palliolum striatum (Müller 1776)
Palliolum tigerinum (Müller 1776)
Pecten maximus (Linnaeus 1758)
Pseudamussium septemradiatum (Müller 1776)
Similipecten similis (Laskey 1811)
Pododesmus patelliformis (Linnaeus 1761)
Anomia ephippium Linnaeus 1758
Heteranomia squamula (Linnaeus 1758)
Ostrea edulis Linnaeus 1758

Totals for order Pterioida: 14 (5.7%)

Totals for subclass Pteriomorpha: 26 (10.5%)

Subclass Heterodonta
Order Veneroida
Lucinella divaricata (Linnaeus 1758)
Lucinoma borealis (Linnaeus 1758)
Axinopsida orbiculata (G.O.Sars 1878)
Thyasira flexuosa (Montagu 1803)
Leptaxinus ferruginosus (Forbes 1844)
Mysella bidentata (Montagu 1803)
Tellimya ferruginosa (Montagu 1803)
Turtonia minuta (Fabricius 1780)
Lepton nitidum (Turton 1822)
Kellia suborbicularis (Montagu 1803)
Tridonta borealis Schumacher 1817
Tridonta elliptica (Brown 1827)
Tridonta montagui (Dillwyn 1817)
Acanthocardia echinata (Linnaeus 1758)
Parvicardium exiguum (Gmelin 1791)
Parvicardium ovale (Sowerby 1840)
Parvicardium scabrum (Philippi 1844)
Plagiocardium papillosum Poli 1795
Parvicardium minimum (Philippi 1836)
Cerastoderma edule (Linnaeus 1758)
Cerastoderma glaucum (Poiret 1789)
Clinocardium ciliatum (Fabricius 1780)
Laevicardium crassum (Gmelin 1791)
Serripes groenlandicus (Bruguière 1798)
Mactra stultorum (Linnaeus 1758)
Lutraria lutraria (Linnaeus 1758)
Spisula elliptica (Brown 1827)
Spisula solida (Linnaeus 1758)
Spisula subtruncata (da Costa 1778)
Ensis ensis (Linnaeus 1758)
Phaxas pellucidus (Pennant 1777)
Angulus tenuis (da Costa 1778)
Tellina donacina Linnaeus 1758
Fabulina fabula (Gmelin 1791)
Tellina pygmaea (Lovén 1846)
Gastrana fragilis (Linnaeus 1758)
Macoma balthica (Linnaeus 1758)
Macoma calcarea (Gmelin 1791)
Macoma torelli Jensen 1904
Macoma loveni Jensen 1904
Donax vittatus (da Costa 1778)
Gari depressa (Pennant 1777)
Gari fervensis (Gmelin 1791)
Scrobicularia plana (da Costa 1778)
Abra alba (Wood 1802)

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Abra nitida (Müller 1776)
Abra prismatica (Montagu 1803)
Abra segmentum (Récluz 1843)
Arctica islandica (Linnaeus 1767)
Kelliella miliaris (Philippi 1844)
Chamelea striatula (da Costa 1778)
Clausinella fasciata (da Costa 1778)
Paphia senescens (Cocconi 1873)
Paphia aurea (Gmelin 1791)
Tapes decussatus (Linnaeus 1758)
Timoclea ovata (Pennant 1777)
Venerupis rhomboides (Pennant 1777)
Venerupis pullastra (Montagu 1803)
Dosinia exoleta (Linnaeus 1758)
Dosinia lincta (Montagu 1803)
Gouldia minima (Montagu 1803)
Mysia undata (Pennant 1777)

Totals for order Veneroida: 62 (25.1%)

Order Myoida
Mya arenaria Linnaeus 1758
Mya truncata Linnaeus 1758
Corbula gibba (Olivi 1792)
Hiatella arctica (Linnaeus 1758)
Hiatella rugosa (Linnaeus 1758)
Saxicavella jeffreysi Winckworth 1930
Panomya arctica (Lamarck 1818)
Barnea candida (Linnaeus 1758)
Pholas dactylus Linnaeus 1758
Zirfaea crispata (Linnaeus 1758)

Totals for order Myoida: 10 (4.0%)

Totals for subclass Heterodonta: 72 (29.1%)

Subclass Anomalodesmata
Order Pholadomyoida
Pandora glacialis Leach 1819
Lyonsia norvegica (Gmelin 1791)
Lyonsia arenosa (Möller 1842)
Cochlodesma praetenue (Pulteney 1799)
Thracia phaseolina (Lamarck 1818)
Thracia villosiuscula (MacGillivray 1827)

Totals for order Pholadomyoida: 6 (2.4%)

Totals for subclass Anomalodesmata: 6 (2.4%)

Totals for Class Bivalvia: 116 (47.0%)

Totals for list 247

Recent species sorted after climatic affinities

Climatic regions: asb.

Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Lepeta caeca (Müller 1776)
Margarites helicinus (Phipps 1774)
Order Neotaenioglossa
Lacuna crassior (Montagu 1803)
Amauropsis islandicus (Gmelin 1791)
Lunatia pallida (Broderip & Sowerby 1829)
Order Neogastropoda
Boreotrophon clathratus (Linnaeus 1767)
Oenopota turricola (Montagu 1803)
Bela exarata G.O.Sars 1818
Admete viridula (Fabricius 1780)
Subclass Opisthobranchia
Order Anaspidea
Retusa obtusa (Montagu 1803)
Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Nuculana pernula (Müller 1776)
Subclass Pteriomorpha
Order Mytiloida
Musculus niger (Gray 1824)
Crenella decussata (Montagu 1803)
Subclass Heterodonta
Order Veneroida
Thyasira sarsi (Philippi 1845)
Tridonta borealis Schumacher 1817
Tridonta elliptica (Brown 1827)
Macoma calcarea (Gmelin 1791)
Order Myoida
Psiloteredo megotara (Forbes & Hanley 1848)

Total for climatic regions asb. : 18 (6.5%)

Climatic regions: asbl

Class Polyplacophora
Order Neoloricata
Leptochiton asellus (Gmelin 1791)
Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Acmaea tessulata (Müller 1776)

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Puncturella noachina (Linnaeus 1771)
Order Neotaenioglossa
Littorina saxatilis (Olivi 1792)
Lacuna pallidula (da Costa 1778)
Onoba aculeus (Gould 1841)
Velutina plicatilis (Müller 1776)
Velutina velutina (Müller 1776)
Order Neogastropoda
Boreotrophon truncatus (Ström 1768)
Oenopota trevelliana (Turton 1834)
Subclass Opisthobranchia
Order Bullomorpha
Scaphander punctostriatus (Mighels & Adams 1841)
Order Anaspidea
Diaphana minuta Brown 1827
Order Thecosomata
Limacina retroversa (Fleming 1823)
Order Gymnosomata
Clione limacina (Phipps 1774)
Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Nuculoma tenuis (Montagu 1808)
Subclass Pteriomorpha
Order Arcoida
Bathyarca pectunculoides (Scacchi 1834)
Order Mytiloida
Musculus discors (Linnaeus 1767)
Subclass Heterodonta
Order Veneroida
Thyasira flexuosa (Montagu 1803)
Mysella dawsoni (Jeffreys 1864)
Tridonta montagui (Dillwyn 1817)
Order Myoida
Mya truncata Linnaeus 1758
Hiatella arctica (Linnaeus 1758)
Hiatella rugosa (Linnaeus 1758)

Total for climatic regions asbl: 23 (8.3%)

Climatic regions: .sb.

Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Nuculana minuta (Müller 1776)
Subclass Heterodonta
Order Veneroida
Arctica islandica (Linnaeus 1767)
Order Myoida
Panomya arctica (Lamarck 1818)
Zirfaea crispata (Linnaeus 1758)

Total for climatic regions .sb. : 4 (1.4%)

Climatic regions: .sbl

Class Polyplacophora
Order Neoloricata
Hanleya hanleyi (Bean 1844)
Ischnochiton albus (Linnaeus 1767)
Tonicella marmorea (Fabricius 1780)
Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Acmaea virginea (Müller 1776)
Order Neotaenioglossa
Littorina obtusata (Linnaeus 1758)
Lacuna vincta (Montagu 1803)
Onoba semicostata (Montagu 1803)
Order Heterogastropoda
Haliella stenostoma (Jeffreys 1858)
Order Neogastropoda
Nucella lapillus (Linnaeus 1758)
Buccinum undatum Linnaeus 1758
Subclass Heterobranchia
Order Heterostropha
Omalogyra atomus (Phillippi 1841)
Subclass Opisthobranchia
Order Bullomorpha
Philine quadrata (S. Wood 1839)
Class Scaphopoda
Antalis entalis (Linnaeus 1758)
Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Yoldiella lucida (Lovén 1846)
Subclass Pteriomorpha
Order Mytiloida
Mytilus edulis Linnaeus 1758
Modiolus modiolus (Linnaeus 1758)
Order Pterioida
Delectopecten vitreus (Gmelin 1791)
Heteranomia squamula (Linnaeus 1758)
Limatula subauriculata (Montagu 1808)
Subclass Heterodonta
Order Veneroida
Thyasira croulinensis (Jeffreys 1847)
Mysella bidentata (Montagu 1803)
Tellimya ferruginosa (Montagu 1803)

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Astarte sulcata (da Costa 1778)
Parvicardium ovale (Sowerby 1840)
Spisula elliptica (Brown 1827)
Macoma balthica (Linnaeus 1758)
Gari fervensis (Gmelin 1791)

Total for climatic regions .sbl: 27 (9.7%)

Climatic regions: ..b.

Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Calliostoma formosa (Mighels 1842)
Order Neotaenioglossa
Cingula turgida (Jeffreys 1870)
Assiminea grayana Fleming 1828
Order Heterogastropoda
Enteroxenos oestergreni Bonnevie 1902
Order Neogastropoda
Colus sabini (Gray 1824)
Liomesus ovum (Turton 1825)
Turrisipho moebii (Dunker & Metzger 1874)
Taranis borealis Bouchet & Warén 1980
Class Bivalvia
Subclass Heterodonta
Order Myoida
Mya arenaria Linnaeus 1758

Total for climatic regions ..b. : 9 (3.2%)

Climatic regions: ..bl

Class Polyplacophora
Order Neoloricata
Callochiton septemvalvis (Montagu 1803)
Lepidochitona cinereus (Linnaeus 1767)
Tonicella rubra (Linnaeus 1767)
Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Patella vulgata Linnaeus 1758
Helcion pellucidum (Linnaeus 1758)
Iothia fulva (Müller 1776)
Emarginula fissura (Linnaeus 1758)
Gibbula cineraria (Linnaeus 1758)
Gibbula tumida (Montagu 1803)
Jujubinus clelandi (W. Wood 1828)
Calliostoma zizyphinum (Linnaeus 1758)
Skenea basistriata (Jeffreys 1877)
Theodoxus fluviatilis (Linnaeus 1758)
Order Neotaenioglossa
Littorina littorea (Linnaeus 1758)
Melaraphe neritoides (Linnaeus 1758)
Littorina mariae Sacchi & Rastelli 1966
Littorina tenebrosa (Montagu 1803)
Lacuna parva (Montagu 1803)
Hydrobia neglecta Muus 1963
Hydrobia ulvae (Pennant 1777)
Hydrobia ventrosa (Montagu 1803)
Potamopyrgus antipodarum (Gray 1853)
Alvania abyssicola (Forbes 1850)
Alvania jeffreysi (Waller 1864)
Alvania punctura (Montagu 1803)
Cingula semistriata (Montagu 1808)
Obtusella alderi (Jeffreys 1858)
Onoba vitrea (Montagu 1803)
Rissoa albella Lovén 1846
Rissoa inconspicua Alder 1844
Rissoa membranacea (J. Adams 1800)
Rissoa parva (da Costa 1779)
Rissoa violacea Desmarest 1814
Caecum glabrum (Montagu 1803)
Bittium reticulatum (da Costa 1778)
Turritella communis Risso 1826
Aporrhais pespelicani (Linnaeus 1758)
Aporrhais serresianus (Michaud 1828)
Crepidula fornicata (Linnaeus 1758)
Capulus ungaricus (Linnaeus 1758)
Lamellaria perspicua (Linnaeus 1758)
Trivia arctica (Pulteney 1799)
Lunatia alderi (Forbes 1838)
Lunatia catena (da Costa 1778)
Lunatia montagui (Forbes 1838)
Order Heterogastropoda
Triphora adversa (Montagu 1803)
Cerithiella metula (Lovén 1846)
Cerithiopsis barleei Jeffreys 1867
Epitonium clathratulum (Kanmacher 1797)
Epitonium clathrus (Linnaeus 1758)
Epitonium trevelyanum (Johnston 1841)
Epitonium turtonis (Turton 1819)
Aclis ascaris (Turton 1819)
Aclis minor (Brown 1827)
Aclis walleri Jeffreys 1867
Eulima bilineata (Alder 1848)
Polygireulima sinuosa (Sacco 1836)
Polygireulima monterosatoi (Monterosato 1890)
Vitreolina philippii (Rayneval & Ponzi 1854)
Melanella lubrica (Monterosato 1891)
Pelseneeria stylifera (Turton 1825)

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Order Neogastropoda
Trophonopsis barvicensis (Johnston 1825)
Colus gracilis (da Costa 1778)
Colus jeffreysianus (Fischer 1868)
Neptunea antiqua (Linnaeus 1758)
Hinia incrassata (Ström 1768)
Hinia pygmaea (Lamarck 1822)
Hinia reticulata (Linnaeus 1758)
Troschelia bernicensis (King 1846)
Cytharella coarctata (Forbes 1840)
Mangelia attenuata (Montagu 1803)
Mangelia brachystoma (Philippi 1844)
Mangelia nebula (Montagu 1803)
Raphitoma asperrima (Brown 1827)
Raphitoma leufroyi (Michaud 1821)
Raphitoma linearis (Montagu 1803)
Taranis moerchi (Malm 1861)
Subclass Heterobranchia
Order Heterostropha
Brachystomia carozzai van Aartsen 1987
Brachystomia eulimoides Hanley 1844
Odostomia scalaris MacGillivray 1843
Chrysallida decussata (Montagu 1803)
Chrysallida indistincta (Montagu 1808)
Chrysallida obtusa (Brown 1827)
Chrysallida spiralis (Montagu 1803)
Ebala nitidissima (Montagu 1803)
Eulimella laevis (Brown 1827)
Eulimella scillae (Scacchi 1835)
Ondina divisa (J. Adams 1797)
Ondina diaphana (Jeffreys 1848)
Liostomia clavula (Lovén 1846)
Odostomia acuta Jeffreys 1848
Odostomia conoidea Winckworth 1932
Odostomia turrita Hanley 1844
Odostomia albella Lovén 1846
Odostomia plicata (Montagu 1803)
Turbonilla crenata (Brown 1827)
Turbonilla delicata (Monterosato 1874)
Turbonilla lactea (Linné 1758)
Subclass Opisthobranchia
Order Bullomorpha
Acteon tornatilis (Linnaeus 1758)
Cylichna cylindracea (Pennant 1777)
Scaphander lignarius (Linnaeus 1758)
Philine aperta (Linnaeus 1767)
Philine catena (Montagu 1803)
Philine denticulata (Adams 1800)
Philine punctata (Adams 1800)
Philine scabra (Müller 1776)
Philinoglossa helgolandica Hertling 1932
Order Anaspidea
Retusa truncatula (Bruguière 1792)
Retusa umbilicata (Montagu 1803)
Rhizorus acuminatus (Bruguière 1792)
Akera bullata Müller 1776
Subclass Pulmonata
Order Basommatophora
Ovatella myosotis (Draparnaud 1801)
Lymnaea peregra (Müller 1774)
Class Scaphopoda
Cadulus subfusiforme (M. Sars 1865)
Antalis agile G.O. Sars 1878
Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Nucula nitidosa Winckworth 1930
Nucula nucleus (Linnaeus 1767)
Nucula sulcata (Bronn 1831)
Nuculoma hanleyi Winckworth 1931
Malletia obtusa (G.O. Sars 1872)
Subclass Pteriomorpha
Order Arcoida
Acar nodulosa (Müller 1766)
Order Mytiloida
Modiolula phaseolina (Philippi 1844)
Modiolus adriaticus (Lamarck 1819)
Modiolaria tumida (Hanley 1843)
Adipicola simpsoni (Marshall 1900)
Order Pterioida
Aequipecten opercularis (Linnaeus 1758)
Chlamys varia (Linnaeus 1758)
Palliolum striatum (Müller 1776)
Palliolum tigerinum (Müller 1776)
Pecten maximus (Linnaeus 1758)
Pseudamussium septemradiatum (Müller 1776)
Similipecten similis (Laskey 1811)
Pododesmus patelliformis (Linnaeus 1761)
Pododesmus squama (Gmelin 1791)
Ostrea edulis Linnaeus 1758
Limaria hians (Gmelin 1791)
Limaria loscombi (Sowerby 1832)
Subclass Heterodonta
Order Veneroida
Lucinoma borealis (Linnaeus 1758)
Myrtea spinifera (Montagu 1803)
Montacuta substriata (Montagu 1803)
Lepton nitidum (Turton 1822)
Lepton squamosum (Montagu 1803)
Devonia perrieri (Malard 1904)
Kellia suborbicularis (Montagu 1803)
Acanthocardia echinata (Linnaeus 1758)

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Parvicardium exiguum (Gmelin 1791)
Parvicardium scabrum (Philippi 1844)
Parvicardium minimum (Philippi 1836)
Cerastoderma edule (Linnaeus 1758)
Cerastoderma glaucum (Poiret 1798)
Laevicardium crassum (Gmelin 1791)
Mactra stultorum (Linnaeus 1758)
Lutraria lutraria (Linnaeus 1758)
Spisula solida (Linnaeus 1758)
Spisula subtruncata (da Costa 1778)
Solecurtus chamasolen (da Costa 1778)
Solecurtus scopula (Turlok 1822)
Ensis arcuatus (Jeffreys 1865)
Ensis ensis (Linnaeus 1758)
Ensis siliqua (Linnaeus 1758)
Phaxas pellucidus (Pennant 1777)
Angulus tenuis (da Costa 1778)
Arcopagia crassa (Pennant 1778)
Fabulina fabula (Gmelin 1791)
Tellina pygmaea (Lovén 1846)
Donax vittatus (da Costa 1778)
Gari tellinella (Lamarck 1818)
Scrobicularia plana (da Costa 1778)
Abra alba (Wood 1802)
Abra nitida (Müller 1776)
Abra prismatica (Montagu 1803)
Kelliella miliaris (Philippi 1844)
Glossus humanus (Linnaeus 1758)
Chamelea striatula (da Costa 1778)
Clausinella fasciata (da Costa 1778)
Timoclea ovata (Pennant 1777)
Venerupis rhomboides (Pennant 1777)
Venerupis pullastra (Montagu 1803)
Dosinia exoleta (Linnaeus 1758)
Dosinia lincta (Montagu 1803)
Mysia undata (Pennant 1777)
Order Myoida
Corbula gibba (Olivi 1792)
Saxicavella jeffreysi Winckworth 1930
Barnea candida (Linnaeus 1758)
Pholas dactylus Linnaeus 1758
Xylophaga dorsalis Turton 1822
Teredo navalis Linnaeus 1758
Nototeredo norvegica (Spengler 1792)
Subclass Anomalodesmata
Order Pholadomyoida
Lyonsia norvegica (Gmelin 1791)
Cochlodesma praetenue (Pulteney 1799)
Thracia convexa (Wood 1815)
Thracia phaseolina (Lamarck 1818)
Thracia gracilis (Jeffreys 1865)
Thracia villosiuscula (MacGillivray 1827)
Cupidaria cuspidata (Olivi 1792)

Total for climatic regions ..bl: 195 (70.1%)

Climatic regions: ...l

Class Gastropoda
Subclass Prosobranchia
Order Neogastropoda
Ocenebra erinacea (Linnaeus 1758)
Class Bivalvia
Subclass Heterodonta
Order Veneroida
Mysella tumidula (Jeffreys 1867)

Total for climatic regions ...l: 2 (0.7%)

Totals for list 278

Subfossil species sorted after climatic affinities

Climatic regions: a...

Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Portlandia arctica (Gray 1824)
Subclass Heterodonta
Order Veneroida
Macoma torelli Jensen 1904

Total for climatic regions a... : 2 (0.8%)

Climatic regions: as..

Class Gastropoda
Subclass Prosobranchia
Order Neotaenioglossa
Alvania cruenta Odhner 1915
Turritella erosa Couthouy 1838
Subclass Opisthobranchia
Order Bullomorpha
Cylichna occulta (Mighels 1841)
Class Bivalvia
Subclass Pteriomorpha
Order Arcoida
Bathyarca glacialis (Gray 1824)

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Subclass Heterodonta
Order Veneroida
Macoma loveni Jensen 1904
Subclass Anomalodesmata
Order Pholadomyoida
Pandora glacialis Leach 1819
Lyonsia arenosa (Möller 1842)

Total for climatic regions as.. : 7 (2.8%)

Climatic regions: asb.

Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Margarites helicinus (Phipps 1774)
Order Neotaenioglossa
Alvania scrobiculata (Möller 1842)
Alvania jan mayeni (Friele 1886)
Lunatia pallida (Broderip & Sowerby 1829)
Order Neogastropoda
Boreotrophon clathratus (Linnaeus 1767)
Buccinum cyaneum Bruguière 1792
Neptunea despecta (Linnaeus 1758)
Oenopota incisula (Verrill 1882)
Oenopota turricola (Montagu 1803)
Oenopota violacea (Mighels & Adams 1842)
Bela exarata G.O.Sars 1818
Admete viridula (Fabricius 1780)
Subclass Opisthobranchia
Order Anaspidea
Retusa obtusa (Montagu 1803)
Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Nuculana pernula (Müller 1776)
Yoldia hyperborea Lovén 1859
Yoldiella lenticula (Möller 1842)
Subclass Pteriomorpha
Order Mytiloida
Musculus laevigatus (Gray 1824)
Musculus niger (Gray 1824)
Crenella decussata (Montagu 1803)
Order Pterioida
Palliolum greenlandicum (Sowerby 1842)
Subclass Heterodonta
Order Veneroida
Axinopsida orbiculata (G.O.Sars 1878)
Tridonta borealis Schumacher 1817
Tridonta elliptica (Brown 1827)
Clinocardium ciliatum (Fabricius 1780)
Serripes groenlandicus (Bruguière 1798)
Macoma calcarea (Gmelin 1791)

Total for climatic regions asb. : 26 (10.5%)

Climatic regions: asbl

Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Acmaea tessulata (Müller 1776)
Order Neotaenioglossa
Littorina saxatilis (Olivi 1792)
Lacuna pallidula (da Costa 1778)
Natica affinis (Gmelin 1790)
Order Neogastropoda
Oenopota trevelliana (Turton 1834)
Subclass Opisthobranchia
Order Bullomorpha
Cylichna alba (Brown 1827)
Order Anaspidea
Diaphana minuta Brown 1827
Order Thecosomata
Limacina retroversa (Fleming 1823)
Order Gymnosomata
Clione limacina (Phipps 1774)
Class Scaphopoda
Siphonodentalium lobatum (Sowerby 1860)
Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Nuculoma tenuis (Montagu 1808)
Yoldiella frigida (Torell 1859)
Subclass Pteriomorpha
Order Mytiloida
Musculus discors (Linnaeus 1767)
Subclass Heterodonta
Order Veneroida
Thyasira flexuosa (Montagu 1803)
Leptaxinus ferruginosus (Forbes 1844)
Tridonta montagui (Dillwyn 1817)
Order Myoida
Mya truncata Linnaeus 1758
Hiatella arctica (Linnaeus 1758)
Hiatella rugosa (Linnaeus 1758)

Total for climatic regions asbl: 19 (7.7%)

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Climatic regions: .sb.

Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Nuculana minuta (Müller 1776)
Subclass Pteriomorpha
Order Pterioida
Chlamys islandica (O.F.Müller 1776)
Subclass Heterodonta
Order Veneroida
Arctica islandica (Linnaeus 1767)
Order Myoida
Panomya arctica (Lamarck 1818)
Zirfaea crispata (Linnaeus 1758)

Total for climatic regions .sb. : 5 (2.0%)

Climatic regions: .sbl

Class Polyplacophora
Order Neoloricata
Tonicella marmorea (Fabricius 1780)
Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Scissurella crispata Fleming 1828
Acmaea virginea (Müller 1776)
Order Neotaenioglossa
Littorina obtusata (Linnaeus 1758)
Lacuna vincta (Montagu 1803)
Skeneopsis planorbis (Fabricius 1780)
Onoba semicostata (Montagu 1803)
Order Neogastropoda
Nucella lapillus (Linnaeus 1758)
Buccinum undatum Linnaeus 1758
Subclass Heterobranchia
Order Heterostropha
Omalogyra atomus (Phillippi 1841)
Class Scaphopoda
Antalis entalis (Linnaeus 1758)
Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Yoldiella lucida (Lovén 1846)
Subclass Pteriomorpha
Order Mytiloida
Mytilus edulis Linnaeus 1758
Modiolus modiolus (Linnaeus 1758)
Order Pterioida
Delectopecten vitreus (Gmelin 1791)
Heteranomia squamula (Linnaeus 1758)
Subclass Heterodonta
Order Veneroida
Mysella bidentata (Montagu 1803)
Tellimya ferruginosa (Montagu 1803)
Turtonia minuta (Fabricius 1780)
Parvicardium ovale (Sowerby 1840)
Spisula elliptica (Brown 1827)
Macoma balthica (Linnaeus 1758)
Gari fervensis (Gmelin 1791)

Total for climatic regions .sbl: 23 (9.3%)

Climatic regions: ..b.

Class Gastropoda
Subclass Prosobranchia
Order Neotaenioglossa
Cingula turgida (Jeffreys 1870)
Subclass Heterobranchia
Order Heterostropha
Chrysallida eximia (Jeffreys 1849)
Class Bivalvia
Subclass Heterodonta
Order Myoida
Mya arenaria Linnaeus 1758

Total for climatic regions ..b. : 3 (1.2%)

Climatic regions: ..bl

Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Patella vulgata Linnaeus 1758
Helcion pellucidum (Linnaeus 1758)
Iothia fulva (Müller 1776)
Gibbula cineraria (Linnaeus 1758)
Gibbula tumida (Montagu 1803)
Skenea basistriata (Jeffreys 1877)
Theodoxus fluviatilis (Linnaeus 1758)
Order Neotaenioglossa
Littorina littorea (Linnaeus 1758)
Littorina tenebrosa (Montagu 1803)
Lacuna parva (Montagu 1803)
Hydrobia ulvae (Pennant 1777)
Hydrobia ventrosa (Montagu 1803)
Barleeia unifasciata (Montagu 1803)
Alvania abyssicola (Forbes 1850)
Alvania cimicoides (Forbes 1844)
Alvania punctura (Montagu 1803)

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Cingula semistriata (Montagu 1808)
Onoba vitrea (Montagu 1803)
Rissoa albella Lovén 1846
Rissoa inconspicua Alder 1844
Rissoa membranacea (J. Adams 1800)
Rissoa parva (da Costa 1779)
Rissoa violacea Desmarest 1814
Caecum glabrum (Montagu 1803)
Bittium reticulatum (da Costa 1778)
Turritella communis Risso 1826
Aporrhais pespelicani (Linnaeus 1758)
Lunatia alderi (Forbes 1838)
Lunatia catena (da Costa 1778)
Lunatia montagui (Forbes 1838)
Order Heterogastropoda
Triphora adversa (Montagu 1803)
Cerithiopsis barleei Jeffreys 1867
Cerithiopsis tubercularis (Montagu 1803)
Epitonium clathrus (Linnaeus 1758)
Epitonium trevelyanum (Johnston 1841)
Epitonium turtonis (Turton 1819)
Aclis ascaris (Turton 1819)
Aclis minor (Brown 1827)
Aclis walleri Jeffreys 1867
Polygireulima sinuosa (Sacco 1836)
Vitreolina philippii (Rayneval & Ponzi 1854)
Graphis albida (Kanmacher 1798)
Melanella lubrica (Monterosato 1891)
Melanella alba (da Costa 1778)
Hemiaclis ventrosa (Jeffreys MS Fricle 1874)
Order Neogastropoda
Neptunea antiqua (Linnaeus 1758)
Hinia incrassata (Ström 1768)
Hinia pygmaea (Lamarck 1822)
Hinia reticulata (Linnaeus 1758)
Cytharella coarctata (Forbes 1840)
Mangelia brachystoma (Philippi 1844)
Raphitoma purpurea (Montagu 1803)
Raphitoma linearis (Montagu 1803)
Subclass Heterobranchia
Order Heterostropha
Brachystomia eulimoides Hanley 1844
Odostomia scalaris MacGillivray 1843
Chrysallida decussata (Montagu 1803)
Chrysallida indistincta (Montagu 1808)
Chrysallida obtusa (Brown 1827)
Chrysallida spiralis (Montagu 1803)
Ebala nitidissima (Montagu 1803)
Eulimella laevis (Brown 1827)
Eulimella scillae (Scacchi 1835)
Ondina divisa (J. Adams 1797)
Ondina diaphana (Jeffreys 1848)
Odostomia acuta Jeffreys 1848
Odostomia conoidea Winckworth 1932
Odostomia turrita Hanley 1844
Odostomia albella Lovén 1846
Odostomia plicata (Montagu 1803)
Odostomia umbilicaris (Malm 1863)
Turbonilla crenata (Brown 1827)
Turbonilla delicata (Monterosato 1874)
Turbonilla lactea (Linné 1758)
Turbonilla sinuosa (Jeffreys 1884)
Subclass Opisthobranchia
Order Bullomorpha
Acteon tornatilis (Linnaeus 1758)
Cylichna cylindracea (Pennant 1777)
Philine aperta (Linnaeus 1767)
Philine catena (Montagu 1803)
Philine punctata (Adams 1800)
Order Anaspidea
Retusa truncatula (Bruguière 1792)
Retusa umbilicata (Montagu 1803)
Akera bullata Müller 1776
Subclass Pulmonata
Order Basommatophora
Lymnaea peregra (Müller 1774)
Class Scaphopoda
Cadulus subfusiforme (M. Sars 1865)
Entalina tetragona (Brocchi 1814)
Class Bivalvia
Subclass Palaeotaxodonta
Order Nuculoida
Nucula nitidosa Winckworth 1930
Nucula nucleus (Linnaeus 1767)
Nucula sulcata (Bronn 1831)
Yoldiella philippiana (Nyst 1845)
Subclass Pteriomorpha
Order Mytiloida
Modiolula phaseolina (Philippi 1844)
Modiolus adriaticus (Lamarck 1819)
Modiolaria tumida (Hanley 1843)
Order Pterioida
Aequipecten opercularis (Linnaeus 1758)
Chlamys varia (Linnaeus 1758)
Palliolum striatum (Müller 1776)
Palliolum tigerinum (Müller 1776)
Pecten maximus (Linnaeus 1758)
Pseudamussium septemradiatum (Müller 1776)
Similipecten similis (Laskey 1811)
Pododesmus patelliformis (Linnaeus 1761)
Ostrea edulis Linnaeus 1758

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Subclass Heterodonta
Order Veneroida
Lucinoma borealis (Linnaeus 1758)
Lepton nitidum (Turton 1822)
Kellia suborbicularis (Montagu 1803)
Acanthocardia echinata (Linnaeus 1758)
Parvicardium exiguum (Gmelin 1791)
Parvicardium scabrum (Philippi 1844)
Parvicardium minimum (Philippi 1836)
Cerastoderma edule (Linnaeus 1758)
Cerastoderma glaucum (Poiret 1798)
Laevicardium crassum (Gmelin 1791)
Mactra stultorum (Linnaeus 1758)
Lutraria lutraria (Linnaeus 1758)
Spisula solida (Linnaeus 1758)
Spisula subtruncata (da Costa 1778)
Ensis ensis (Linnaeus 1758)
Phaxas pellucidus (Pennant 1777)
Angulus tenuis (da Costa 1778)
Tellina donacina Linnaeus 1758
Fabulina fabula (Gmelin 1791)
Tellina pygmaea (Lovén 1846)
Donax vittatus (da Costa 1778)
Gari depressa (Pennant 1777)
Scrobicularia plana (da Costa 1778)
Abra alba (Wood 1802)
Abra nitida (Müller 1776)
Abra prismatica (Montagu 1803)
Kelliella miliaris (Philippi 1844)
Chamelea striatula (da Costa 1778)
Clausinella fasciata (da Costa 1778)
Paphia aurea (Gmelin 1791)
Tapes decussatus (Linnaeus 1758)
Timoclea ovata (Pennant 1777)
Venerupis rhomboides (Pennant 1777)
Venerupis pullastra (Montagu 1803)
Dosinia exoleta (Linnaeus 1758)
Dosinia lincta (Montagu 1803)
Mysia undata (Pennant 1777)
Order Myoida
Corbula gibba (Olivi 1792)
Saxicavella jeffreysi Winckworth 1930
Barnea candida (Linnaeus 1758)
Pholas dactylus Linnaeus 1758
Subclass Anomalodesmata
Order Pholadomyoida
Lyonsia norvegica (Gmelin 1791)
Cochlodesma praetenue (Pulteney 1799)
Thracia phaseolina (Lamarck 1818)
Thracia villosiuscula (MacGillivray 1827)

Total for climatic regions ..bl: 146 (59.1%)

Climatic regions: ...l

Class Gastropoda
Subclass Prosobranchia
Order Archaeogastropoda
Skenea serpuloides (Montagu 1808)
Order Neotaenioglossa
Alvania lactea (Michaud 1830)
Onoba proxima (Forbes & Hanley 1850)
Trivia monacha (da Costa 1778)
Order Heterogastropoda
Vitreolina collensi (Sykes 1903)
Subclass Opisthobranchia
Order Bullomorpha
Haminoea navicula (da Costa 1778)
Class Scaphopoda
Dentalium vulgare da Costa 1778
Class Bivalvia
Subclass Pteriomorpha
Order Mytiloida
Mytilaster lineatus (Gmelin 1791)
Mytilaster solidus (Poli 1795)
Order Pterioida
Anomia ephippium Linnaeus 1758
Subclass Heterodonta
Order Veneroida
Lucinella divaricata (Linnaeus 1758)
Plagiocardium papillosum Poli 1795
Gastrana fragilis (Linnaeus 1758)
Abra segmentum (Récluz 1843)
Paphia senescens (Cocconi 1873)
Gouldia minima (Montagu 1803)

Total for climatic regions ...l: 16 (6.5%)

Totals for list 247

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Appendix 2

The washed samples

The result of the studies on the macrofauna from the washed samples of the Skagen III Well is presented in this Appendix by the first appearance of the observed molluscan species. No molluscan species were found in these samples that were not represented in the cored sample material.

In all, 42 species were found compared to the 85 species recorded from the cored sections of the Skagen Well. In most cases, the first appearance of a species is within the same interval as is recorded from the cores. However, in a few cases the washed sample material gave important information in relation to the occurrence in the sequence.

The washed samples show that *Hinia reticulata* occurs in the uppermost part of the section around the 12 m level.

As a supplement to the otherwise few finds of *Siphonodentalium lobatum* from the cores, this species has also been found in the washed samples from the interval of the Younger *Yoldia* Sea.

Nuculana minuta has been found in the youngest part of the Subatlantic from the 31 m level, where this species occurred at the early Subatlantic from the cored section at the 53.90–54.00 m level.

Portlandia arctica is found at the 115 m level, which is the level where the transition from the Arctic Sea deposits to the Boreal Holocene deposits takes place. Furthermore, also the magnetic sphaeric concretions found in the Younger *Yoldia* Sea deposits appear in the washed samples at this level.

The occurrence of *Yoldiella frigida* from the 121 m level is an extension to the distribution of this species from the 126.99 m level.

The single find of *Abra alba* at the 77.93–78.00 m level from the cored section is supplemented by the occurrence at the 108 m level of the same species.

The very sparse occurrence of *Arctica islandica* is supplemented by another find at the 18.0 m level. However, still the Holocene occurrences of this Boreal species are from the latest part of the Subatlantic.

From the strata below the glacial section, no supplementary information has been obtained, and washed samples were not taken beyond the depth of 183 m b.s. in the core.

The results from the analyses of the washed samples lead to the conclusion that the important changes in a marine sequence can be demonstrated, as seen from the occurrence of both *Portlandia arctica* and the magnetic sphaeric concretions at exactly the same place as recorded in the cored section. However, when passing through the thicker pocket of glacial deposits, the information from the strata below fades out.

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Appendix 2: The washed samples, page 1

Depth m b.s.	Top	Base	Locality	Lab.no.	Shell >0.5mm %	Analysis	No. of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Onoba vitrea	Turritella communis	Aporrhais pespelecani	Lunatia alderi	Colus sp	Hinia pygmaea	Hinia reticulata	Oenopota turricula	Mangelia brachystoma	Epitonium trevelyanum	Acilis minor	Melanella lubrica	Melanella frielei	Vitreolina philippii	Brachystomia albella	Opistobranchia	Retusa truncatula	Scaphopoda	Siphonodentalium lobatum	Nucula sp
0,0	0,0	30,0	Skagen 3	77,93	7,7	M	10																												
-	0,0	3,0	Skagen 3	193,93	55,8	M	1																												
1,5																																			
3,0	3,0	6,0	Skagen 3	194,93	42,9	M	1																												
4,5																																			
6,0	6,0	9,0	Skagen 3	195,93	38,5	M	3																												
7,5																																			
9,0	9,0	12,0	Skagen 3	207,93	63,2	M	10																												
10,5																																			
12,0	12,0	15,0	Skagen 3	208,93	34,5	M	7																												
13,5																																			
15,0	15,0	18,0	Skagen 3	209,93	30,7	M	4																												
16,5																																			
18,0	18,0	21,0	Skagen 3	210,93	33,8	M	12																												
19,5																																			
21,0	21,0	24,0	Skagen 3	211,93	42,8	M	4																												
22,5																																			
24,0	24,0	27,0	Skagen 3	212,93	24,4	M	5																												
25,5																																			
27,0	27,0	30,0	Skagen 3	214,93		M	0																												
-	27,0	30,0	Skagen 3	213,93	19,8	M	0																												
-	27,0	30,0	Skagen 3	214,93	3,7	M	11																												
28,5																																			
30,0	30,0	31,5	Skagen 3	79,93		M	11																												
31,5	31,5	33,0	Skagen 3	80,93		M	9																												
33,0	33,0	34,5	Skagen 3	81,93		M	7																												
34,5	34,5	36,0	Skagen 3	82,93		M	5																												
36,0	36,0	37,5	Skagen 3	84,93		M	8																												
37,5	37,5	39,0	Skagen 3	85,93		M	4																												
39,0	39,0	40,5	Skagen 3	86,93	1,5	M	3																												
40,5	40,5	42,0	Skagen 3	87,93	2,5	M	6																												
42,0	42,0	43,5	Skagen 3	88,93	1,3	M	6																												
43,5	43,5	45,0	Skagen 3	89,93		M	2																												
45,0	45,0	46,5	Skagen 3	90,93		M	1																												
46,5	46,5	48,0	Skagen 3	91,93		M	5																												
48,0																																			
49,5	49,5	51,0	Skagen 3	92,93	5,4	M	5																												
51,0	51,0	52,5	Skagen 3	93,93		M	3																												
52,5	52,5	54,0	Skagen 3	94,93		M	6																												
54,0	54,0	55,5	Skagen 3	95,93	2,7	M	4																												
55,5	55,5	57,0	Skagen 3	96,93		M	0																												
57,0	57,0	58,5	Skagen 3	97,93		M	7																												
58,5	58,5	60,0	Skagen 3	98,93	0,9	M	11																												
60,0	61,0	61,5	Skagen 3	99,93		M	5																												
61,5	61,5	63,0	Skagen 3	100,93	4,7	M	5																												
63,0	63,0	64,5	Skagen 3	101,93		M	3																												
64,5	64,5	66,0	Skagen 3	102,93		M	2																												
66,0																																			
67,5	67,5	69,0	Skagen 3	103,93		M	3																												
69,0	69,0	70,5	Skagen 3	104,93		M	3																												
70,5	70,5	72,0	Skagen 3	105,93		M	3																												
72,0	72,0	73,5	Skagen 3	106,93		M	9																												
73,5	73,5	75,0	Skagen 3	107,93		M	9																												
75,0	75,0	76,5	Skagen 3	108,93		M	6																												
76,5	76,5	78,0	Skagen 3	109,93		M	1																												
78,0	78,0	79,5	Skagen 3	110,93		M	4																												
79,5	79,5	81,0	Skagen 3	111,93	4,2	M	5																												
81,0	81,0	82,5	Skagen 3	112,93	6,3	M	4																												
82,5																																			
84,0	84,0	85,5	Skagen 3	113,93		M	3																												
85,5	85,5	87,0	Skagen 3	114,93		M	0																												
87,0	87,0	88,5	Skagen 3	115,93		M	3																												
88,5	88,5	90,0	Skagen 3	116,93		M	0																												
90,0	90,0	91,5	Skagen 3	117,93		M	2																												
91,5	91,5	93,0	Skagen 3	118,93		M	0																												
93,0	93,0	94,5	Skagen 3	119,93		M	1																												
94,5	95,5	96,0	Skagen 3	120,93		M	1																												
96,0	96,0	97,5	Skagen 3	121,93		M	3																												
97,5	97,5	99,0	Skagen 3	122,93		M	0																												
99,0	99,0	100,5	Skagen 3	124,93	0,9	M	1																												
100,5	100,5	102,0	Skagen 3	125,93	2,9	M	2																												
102,0	102,0	103,5	Skagen 3	126,93	4,3	M	3																												
103,5	103,5	105,0	Skagen 3	127,93	0,6	M	0																												
105,0	105,0	106,5	Skagen 3	128,93	3,9	M	2																												
106,5	106,5	108,0	Skagen 3	129,93	1,0	M	0																												
108,0	108,0		Skagen 3	130,93	2,5	M	15																												
-	108,0	109,5	Skagen 3	131,93	0,9	M	2																												
-	108,0		Skagen 3	192,93	0,6	M	3																												
109,5	109,5	111,0	Skagen 3	132,93	0,3	M	2																												
-	109,5	111,0	Skagen 3	191,93	0,6	M	0																												
111,0	111,0	112,5	Skagen 3	133,93	0,9	M	2																												
112,5	112,5	114,0	Skagen 3	134,93	0,5	M	1																												
114,0	114,0	115,5	Skagen 3	135,93	0,3	M	1																												
115,5	115,5	117,0	Skagen 3	136,93	0,1	M	1																												
117,0	117,0	118,5	Skagen 3	137,93	0,1	M	2																												
118,5	118,5	120,0	Skagen 3	138,93	0,3	M	0																												
120,0	120,0	121,5	Skagen 3	139,93	0,4	M	1																												

Appendix 2: The washed samples, page 2

Depth m b.s.	Nucula hanleyi	Nuculana minuta	Portlandia arctica	Portlandia fraterna	Yoldiella frigida	Mytilus sp	Mytilus edulis	Pectinidae	Ostrea edulis	Mysella bidentata	Tellimya ferruginosa	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Parvicardium minumum	Mactra stultorum	Spisula subtruncata	Pharidae	Tellina fabula	Tellina tenuis	Donax vittatus	Abra sp	Abra alba	Abra nitida	Abra tenuis	Arctica islandica	Chamelea striatula	Mysia undata	Corbula gibba	Hiatella arctica	Barnea candida
0,0	■						■			■						■	■	■		■	■								■		
-																	▒														
1,5																															
3,0																	▒														
4,5																															
6,0																	▒				▒										
7,5																															
9,0								■				■				▒	▒		■	▒	▒						■				■
10,5																															
12,0																▒	▒	▒			▒						▒				▒
13,5																															
15,0							▒					▒				▒	▒														
16,5																															
18,0							▒		■			▒					▒				▒					■	▒		▒		▒
19,5																															
21,0																	▒				▒										
22,5																															
24,0																▒	▒										▒		▒		
25,5																															
27,0										▒		▒				▒	▒				▒						▒		▒		
-										▒		▒				▒	▒				▒						▒		▒		
-										▒		▒				▒	▒				▒						▒		▒		
28,5																															
30,0							▒			▒	■						▒	▒	▒								▒		▒		
31,5		■								▒							▒		▒								▒			■	
33,0							▒			▒	▒						▒										▒				
34,5											▒						▒		▒	▒									▒		
36,0										▒							▒				▒								▒		▒
37,5						■				▒							▒														
39,0										▒							▒											■			
40,5										▒																			▒		
42,0										▒							▒										▒		▒		
43,5							▒										▒														
45,0																	▒														
46,5										▒							▒		▒										▒		
48,0																															
49,5										▒							▒	▒			▒										
51,0													■				▒												▒		
52,5										▒		▒																	▒	▒	
54,0										▒							▒												▒		
55,5																															
57,0										▒			▒				▒							■							
58,5										▒			▒											▒						▒	
60,0										▒							▒								■				▒		
61,5										▒		▒										■									
63,0										▒		▒																			
64,5													▒									▒									
66,0																															
67,5							▒			▒																			▒		
69,0																						▒									
70,5										▒														▒							
72,0		▒					▒						▒				▒														
73,5						▒				▒												▒								▒	
75,0												▒	▒				▒														
76,5						▒																									
78,0																	▒							▒			▒				
79,5													▒				▒														
81,0							▒								■		▒												▒		
82,5																															
84,0																	▒							▒							
85,5																															
87,0																	▒														
88,5																															
90,0						▒											▒														
91,5																															
93,0																	▒														
94,5																						▒									
96,0														■			▒														
97,5																															
99,0																	▒														
100,5																															
102,0						▒											▒														
103,5																															
105,0						▒											▒														
106,5																															
108,0		▒					▒			▒							▒	▒		▒	▒		■				▒		▒		
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-																	▒														
109,5																	▒		▒												
-																	▒		▒												
111,0							▒										▒														
112,5																	▒														
114,0						▒																									
115,5			■														▒														
117,0							▒																								
118,5																															
120,0																	▒														

Appendix 2: The washed samples, page 3

Depth m b.s.	Top	Base	Locality	Lab.no.	Shell >0.5mm %	Analysis	No. of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Onoba vitrea	Turritella communis	Aporrhais pespelecani	Lunatia alderi	Colus sp	Hinia pygmaea	Hinia reticulata	Oenopota turricula	Mangelia brachystoma	Epitonium trevelyanum	Acilis minor	Melanella lubrica	Melanella frielei	Vitreolina philippii	Brachystomia albella	Opistobranchia	Retusa truncatula	Scaphopoda	Siphonodentalium lobatum	Nucula sp
121,5	121,5	123,0	Skagen 3	140,93	0,3	M	6																												
123,0	123,0	124,5	Skagen 3	141,93	0,4	M	4																												
124,5	124,5	126,0	Skagen 3	142,93	0,5	M	0																												
126,0	126,0	127,5	Skagen 3	143,93	0,6	M	0																												
127,5	127,5	129,0	Skagen 3	144,93	0,1	M	2																												
129,0	129,0	130,5	Skagen 3	145,93	0,3	M	2																												
130,5	130,5	132,0	Skagen 3	146,93	0,2	M	2																												
132,0	132,0	133,5	Skagen 3	147,93	0,7	M	3																												
133,5	133,5	135,0	Skagen 3	148,93	0,5	M	2																												
135,0	135,0	136,5	Skagen 3	149,93	37,9	M	4																												
136,5	136,5		Skagen 3	150,93	3,0	M	1																												
-	136,5	138,0	Skagen 3	151,93	0,5	M	1																												
138,0	138,0		Skagen 3	152,93	5,3	M	1																												
-	138,0		Skagen 3	153,93	12,3	M	2																												
-	138,0	139,5	Skagen 3	190,93	33,0	M	0																												
-	138,0	139,5	Skagen 3	190,93	7,6	M	6																												
139,5	139,5	141,0	Skagen 3	155,93	26,4	M	0																												
141,0	141,0	142,5	Skagen 3	156,93	35,2	M	0																												
142,5	142,5	144,0	Skagen 3	157,93	18,1	M	2																												
144,0	144,0	145,5	Skagen 3	158,93	4,9	M	1																												
145,5	145,5	147,0	Skagen 3	159,93	6,3	M	3																												
147,0	147,0	148,5	Skagen 3	160,93	8,3	M	4																												
148,5	148,5	150,0	Skagen 3	161,93	7,6	M	5																												
150,0	150,0	151,5	Skagen 3	162,93	11,3	M	2																												
151,5	151,5	153,0	Skagen 3	163,93		M	0																												
153,0																																			
154,5																																			
156,0																																			
157,5																																			
159,0																																			
160,5																																			
162,0																																			
163,5	163,5	165,0	Skagen 3	164,93	15,7	M	1																												
165,0																																			
166,5	166,5	168,0	Skagen 3	165,93	10,3	M	0																												
168,0	168,0	169,5	Skagen 3	166,93	0,7	M	1																												
169,5	169,5	171,0	Skagen 3	167,93	14,7	M	1																												
171,0	171,0	172,5	Skagen 3	168,93	54,3	M	5																												
172,5	172,5		Skagen 3	169,93	44,6	M	0																												
-	172,5	174,0	Skagen 3	171,93	37,5	M	0																												
174,0	174,0	175,0	Skagen 3	170,93	8,1	M	2																												
-	174,0	175,5	Skagen 3	172,93	13,1	M	1																												
175,5																																			
177,0	177,0	178,5	Skagen 3	173,93	20,8	M	0																												
178,5	178,5	180,0	Skagen 3	174,93	7,1	M	0																												
180,0	180,0	181,5	Skagen 3	175,93	49,9	M	0																												
181,5	181,5	183,0	Skagen 3	176,93	48,4	M	0																												
183,0	183,0	184,5	Skagen 3	177,93	16,2	M	2																												
184,5																																			
186,0																																			
187,5																																			
189,0																																			
190,5																																			
192,0																																			
193,5																																			
195,0																																			
196,5																																			
198,0																																			
199,5																																			
201,0																																			

Appendix 2: The washed samples, page 4

Depth m b.s.	Nucula hanleyi	Nuculana minuta	Portlandia arctica	Portlandia fraterna	Yoldiella frigida	Mytilus sp	Mytilus edulis	Pectinidae	Ostrea edulis	Mysella bidentata	Tellimya ferruginosa	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Parvicardium minumum	Mactra stultorum	Spisula subtruncata	Pharidae	Tellina fabula	Tellina tenuis	Donax vittatus	Abra sp	Abra alba	Abra nitida	Abra tenuis	Arctica islandica	Chamelea striatula	Mysia undata	Corbula gibba	Hiatella arctica	Barnea candida
121,5					■																										
123,0																															
124,5																															
126,0																															
127,5																															
129,0																															
130,5																															
132,0																															
133,5																															
135,0																															
136,5																															
-																															
138,0																															
-																															
-				■																											
-																															
139,5																															
141,0																															
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192,0																															
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195,0																															
196,5																															
198,0																															
199,5																															
201,0																															

Legend

Occurrence

First occurrence among the molluscs of each species

Appendix 3

Sedimentological and fossil data from the Skagen Well.

Content in per cent of clay (< 0.002 mm), fine silt (> 0.002 mm – < 0.006 mm), medium silt (> 0.006 mm – < 0.02 mm), coarse silt (> 0.02 mm – < 0.063 mm), fine sand (> 0.063 mm – < 0.2 mm), medium sand (> 0.2 mm – < 0.6 mm), coarse sand (> 0.6 mm – < 2.0 mm), and gravel (> 2.0 mm).

Quartiles Q_1 (25%), Q_2 (50%), Q_3 (75%) and percentile P_{10} (10%), P_{40} (40%), P_{90} (90%).

Mean grain size: $\frac{Q_1 + Q_2 + Q_3}{3}$

Sorting coefficient (So): $\sqrt{\frac{Q_1}{Q_3}}$

Skewness: $\sqrt{\frac{Q_1 \cdot Q_3}{Q_2 \cdot Q_2}}$

Kurtosis: $\frac{Q_1 - Q_3}{2(P_{10} - P_{90})}$

Uniformity coefficient: $\frac{P_{40}}{P_{90}}$

Water per cent;

Loss on ignition (550°C)

Furthermore, the occurrences of pyrite, reworked shell, spatangoids, cirripeds, ophiuroids, concretions, fish, and other fossils. Finally N of species.

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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 1

Depth m b.s.	Top	Base	Locality	Core	Lab.no.	Clay %	Fine Silt %	Medium Silt %	Coarse Silt %	Fine Sand %	Medium Sand %	Coarse Sand %	Gravel %	P_{10}	Q_1	P_{40}	Q_2	Q_3	P_{90}	Mean Grain Size	So	Geom. skewness	Kurtosis	P_{40}/P_{90}	Water (DS) %	Loss on ignition	Shell >0.5mm %	Mat >1.0mm (g)	Analysis
0.0	0.0	1.0	Skagen 4	1	325.93																						19.52		M
0.2																													
0.4																													
0.6																													
0.8																													
1.0																													
1.2																													
1.4	1.5	2.0	Skagen 4	4	326.93																						16.12		M
1.6																													
1.8																													
2.0																													
2.2	2.2	2.3	Skagen 4		295.93					26.8	70.2	1	1.8		0.285	0.242	0.229	0.197	0.173	0.237	1.202			1.403		0.12	3.79		S I M
2.4	2.5	3.0	Skagen 4	8	327.93																						3.78		M
2.6																													
2.8																													
3.0	3.0	3.5	Skagen 4	9	328.93																						2.45		M
3.2																													
3.4																													
3.6	3.7	3.8	Skagen 4		296.93					26.1	66.6	4	2.6		0.323	0.258	0.237	0.197	0.162	0.252	1.280			1.595		0.18	9.76		S I M
3.8																													
4.0	4.0	4.5	Skagen 4	13	329.93																						7.11		M
4.2																													
4.4																													
4.6	4.7	4.8	Skagen 4		297.93					41.7	48.9	1.9	6.4		0.269	0.229	0.212	0.169	0.139	0.216	1.263			1.639		0.18	11.87		S I M
4.8	4.8	5.0	Skagen	16	940217																					0.12	1.08		I M
5.0	5.0	5.5	Skagen 4	17	330.93																						2.8		M
5.2																													
5.4																													
5.6	5.7	5.8	Skagen 4		298.93					70.6	26.5	0.5	0.6		0.206	0.176	0.167	0.143	0.129	0.172	1.200			1.368		0.21	1.64		S I M
5.8																													
6.0	6.0	6.5	Skagen 4	21	331.93																						0.95		M
6.2																													
6.4																													
6.6	6.7	6.8	Skagen 4		299.93					73.9	22.9	0.3	1.1		0.198	0.173	0.164	0.141	0.127	0.168	1.185			1.361		0.21	0.58		S I M
6.8																													
7.0	7.0	7.5	Skagen 4	25	332.93																						0.59		M
7.2																													
7.4																													
7.6	7.7	7.8	Skagen 4		300.93					80.2	15.7	0.3	0.6		0.177	0.164	0.155	0.134	0.105	0.155	1.153			1.560		0.22	0.92		S I M
7.8																													
8.0	8.0	8.5	Skagen 4	29	333.93																						1.89		M
8.2																													
8.4																													
8.6	8.7	8.8	Skagen 4		301.93					69.6	27.6	0.1	0.1		0.205	0.178	0.168	0.141	0.125	0.171	1.207			1.423		0.12	0.33		S I M
8.8																													
9.0	9.0	9.5	Skagen 4	33	334.93																						0.65		M
9.2																													
9.4																													
9.6	9.7	9.8	Skagen 4		302.93					74.2	22.5	0.1	0.2		0.195	0.172	0.162	0.139	0.123	0.165	1.184			1.394		0.18	0.7		S I M
9.8																													
10.0	10.0	10.5	Skagen 4	37	335.93																						1.43		M
10.2																													
10.4																													
10.6	10.7	10.8	Skagen 4		303.93					71.3	24.9	0.1	0		0.200	0.174	0.163	0.136	0.105	0.166	1.211			1.651		0.22	0.29		S I M
10.8																													
11.0	11.0	11.5	Skagen 4	41	336.93																						1.17		M
11.2																													
11.4																													
11.6	11.7	11.8	Skagen 4		304.93					72.4	22.6	0.1	0.4		0.195	0.171	0.160	0.132	0.095	0.162	1.216			1.795		0.23	0.42		S I M
11.8																													
12.0	12.0	12.5	Skagen 4	45	337.93																						1.93		M
12.2																													
12.4																													
12.6	12.7	12.8	Skagen 4		305.93					30.8	67.9	0.3	0.1		0.296	0.252	0.233	0.188	0.147	0.239	1.256			1.710		0.14	0.77		S I M
12.8																													
13.0	13.0	13.5	Skagen 4	49	338.93																						2.06		M
13.2																													
13.4																													
13.6	13.7	13.8	Skagen 4		306.93					30.3	68.3	0.3	0.4		0.270	0.237	0.224	0.192	0.157	0.229	1.184			1.508		0.14	0.57		S I M
13.8																													
14.0	14.0	14.5	Skagen 4	53	339.93																						5.41		M
14.2																													
14.4																													
14.6	14.7	14.8	Skagen 4		307.93					30.2	67.7	0.6	0.8		0.278	0.239	0.226	0.192	0.157	0.232	1.203			1.520		0.18	1.95		S I M
14.8																													
15.0	15.0	15.5	Skagen 4	57	340.93																						2.12		M
15.2																													
15.4	15.5	15.7	Skagen	58	940218																					0.2	2.85		I M
15.6	15.7	15.8	Skagen 4		308.93					46.9	51.6	0.2	0		0.236	0.216	0.202	0.163	0.133	0.201	1.201			1.626		0.16	0.37		S I M
15.8																													
16.0	16.0	16.5	Skagen 4	61	341.93																						2.76		M
16.2																													
16.4	16.5	17.0	Skagen 4		356.93																						21.06		M
16.6	16.7	16.8	Skagen 4		309.93					23.2	57.5	8.4	10		0.423	0.307	0.262	0.202	0.158	0.296	1.447			1.938		0.3	21.9		S I M
16.8																													
17.0	17.0	17.5	Skagen 4	65	342.93																						5.79		M
17.2																													
17.4																													
17.6	17.7	17.8	Skagen 4		310.93					31.4	67.5	0.2	0.1		0.280	0.241	0.226	0.189	0.149	0.232	1.217			1.620		0.12	0.39		S I M
17.8																													
18.0	18.0	18.5	Skagen 4	69	343.93																						2.09		M
18.2																													
18.4																													
18.6	18.7	18.8	Skagen 4		311.93					47.3	51.2	0.1	0		0.235	0.215	0.202	0.162	0.131	0.199	1.205			1.645		0.11	0.06		S I M
18.8																													
19.0	19.0	19.5	Skagen 4	73	344.93																						1.06		M
19.2																													
19.4																													
19.6	19.7	19.8	Skagen 4		312.93					57.5	39.4	0.1	0		0.221	0.199	0.185	0.146	0.119	0.184	1.229			1.672		0.18	0.1		S I M
19.8																													
20.0	20.0	20.5	Skagen 4	77	345.93																						0.69		M
20.2																													
20.4																													
20.6																													
20.8	20.8	20.9	Skagen 4		313.93					45.6	50.7	0.5	0.4		0.239	0.217	0.202	0.159	0.127	0.200	1.224			1.709		0.31	1.16		S I M
21.0	21.0	21.5	Skagen 4	81	346.93																						0.86		M
21.2																													
21.4																													
21.6	21.8	21.8	Skagen 4		314.93					47.7	49.4	0	0		0.234	0.213	0.199	0.155	0.117	0.196	1.228			1.821		0.24	0.06		S I M
21.8																													
22.0	22.0	22.5	Skagen 4	85	347.93																						0.13		M
22.2																													

Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 2

Depth m b.s.	Number of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Polyplacophora	Lacuna pallidula	Hydrobia ulvae	Barleeia unifasciata	Onoba vitrea	Rissoa porifera	Rissoa albella	- drilled specimens	Turritella communis	- drilled specimens	Bittium reticulatum	Aporrhais pespelicani	Lunatia montagui	Lunatia alderi	- drilled specimens	Buccinum undatum	Colus sp	Hinia pygmaea	- drilled specimens	Hinia reticulata	Oenopota turricola	Mangelia brachystoma	Epitonium trevelyanum	Aclis minor	- drilled specimens	Hermiaclis ventrosa	- drilled specimens	Graphis albida	Melanella alba	Melanella lubrica	Melanella frielei	Polygireulima sinuosa	Vitreolina philippii	- drilled specimens	Vitreolina collensi	Chrysallida decussata	Brachystomia albella	Odostomia conoidea	Odostomia umbilicaris
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0.2																																																
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4.8	0																																															
5.0	9															1							2																										
5.2																																																
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5.6	1																																															
5.8																																																
6.0	4																						1				1																						
6.2																																																
6.4																																																
6.6	0																																															
6.8																																																
7.0	9															1							4				3	1														1						
7.2																																																
7.4																																																
7.6	2																																															
7.8																																																
8.0	11													1		1							4								1																	
8.2																																																
8.4																																																
8.6	1																																															
8.8																																																
9.0	8																						4				2																						
9.2																																																
9.4																																																
9.6	4																																															
9.8																																																
10.0	13															3		1					11	1			7															1	1					
10.2																																																
10.4																																																
10.6	3																																															
10.8																																																
11.0	17															2					1				1		3				1				2	1												
11.2																																																
11.4																																																
11.6	5											1																																				
11.8																																																
12.0	9																						1				8	1																				
12.2																																																
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12.8																																																
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13.2																																																
13.4																																																
13.6	3																																															
13.8																																																
14.0	7																						8																										
14.2																																																
14.4																																																
14.6	2																																															
14.8																																																
15.0	17															40					1		19				14																		8				
15.2																																																
15.4	0																																															
15.6	3																																															
15.8																																																
16.0	8															16					1																												
16.2																																																
16.4	0																																															
16.6	7																						2																										
16.8																																																
17.0	6																						1				5																						
17.2																																																
17.4																																																
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18.0	5																																															
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18.8																																																
19.0	10															8											8																						
19.2																																																
19.4																																																
19.6	3																																															
19.8																																																
20.0	19															4						2	13				9	1	1																				
20.2																																																
20.4																																																
20.6																																																
20.8	3																																															
21.0	17																	1			1		4				2			1												1							
21.2																																																
21.4																																																
21.6	4																																															
21.8																																																
22.0	15															1		1		1	1		3							1																			
22.2																																																

Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 3

Depth m b.s.	Eulimella scillae	Turbonilla acuta	Opisthobranchia	Retusa truncatula	Retusa umbilicata	Cylichna alba	Philine catena	Clione limacina	Limacina retroversa	Limacina helicina	Scaphopoda	Dentalium vulgare	Cadulus jeffreysi	Entalina tetragona	Siphonodentalium lobatum	Nuculidae	Nucula hanleyi	Nucula nitidosa	- drilled specimens	Nucula nucleus	- drilled specimens	Nuculana minuta	Nuculana pernula	Yoldia hyperborea	Portlandia arctica	- drilled specimens	Portlandia fraterna	Yoldiella frigida	Yoldiella lenticula	Bathyarca glacialis	Mytilidae	Musculus discors	Mytilus edulis	- drilled specimens	Pectinidae	Chlamys varia	Palliolum greenlandicum	Delectopecten vitreus	Heteranomia squamula	Ostrea edulis	Thyasira flexuosa	Mysella bidentata	- drilled specimens	Tellimya ferruginosa
0.0																																													
0.2																																													
0.4																																													
0.6																																													
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22.0																		1															2		1							1		1
22.2																																													

Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 4

Depth m b.s.	- drilled specimens	Turtonia minuta	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Laevicardium crassum	Parvicardium minimum	Mactra stultorum	Spisula subtruncata	- drilled specimens	Pharidae	Phaxas pellucidus	Macoma sp	Macoma calcarea	Tellina fabula	- drilled specimens	Tellina pusilla	Tellina tenuis	- drilled specimens	Donax vittatus	Gari fervensis	Abra sp	Abra alba	Abra nitida	Abra prismatica	Abra tenuis	Arctica islandica	Kelliella milaris	- drilled specimens	Chamelea striatula	- drilled specimens	Timoclea ovata	Mysia undata	Corbula gibba	- drilled specimens	Hiatella arctica	Saxicavella jeffreysi	Barnea candida	Pholas dactylus	Lyonsia sp	Cochlodesma praetenue	Thracia phaseolina
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4.8																																											
5.0								1	83	2					2			2		1														1				1					
5.2																																											
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5.8																																											
6.0									31	3					2			3	2																								
6.2																																											
6.4																																											
6.6									20	3					1																							1					
6.8																																											
7.0									79	17					5					1																							
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7.4																																											
7.6									15						1																												
7.8																																											
8.0									94	21					3															1													
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8.4																																											
8.6									19	1																																	
8.8																																											
9.0	1								183	29					2															1				1									
9.2																																											
9.4																																											
9.6									16						1																					1							
9.8																																											
10.0								2	218	35					2															1													
10.2																																											
10.4																																											
10.6									47	2					1									1																			
10.8																																											
11.0								1	221	31					1			1												1				1		1		1					
11.2																																											
11.4																																											
11.6									56	1					1																					1							
11.8																																											
12.0								2	853	25	1				2			2												6													
12.2																																											
12.4																																											
12.6									68						1					1				1																			
12.8																																											
13.0									395	5										1										2													
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13.6									18						1									1																			
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14.0									1264	28								2	1	1										1													1
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14.8																																											
15.0				2				16	2728	268	1				18	1		4												22	1			3									1
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16.0				2					1948	39										1										17				8									
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16.6									149						1					1				1																			
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19.8																																											
20.0	2								1170	82	1	1			8			3												10	4			6	1	1	1		1				
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20.8									13						2																												
21.0				1					53	5		1			3					1								5						1									
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22.2																																											

Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 5

Depth m b.s.	Top	Base	Locality	Core	Lab.no.	Clay %	Fine Silt %	Medium Silt %	Coarse Silt %	Fine Sand %	Medium Sand %	Coarse Sand %	Gravel %	P_{10}	Q_1	P_{40}	Q_2	Q_3	P_{90}	Mean Grain Size	So	Geom. skewness	Kurtosis	P_{40}/P_{90}	Water (DS) %	Loss on ignition	Shell >0.5mm %	Mat >1.0mm (g)	Analysis
22.4																													
22.6	22.7	22.8	Skagen 4		315.93					43.9	54.7	0.1	0.1		0.235	0.218	0.206	0.172	0.135	0.204	1.169			1.609		0.19	0.25		S I M
22.8																													
23.0	23.0	23.5	Skagen 4	89	348.93																						0.32		M
23.2																													
23.4																													
23.6	23.7	23.8	Skagen 4		316.93					66.4	28.3	0.1	0.1		0.207	0.177	0.162	0.123	0.086	0.164	1.296			2.059		0.26	0.32		S I M
23.8																													
24.0	24.0	24.5	Skagen 4	93	349.93																						0.1		M
24.2																													
24.4																													
24.6	24.8	24.8	Skagen 4		317.93					67.2	30.2	0.1	0		0.210	0.182	0.169	0.140	0.114	0.173	1.226			1.591		0.23	0.06		S I M
24.8																													
25.0	25.0	25.5	Skagen 4	97	350.93																						0.25		M
25.2																													
25.4																													
25.6	25.7	25.8	Skagen 4		318.93					63	33.2	0	0		0.215	0.188	0.173	0.139	0.109	0.176	1.241			1.729		0.26	0.11		S I M
25.8																													
26.0	26.0	26.5	Skagen 4	101	351.93																						0.28		M
26.2																													
26.4																													
26.6	26.7	26.8	Skagen 4		319.93					62.2	32.2	0.1	0		0.213	0.186	0.171	0.136	0.098	0.173	1.250			1.897		0.46	0.11		S I M
26.8																													
27.0	27.0	27.5	Skagen 4	105	352.93																						0.13		M
27.2																													
27.4																													
27.6																													
27.8	27.9	27.9	Skagen 4		320.93					81.5	4.8	0	0		0.153	0.131	0.118	0.091		0.121	1.296					1.2	0.07		S I M
28.0	28.0	28.5	Skagen 4	109	353.93																						0.11		M
28.2																													
28.4	28.5	28.9	Skagen 4		321.93					68	15.3	0.1	1		0.174	0.149	0.132	0.090		0.132	1.389					1.29	0.21		S I M
28.6																													
28.8																													
29.0	29.0	29.5	Skagen 4	112	354.93																						0.08		M
29.2																													
29.4																													
29.6																													
29.8	29.8	29.8	Skagen 4		322.93																					3.96	0.18		S I M
-	29.8	29.9	Skagen 4		323.93					86.4	5.7	0.1	0.3		0.163	0.148	0.138	0.108	0.079	0.136	1.229			1.868		0.68	0.62		S I M
30.0	30.0	30.5	Skagen 4	116	355.93																						0.08		M
30.2																													
30.4																													
30.6	30.8	30.9	Skagen 4		324.93					67.2	1.6	0	0		0.121	0.103	0.091									1.22	0.07		S I M
30.8																													
31.0																													
31.2	31.4	31.4	Skagen 3	1																								0.04	W
31.4																													
31.6																													
31.8																													
32.0																													
32.2																													
32.4																													
32.6																													
32.8	32.9	32.9	Skagen 3	2																								0.022	W
-	32.9	33.0	Skagen 3	2	495.93	5.2	4.8	6.2	21.5	61.9	0.3	0	0.1	0.138	0.110	0.092	0.079	0.040	0.006	0.077	1.650	0.715	0.264	15.371		3.25	5.38		H I M
33.0																													
33.2																													
33.4																													
33.6	33.6	33.7	Skagen 3	3																								0.085	W
33.8	33.9	34.2	Skagen 3	3	709.93																				29.36	2.65	0.01		I M
34.0																													
34.2	34.3	34.3	Skagen 3	3																								0.273	W
34.4																													
34.6																													
34.8																													
35.0																													
35.2																													
35.4	35.6	35.6	Skagen 3	4																								0.072	W
35.6																													
35.8	35.9	36.0	Skagen 3	4	496.93	6.3	5	7.2	20.3	60.6	0.6	0	0	0.141	0.109	0.089	0.077	0.034	0.005	0.073	1.795	0.631	0.277	19.637		2.99	0.06		H I M
36.0																													
36.2																													
36.4																													
36.6	36.7	36.7	Skagen 3	5																								0.033	W
36.8																													
37.0	37.0	37.3	Skagen 3	5	710.93																				25.59	2.31	0.15		I M
37.2	37.3	37.4	Skagen 3	5																								0.078	W
37.4																													
37.6																													
37.8																													
38.0	38.2	38.2	Skagen 3	6																								0.178	W
-	38.2	38.2	Skagen 3	6																								0.178	W
38.2																													
38.4																													
38.6																													
38.8	38.9	39.0	Skagen 3	6	497.93																							0.074	W
-	38.9	39.0	Skagen 3	6	497.93	6.2	5.8	6.4	19.8	61.5	0.3	0	0	0.123	0.101	0.083	0.074	0.039	0.004	0.071	1.605	0.726	0.260	20.683		2.98	0.02		H I M
39.0																													
39.2	39.3	39.4	Skagen 3	7																								0.003	W
39.4																													
39.6																													
39.8	39.9	40.0	Skagen 3	7	711.93																				24.38	2.36	0.05		I M
40.0																													
40.2	40.3	40.4	Skagen 3	7																								0.054	W
40.4																													
40.6																													
40.8																													
41.0																													
41.2																													
41.4	41.5	41.5	Skagen 3	8																								0.016	W
41.6																													
41.8	41.9	42.0	Skagen 3	8	498.93	6.2	5.3	7.5	27.7	53.3	0.1	0	0	0.107	0.085	0.073	0.066	0.036	0.005	0.062	1.542	0.699	0.240	15.778		2.9	0.01		H I M
42.0																													
42.2																													
42.4	42.6	42.6	Skagen 3	9																								0.025	W
42.6																													
42.8	42.9	43.1	Skagen 3	9	712.93																				20.55	2.26	0.07		I M
43.0	43.2	43.2	Skagen 3	9																								0.054	W
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 6

Depth m b.s.	Number of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Polyplacophora	Lacuna pallidula	Hydrobia ulvae	Barleeia unifasciata	Onoba vitrea	Rissoa porifera	Rissoa albella	- drilled specimens	Turritella communis	- drilled specimens	Bittium reticulatum	Aporrhais pespelicani	Lunatia montagui	Lunatia alderi	- drilled specimens	Buccinum undatum	Colus sp	Hinia pygmaea	- drilled specimens	Hinia reticulata	Oenopota turricola	Mangelia brachystoma	Epitonium trevelyanum	Acis minor	- drilled specimens	Hermiaclis ventrosa	- drilled specimens	Graphis albida	Melanella alba	Melanella lubrica	Melanella frielei	Polygireulima sinuosa	Vitreolina philippii	- drilled specimens	Vitreolina collensi	Chrysallida decussata	Brachystomia albella	Odostomia conoidea	Odostomia umbilicaris
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27.8	6															1							1																									
28.0	17														2	6							15				3																					
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 7

Depth m b.s.	Eulimella scillae	Turbonilla acuta	Opisthobranchia	Retusa truncatula	Retusa umbilicata	Cylichna alba	Philine catena	Clione limacina	Limacina retroversa	Limacina helicina	Scaphopoda	Dentalium vulgare	Cadulus jeffreysi	Entalina tetragona	Siphonodentalium lobatum	Nuculidae	Nucula hanleyi	Nucula nitidosa	- drilled specimens	Nucula nucleus	- drilled specimens	Nuculana minuta	Nuculana pernula	Yoldia hyperborea	Portlandia arctica	- drilled specimens	Portlandia fraterna	Yoldiella frigida	Yoldiella lenticula	Bathyarca glacialis	Mytilidae	Musculus discors	Mytilus edulis	- drilled specimens	Pectinidae	Chlamys varia	Palliolum greenlandicum	Delectopecten vitreus	Heteranomia squamula	Ostrea edulis	Thyasira flexuosa	Mysella bidentata	- drilled specimens	Tellimya ferruginosa
22.4																																													
22.6																				1													1												
22.8																																													
23.0																		2																					2			3		2
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24.8																																													
25.0																				4	1												17		1				3			3	1	3
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25.8																																													
26.0																		1	1														14							1		7			
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26.6																1																													
26.8																																													
27.0			1															7	2														14						2	2		31	6	6
27.2																																													
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27.6																																													
27.8																																										1			
28.0																		1														1	8							2		11		1
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29.0				2														3															13						2			15	2	1
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 8

Depth m b.s.	- drilled specimens	Turtonia minuta	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Laevicardium crassum	Parvicardium minimum	Mactra stultorum	Spisula subtruncata	- drilled specimens	Pharidae	Phaxas pellucidus	Macoma sp	Macoma calcarea	Tellina fabula	- drilled specimens	Tellina pusilla	Tellina tenuis	- drilled specimens	Donax vittatus	Gari fervensis	Abra sp	Abra alba	Abra nitida	Abra prismatica	Abra tenuis	Arctica islandica	Kelliella milaris	- drilled specimens	Chamelea striatula	- drilled specimens	Timoclea ovata	Mysia undata	Corbula gibba	- drilled specimens	Hiatella arctica	Saxicavella jeffreysi	Barnea candida	Pholas dactylus	Lyonsia sp	Cochlodesma praetenue	Thracia phaseolina
22.4																																											
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24.8																																											
25.0				1					95	3		2			1									4					11	1			10	3								
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25.6									3						1																		1									
25.8																																											
26.0				2				2	111	6		4			3						2								10	2			9	1	2							
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26.6									2			1																	1													
26.8																																											
27.0				1				2	105	10		5			1	1	4	1		2	1	1							22	5	1		23	4	2							
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27.8									2						1																		1									
28.0									46			2			1		1												23	5			25	10	2							
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 9

Depth m b.s.	Top	Base	Locality	Core	Lab.no.	Clay %	Fine Silt %	Medium Silt %	Coarse Silt %	Fine Sand %	Medium Sand %	Coarse Sand %	Gravel %	P_{10}	Q_1	P_{40}	Q_2	Q_3	P_{90}	Mean Grain Size	So	Geom. skewness	Kurtosis	P_{40}/P_{90}	Water (DS) %	Loss on ignition	Shell >0.5mm %	Mat >1.0mm (g)	Analysis
44.0																													
44.2																													
44.4																													
44.6																													
44.8	44.8	44.9	Skagen 3	10																								0.118	W
-	44.9	45.0	Skagen 3	10	499.93	5.6	4.8	5.3	24.2	59.9	0.1	0	0	0.115	0.090	0.078	0.071	0.044	0.005	0.068	1.435	0.785	0.210	14.634		2.35	0.02		H I M
45.0																													
45.2																													
45.4	45.5	45.6	Skagen 3	11																								0.043	W
45.6																													
45.8																													
46.0	46.1	46.3	Skagen 3	11	713.93	7																			25.32	2.7	0.03		I M
46.2	46.3	46.4	Skagen 3	11																								0.018	W
46.4																													
46.6																													
46.8																													
47.0																													
47.2	47.3	47.4	Skagen 3	12																								0.038	W
47.4																													
47.6																													
47.8	47.8	47.9	Skagen 3	12																								0.031	W
-	47.9	48.0	Skagen 3	12	500.93	6.1	5.2	7.9	28	52.6	0.2	0	0	0.111	0.086	0.074	0.065	0.034	0.004	0.062	1.588	0.688	0.243	16.913		2.38	0.04		H I M
48.0																													
48.2																													
48.4	48.5	48.5	Skagen 3	13																								0.027	W
48.6																													
48.8	48.9	49.1	Skagen 3	13	714.93																				24.81	2.55	0.04		I M
49.0	49.1	49.2	Skagen 3	13																								0.04	W
49.2																													
49.4																													
49.6																													
49.8																													
50.0																													
50.2																													
50.4	50.5	50.5	Skagen 3	14																								0.041	W
50.6																													
50.8	50.9	51.0	Skagen 3	14	501.93	5.1	6.1	5.2	28.8	54.8	0	0.1	0	0.105	0.084	0.073	0.066	0.041	0.005	0.064	1.431	0.780	0.214	15.355		2.4	0.01		H I M
51.0																													
51.2																													
51.4	51.5	51.6	Skagen 3	15																								0.034	W
51.6																													
51.8																													
52.0	52.0	52.2	Skagen 3	15	715.93																				22.94	2.5	0.03		I M
52.2	52.3	52.3	Skagen 3	15																								0.163	W
52.4																													
52.6																													
52.8																													
53.0																													
53.2																													
53.4																													
53.6																													
53.8	53.9	54.0	Skagen 3	16	502.93	6.2	4.5	6.2	27.3	55.7	0.1	0	0	0.103	0.084	0.074	0.067	0.038	0.005	0.063	1.486	0.708	0.233	14.443		2.76	0.01		H I M
54.0																													
54.2																													
54.4	54.5	54.5	Skagen 3	17																								0.092	W
54.6																													
54.8																													
55.0	55.1	55.3	Skagen 3	17	716.93																				26.21	2.92	0.03		I M
55.2	55.3	55.4	Skagen 3	17																								0.029	W
55.4																													
55.6																													
55.8																													
56.0																													
56.2																													
56.4																													
56.6	56.8	56.8	Skagen 3	18																								0.003	W
56.8	56.9	57.0	Skagen 3	18	503.93	3.9	5.4	5.2	27.4	57.9	0.1	0.1	0	0.105	0.084	0.075	0.068	0.044	0.007	0.066	1.386	0.796	0.206	10.855		2.67	0.02		H I M
57.0																													
57.2																													
57.4																													
57.6																													
57.8	57.9	57.9	Skagen 3	19																								0.028	W
58.0	58.0	58.3	Skagen 3	19	717.93																				24.41	3.14	0.02		I M
58.2	58.3	58.4	Skagen 3	19																								0	W
58.4																													
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58.8																													
59.0																													
59.2																													
59.4																													
59.6	59.7	59.8	Skagen 3	20																								0.022	W
59.8	59.9	60.0	Skagen 3	20	504.93	7.5	4	4.5	23.8	60.2	0.1	0	0	0.109	0.087	0.077	0.070	0.047	0.004	0.068	1.360	0.834	0.190	17.796		2.51	0.02		H I M
60.0																													
60.2																													
60.4																													
60.6																													
60.8																													
61.0	61.1	61.1	Skagen 3	21	717.93																							0.015	W
61.2	61.3	61.5	Skagen 3	21	718.93																				22.23	2.77	0.02		I M
61.4																													
61.6																													
61.8																													
62.0																													
62.2																													
62.4	62.6	62.6	Skagen 3	22																								0.021	W
62.6																													
62.8	62.9	63.0	Skagen 3	22	505.93	8.7	3.6	4.2	26.2	57.2	0.1	0	0	0.104	0.084	0.074	0.068	0.040	0.003	0.064	1.445	0.739	0.217	25.944		2.15	0.02		H I M
63.0																													
63.2																													
63.4	63.5	63.5	Skagen 3	23																								0.037	W
63.6																													
63.8																													
64.0	64.1	64.3	Skagen 3	23	719.93																				24.03	3	0.07		I M
64.2	64.3	64.4	Skagen 3	23																								0.026	W
64.4																													
64.6																													
64.8																													
65.0																													
65.2	65.3	65.4	Skagen 3	24																								0.058	W
65.4																													
65.6	65.7	65.8	Skagen 3	24	506.93	9	5.7	5	22.3	57.8	0.1	0	0	0.107	0.085	0.075	0.068	0.039	0.003	0.064	1.484	0.706	0.224	27.450		2.96	0.05		H I M
65.8	65.9	65.9	Skagen 3	24																								0.124	W

Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 10

Depth m b.s.	Number of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Polyplacophora	Lacuna pallidula	Hydrobia ulvae	Barleeia unifasciata	Onoba vitrea	Rissoa porifera	Rissoa albella	- drilled specimens	Turritella communis	- drilled specimens	Bittium reticulatum	Aporrhais pespelicani	Lunatia montagui	Lunatia alderi	- drilled specimens	Buccinum undatum	Colus sp	Hinia pygmaea	- drilled specimens	Hinia reticulata	Oenopota turricola	Mangelia brachystoma	Epitonium trevelyanum	Aclis minor	- drilled specimens	Hermaclis ventrosa	- drilled specimens	Graphis albida	Melanella alba	Melanella lubrica	Melanella frielei	Polygireulima sinuosa	Vitreolina philippii	- drilled specimens	Vitreolina collensi	Chrysallida decussata	Brachystomia albella	Odostomia conoidea	Odostomia umbilicaris
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 11

Depth m b.s.	Eulimella scillae	Turbonilla acuta	Opisthobranchia	Retusa truncatula	Retusa umbilicata	Cylichna alba	Philine catena	Clione limacina	Limacina retroversa	Limacina helicina	Scaphopoda	Dentalium vulgare	Cadulus jeffreysi	Entalina tetragona	Siphonodentalium lobatum	Nuculidae	Nucula hanleyi	Nucula nitidosa	- drilled specimens	Nucula nucleus	- drilled specimens	Nuculana minuta	Nuculana pernula	Yoldia hyperborea	Portlandia arctica	- drilled specimens	Portlandia fraterna	Yoldiella frigida	Yoldiella lenticula	Bathyarca glacialis	Mytilidae	Musculus discors	Mytilus edulis	- drilled specimens	Pectinidae	Chlamys varia	Palliolum greenlandicum	Delectopecten vitreus	Heteranomia squamula	Ostrea edulis	Thyasira flexuosa	Mysella bidentata	- drilled specimens	Tellimya ferruginosa
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 12

Depth m b.s.	- drilled specimens	Turtonia minuta	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Laevicardium crassum	Parvicardium minimum	Mactra stultorum	Spisula subtruncata	- drilled specimens	Pharidae	Phaxas pellucidus	Macoma sp	Macoma calcarea	Tellina fabula	- drilled specimens	Tellina pusilla	Tellina tenuis	- drilled specimens	Donax vittatus	Gari fervensis	Abra sp	Abra alba	Abra nitida	Abra prismatica	Abra tenuis	Arctica islandica	Kelliella milaris	- drilled specimens	Chamelea striatula	- drilled specimens	Timoclea ovata	Mysia undata	Corbula gibba	- drilled specimens	Hiatella arctica	Saxicavella jeffreysi	Barnea candida	Pholas dactylus	Lyonsia sp	Cochlodesma praetenue	Thracia phaseolina
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 13

Depth m b.s.	Top	Base	Locality	Core	Lab.no.	Clay %	Fine Silt %	Medium Silt %	Coarse Silt %	Fine Sand %	Medium Sand %	Coarse Sand %	Gravel %	P_{10}	Q_1	P_{40}	Q_2	Q_3	P_{90}	Mean Grain Size	So	Geom. skewness	Kurtosis	P_{40}/P_{90}	Water (DS) %	Loss on ignition	Shell >0.5mm %	Mat >1.0mm (g)	Analysis
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66.4																													
66.6	66.7	66.7	Skagen 3	25																								0.015	W
66.8																													
67.0	67.0	67.3	Skagen 3	25	720.93																				22.87	3.06	0.06		I M
67.2	67.3	67.4	Skagen 3	25																								0.099	W
67.4																													
67.6																													
67.8																													
68.0																													
68.2																													
68.4																													
68.6																													
68.8	68.8	68.9	Skagen 3	26																								0.038	W
-	68.9	69.0	Skagen 3	26	507.93	9.1	3.6	5.3	19.4	62.5	0.1	0	0	0.115	0.095	0.081	0.073	0.046	0.003	0.071	1.433	0.823	0.217	28.778		2.36	0.07		H I M
69.0																													
69.2																													
69.4																													
69.6																													
69.8																													
70.0	70.1	70.3	Skagen 3	27	721.93																				24.29	2.42	0.03		I M
70.2	70.3	70.4	Skagen 3	27																								0.06	W
70.4																													
70.6																													
70.8																													
71.0																													
71.2	71.3	71.3	Skagen 3	28																								0.032	W
71.4																													
71.6																													
71.8	71.8	71.9	Skagen 3	28																								0.008	W
-	71.9	72.0	Skagen 3	28	508.93	9.7	4.4	6.3	27.1	52.4	0.1	0	0	0.103	0.083	0.072	0.065	0.033	0.002	0.060	1.593	0.645	0.249	33.527		2.9	0.05		H I M
72.0																													
72.2																													
72.4																													
72.6																													
72.8	72.9	72.9	Skagen 3	29																								0.036	W
73.0	73.1	73.3	Skagen 3	29	722.93																				22.21	2.63	0.09		I M
73.2	73.4	73.4	Skagen 3	29																								0.096	W
73.4																													
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73.8																													
74.0																													
74.2																													
74.4																													
74.6																													
74.8	74.8	74.9	Skagen 3	30																								0.007	W
-	74.9	75.0	Skagen 3	30	509.93	7.8	4.6	4.9	27.8	54.9	0.1	0	0	0.107	0.085	0.074	0.067	0.042	0.003	0.064	1.427	0.800	0.207	24.745		3.1	0.04		H I M
75.0																													
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75.8																													
76.0																													
76.2	76.3	76.3	Skagen 3	31																								0.019	W
-	76.3	76.5	Skagen 3	31	723.93																				25.31	3.8	0.03		I M
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77.8	77.9	78.0	Skagen 3	32																								0.067	W
-	77.9	78.0	Skagen 3	32	510.93	13.7	5	8.3	36.5	36.4	0.1	0	0	0.087	0.073	0.060	0.053	0.016		0.047	2.154	0.411				3.87	0.04		H I M
78.0																													
78.2	78.3	78.4	Skagen 3	33																								0.017	W
78.4																													
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78.8	78.9	78.9	Skagen 3	32																								0.046	W
79.0	79.0	79.2	Skagen 3	33	724.93																				25.04	3.6	0.01		I M
79.2	79.2	79.3	Skagen 3	33																								0.041	W
79.4																													
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79.8	80.0	80.0	Skagen 3	34																								0.027	W
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80.6	80.6	80.7	Skagen 3	34	511.93	15.2	5.9	10	38.5	30.4	0.1	0	0	0.084	0.069	0.055	0.046	0.010		0.042	2.617	0.325				4.45	0.02		H I M
80.8																													
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81.4	81.4	81.5	Skagen 3	35																								0	W
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81.8																													
82.0	82.0	82.1	Skagen 3	35																								0	W
82.2	82.3	82.5	Skagen 3	35	725.93																							0	W
-	82.3	82.5	Skagen 3	35	725.93																				18.53	5.39	0.08		I M
82.4																													
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83.0	83.1	83.2	Skagen 3	36																								0.019	W
83.2																													
83.4																													
83.6	83.7	83.8	Skagen 3	36	512.93	12.4	5.7	9	44.1	28.8	0.1	0	0	0.085	0.067	0.056	0.050	0.016		0.045	2.054	0.423				3.96	0.02		H I M
83.8	83.9	84.0	Skagen 3	36																								0.122	W
84.0																													
84.2	84.3	84.4	Skagen 3	37																								0.006	W
84.4																													
84.6																													
84.8																													
85.0	85.0	85.3	Skagen 3	37	726.93																				25.87	6.07	0.12		I M
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85.4																													
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85.8																													
86.0	86.1	86.2	Skagen 3	38																								0.018	W
86.2																													
86.4	86.5	86.8	Skagen 3	38	940168																					5.51	0.05		I M
86.6																													
86.8	86.8	86.9	Skagen 3	38																								0.007	W
-	86.9	87.0	Skagen 3	38	513.93	17.6	10.5	14.9	42.5	14.4	0.1	0	0	0.072	0.056	0.045	0.030	0.004		0.030	3.544	0.269				5.3	0.01		H I M

Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 14

Depth m b.s.	Number of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Polyplacophora	Lacuna pallidula	Hydrobia ulvae	Barleeia unifasciata	Onoba vitrea	Rissoa porifera	Rissoa albella	- drilled specimens	Turritella communis	- drilled specimens	Bittium reticulatum	Aporrhais pespelicani	Lunatia montagui	Lunatia alderi	- drilled specimens	Buccinum undatum	Colus sp	Hinia pygmaea	- drilled specimens	Hinia reticulata	Oenopota turricola	Mangelia brachystoma	Epitonium trevelyanum	Aclis minor	- drilled specimens	Hermiaclis ventrosa	- drilled specimens	Graphis albida	Melanella alba	Melanella lubrica	Melanella frielei	Polygireulima sinuosa	Vitreolina philippii	- drilled specimens	Vitreolina collensi	Chrysallida decussata	Brachystomia albella	Odostomia conoidea	Odostomia umbilicaris
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 15

Depth m b.s.	Eulimella scillae	Turbonilla acuta	Opisthobranchia	Retusa truncatula	Retusa umbilicata	Cylichna alba	Philine catena	Clione limacina	Limacina retroversa	Limacina helicina	Scaphopoda	Dentalium vulgare	Cadulus jeffreysi	Entalina tetragona	Siphonodentalium lobatum	Nuculidae	Nucula hanleyi	Nucula nitidosa	- drilled specimens	Nucula nucleus	- drilled specimens	Nuculana minuta	Nuculana pernula	Yoldia hyperborea	Portlandia arctica	- drilled specimens	Portlandia fraterna	Yoldiella frigida	Yoldiella lenticula	Bathyarca glacialis	Mytilidae	Musculus discors	Mytilus edulis	- drilled specimens	Pectinidae	Chlamys varia	Palliolum greenlandicum	Delectopecten vitreus	Heteranomia squamula	Ostrea edulis	Thyasira flexuosa	Mysella bidentata	- drilled specimens	Tellimya ferruginosa
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 16

Depth m b.s.	- drilled specimens	Turtonia minuta	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Laevicardium crassum	Parvicardium minimum	Mactra stultorum	Spisula subtruncata	- drilled specimens	Pharidae	Phaxas pellucidus	Macoma sp	Macoma calcarea	Tellina fabula	- drilled specimens	Tellina pusilla	Tellina tenuis	- drilled specimens	Donax vittatus	Gari fervensis	Abra sp	Abra alba	Abra nitida	Abra prismatica	Abra tenuis	Arctica islandica	Kelliella milaris	- drilled specimens	Chamelea striatula	- drilled specimens	Timoclea ovata	Mysia undata	Corbula gibba	- drilled specimens	Hiatella arctica	Saxicavella jeffreysi	Barnea candida	Pholas dactylus	Lyonsia sp	Cochlodesma praetenue	Thracia phaseolina
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 17

Depth m b.s.	Top	Base	Locality	Core	Lab.no.	Clay %	Fine Silt %	Medium Silt %	Coarse Silt %	Fine Sand %	Medium Sand %	Coarse Sand %	Gravel %	P_{10}	Q_1	P_{40}	Q_2	Q_3	P_{90}	Mean Grain Size	So	Geom. skewness	Kurtosis	P_{40}/P_{90}	Water (DS) %	Loss on ignition	Shell >0.5mm %	Mat >1.0mm (g)	Analysis
87.0																													
87.2	87.4	87.6	Skagen 3	39																						5.14	0.02		I M
87.4																													
87.6																													
87.8																													
88.0																													
88.2	88.3	88.5	Skagen 3	37	727.93																				24.82	6.03	0.1		I M
88.4																													
88.6	88.8	88.8	Skagen 3	40																								0.009	W
88.8	88.8	89.2	Skagen 3	40	940170																					5.89	0.07		I M
89.0																													
89.2																													
89.4																													
89.6	89.8	89.8	Skagen 3	40																								0.011	W
89.8	89.8	90.0	Skagen 3	40	514.93	23.2	14.7	20.4	36.3	5.1	0.1	0.1	0	0.058	0.041	0.022	0.013	0.002		0.018	4.172	0.600				6.77	0.06		H I M
90.0																													
90.2	90.4	90.4	Skagen 3	41																								0.095	W
90.4																													
90.6																													
90.8																													
91.0	91.1	91.3	Skagen 3	41	728.93																				23.97	5.95	0.05		I M
91.2	91.3	91.4	Skagen 3	41																								0.081	W
91.4																													
91.6																													
91.8	91.8	91.9	Skagen 3	42																								0.026	W
92.0																													
92.2																													
92.4																													
92.6	92.7	92.7	Skagen 3	42																								0.029	W
92.8	92.9	93.0	Skagen 3	42	515.93	19.6	13.5	22.1	38.5	6.2	0.1	0	0	0.059	0.043	0.025	0.016	0.003		0.021	3.693	0.568				6.05	0.02		H I M
93.0																													
93.2	93.3	93.3	Skagen 3	43																								0.03	W
93.4																													
93.6																													
93.8																													
94.0	94.1	94.2	Skagen 3	43																								0.024	W
-	94.2	94.4	Skagen 3	43	729.93																				25.85	6.43	0.01		I M
94.2																													
94.4																													
94.6																													
94.8	94.9	95.2	Skagen 3	44	940171																							0.017	W
-	94.9	95.2	Skagen 3	44	940171																					7.55	0.1		I M
95.0																													
95.2																													
95.4																													
95.6	95.7	95.8	Skagen 3	44																								0	W
95.8	95.9	96.0	Skagen 3	44	516.93	2.5	15.5	35.9	43.4	2.6	0	0	0	0.045	0.029	0.024	0.016	0.007	0.004	0.018	2.006	0.827	0.270	5.567		7.14	0.01		H I M
96.0	96.2	96.2	Skagen 3	45																								2.635	W
96.2	96.3	96.5	Skagen 3	45	730.93																				26.4	6.38	0.02		I M
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97.0																													
97.2	97.3	97.5	Skagen 3	45	731.93																				27.22	6.74	0.02		I M
97.4																													
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97.8																													
98.0	98.1	98.3	Skagen 3	46	732.93																				31.11	7.33	0.01		I M
98.2																													
98.4																													
98.6																													
98.8	98.9	99.0	Skagen 3	46	517.93	32.9	18.2	23.4	23.7	1.8	0	0	0	0.043	0.021	0.009	0.006									7.03	0.01		H I M
99.0																													
99.2	99.4	99.4	Skagen 3	47																								0.16	W
99.4	99.5	99.7	Skagen 3	47	733.93																				31.76	5.65	0.01		I M
99.6																													
99.8																													
100.0																													
100.2	100.3	100.5	Skagen 3	47	734.93																				30.03	6.25	0.12		I M
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101.0																													
101.2	101.3	101.5	Skagen 3	48	735.93																				23.81	5.41	0.01		I M
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101.6																													
101.8	101.9	102.9	Skagen 3	48	518.93	22.2	32.1	25.7	18.9	1.1	0	0	0	0.037	0.015	0.007	0.005	0.002		0.007	2.576	1.282				7.7	0.02		H I M
102.0																													
102.2																													
102.4	102.5	102.7	Skagen 3	49	736.93																				28.17	5.39	0.02		I M
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103.0																													
103.2	103.3	103.5	Skagen 3	49	737.93																				31.06	7.65	0.05		I M
103.4																													
103.6	103.8	103.8	Skagen 3	50																								0	W
103.8	104.0	104.2	Skagen 3	50	738.93																				21.22	7.64	0.05		I M
104.0																													
104.2																													
104.4	104.5	104.5	Skagen 3	50																								0.03	W
104.6																													
104.8	104.9	105.0	Skagen 3	50	519.93	35.1	23.1	24.8	15.6	1.4	0	0	0	0.031	0.013	0.006	0.004									7.89	0.01		H I M
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105.6	105.8	106.0	Skagen 3	51	739.93																				32.93	7.65	0.01		I M
105.8																													
106.0																													
106.2	106.3	106.5	Skagen 3	51	740.93																				28.14	7.25	0.02		I M
106.4																													
106.6	106.7	106.8	Skagen 3	52																								0.011	W
106.8																													
107.0	107.2	107.2	Skagen 3	52																								0.33	W
107.2	107.2	107.5	Skagen 3	52	741.93																				32.01	8.32	0.01		I M
107.4	107.5	107.6	Skagen 3	52																								0.012	W
107.6																													
107.8	107.9	108.0	Skagen 3	52	520.93	36.9	23.4	27.1	11.5	1.1	0	0	0	0.024	0.011	0.006	0.004									7.16	0.01		H I M
108.0																													
108.2	108.3	108.6	Skagen 3	53	742.93																				34.52	8.39	0		I M
108.4																													
108.6																													
108.8	109.0	109.0	Skagen 3	53																								0.007	W

Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 18

Depth m b.s.	Number of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Polyplacophora	Lacuna pallidula	Hydrobia ulvae	Barleeia unifasciata	Onoba vitrea	Rissoa porifera	Rissoa albella	- drilled specimens	Turritella communis	- drilled specimens	Bittium reticulatum	Aporrhais pespelicani	Lunatia montagui	Lunatia alderi	- drilled specimens	Buccinum undatum	Colus sp	Hinia pygmaea	- drilled specimens	Hinia reticulata	Oenopota turricola	Mangelia brachystoma	Epitonium trevelyanum	Aclis minor	- drilled specimens	Hermaclis ventrosa	- drilled specimens	Graphis albida	Melanella alba	Melanella lubrica	Melanella frielei	Polygireulima sinuosa	Vitreolina philippii	- drilled specimens	Vitreolina collensi	Chrysallida decussata	Brachystomia albella	Odostomia conoidea	Odostomia umbilicaris
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 19

Depth m b.s.	Eulimella scillae	Turbonilla acuta	Opisthobranchia	Retusa truncatula	Retusa umbilicata	Cylichna alba	Philine catena	Clione limacina	Limacina retroversa	Limacina helicina	Scaphopoda	Dentalium vulgare	Cadulus jeffreysi	Entalina tetragona	Siphonodentalium lobatum	Nuculidae	Nucula hanleyi	Nucula nitidosa	- drilled specimens	Nucula nucleus	- drilled specimens	Nuculana minuta	Nuculana pernula	Yoldia hyperborea	Portlandia arctica	- drilled specimens	Portlandia fraterna	Yoldiella frigida	Yoldiella lenticula	Bathyarca glacialis	Mytilidae	Musculus discors	Mytilus edulis	- drilled specimens	Pectinidae	Chlamys varia	Palliolum greenlandicum	Delectopecten vitreus	Heteranomia squamula	Ostrea edulis	Thyasira flexuosa	Mysella bidentata	- drilled specimens	Tellimya ferruginosa
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Depth m b.s.	- drilled specimens	Turtonia minuta	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Laevicardium crassum	Parvicardium minimum	Mactra stultorum	Spisula subtruncata	- drilled specimens	Pharidae	Phaxas pellucidus	Macoma sp	Macoma calcarea	Tellina fabula	- drilled specimens	Tellina pusilla	Tellina tenuis	- drilled specimens	Donax vittatus	Gari fervensis	Abra sp	Abra alba	Abra nitida	Abra prismatica	Abra tenuis	Arctica islandica	Kelliella milaris	- drilled specimens	Chamelea striatula	- drilled specimens	Timoclea ovata	Mysia undata	Corbula gibba	- drilled specimens	Hiatella arctica	Saxicavella jeffreysi	Barnea candida	Pholas dactylus	Lyonsia sp	Cochlodesma praetenue	Thracia phaseolina
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Depth m b.s.	Top	Base	Locality	Core	Lab.no.	Clay %	Fine Silt %	Medium Silt %	Coarse Silt %	Fine Sand %	Medium Sand %	Coarse Sand %	Gravel %	P_{10}	Q_1	P_{50}	Q_2	Q_3	P_{90}	Mean Grain Size	So	Geom. skewness	Kurtosis	P_{50}/P_{90}	Water (DS) %	Loss on ignition	Shell >0.5mm %	Mat >1.0mm (g)	Analysis
109.0																													
109.2	109.4	109.5	Skagen 3	53	743.93																				39.45	7.54	0.02		I M
109.4	109.5	109.8	Skagen 3	54	940172																					8.75	0.12		I M
109.6	109.8	109.8	Skagen 3	54																								0.124	W
109.8																													
110.0	110.1	110.4	Skagen 3	54	744.93	43.1	22.3	23.7	10.6	0.4	0	0	0	0.021	0.009	0.005	0.003								29.33	7.4	0.02		H I M
110.2																													
110.4																													
110.6																													
110.8	110.8	110.9	Skagen 3	54																								0.001	W
-	110.9	111.0	Skagen 3	54	521.93	36.9	21.2	25.4	15.8	0.7	0	0	0	0.037	0.012	0.007	0.004									5.82	0.02		H I M
111.0	111.0	111.2	Skagen 3	55	940173																					8.48	0.06		I M
111.2	111.2	111.3																											
111.4																													
111.6	111.6	111.7	Skagen 3	55																								0.053	W
-	111.7	111.9	Skagen 3	55	745.93	41.3	24.2	21.3	12.8	0.5	0	0	0	0.026	0.010	0.005	0.003								31.07	7.68	0.01		H I M
111.8																													
112.0																													
112.2	112.3	112.5	Skagen 3	55	746.93	39	22	21.5	17	0.5	0	0	0	0.034	0.012	0.006	0.003								34.74	6.09	0.01		H I M
112.4																													
112.6	112.7	112.7	Skagen 3	56																								0	W
112.8	112.8	112.9	Skagen 3	56																								0.043	W
-	112.9	113.1	Skagen 3	56	747.93	41.9	24.3	20.2	12.7	0.9	0	0	0	0.029	0.009	0.005	0.003								28.32	7.63	0.02		H I M
113.0																													
113.2	113.2	113.4	Skagen 3	56	940174																					8.07	0.03		I M
113.4																													
113.6	113.6	113.7	Skagen 3	56	522.93	42.1	22.7	19.9	14	1.3	0	0	0	0.029	0.011	0.005	0.003									5.93	0.01		H I M
113.8																													
114.0	114.0	114.1	Skagen 3	57																								0	W
114.2	114.4	114.4	Skagen 3	57		45.4	19.8	21	12.7	1.1	0	0	0	0.029	0.010	0.005	0.003								6.63	7.52	0.09		H I M
114.4	114.5	114.5	Skagen 3	57																								0.028	W
114.6	114.6		Skagen 3	57																								0.214	W
-	114.8	114.8	Skagen 3	57																								0.214	W
114.8																													
115.0	115.0		Skagen 3	57																								0.896	W
-	115.1	115.2	Skagen 3	57	749.93	40.3	13.9	15	15.1	11.2	3.9	0.6	0.2	0.115	0.031	0.010	0.004								26.23	5.37	0.67		H I M
-	115.1	115.2	Skagen 3	57																								0.187	W
115.2	115.3		Skagen 3	57																								9.97	W
-	115.4	115.4	Skagen 3	57																								0.164	W
115.4																													
115.6	115.6	115.6	Skagen 3	58																								0.048	W
115.8	115.9	115.9	Skagen 3	58																								0.387	W
-	116.0	116.0	Skagen 3	58																								0.083	W
116.0	116.0	116.1	Skagen 3	58																								0.04	W
-	116.1	116.1	Skagen 3	58																								1.405	W
116.2	116.3	116.5	Skagen 3	58	750.93	55.1	17.2	15.1	10.1	2.5	0	0	0	0.026	0.007	0.003									23.28	7.01	0.3		H I M
116.4																													
116.6	116.7		Skagen 3	58																								2.296	W
116.8	116.9	117.0	Skagen 3	58	523.93																							0.813	W
-	116.9	117.0	Skagen 3	58	523.93	53.5	17	13	11.5	5.1	0	0	0	0.039	0.008	0.003										5.47	1.21		H I M
117.0																													
117.2	117.3	117.4	Skagen 3	59	751.93	63.2	15	10.8	7.4	3.6	0	0	0	0.023	0.005										33.87	8.26	0.3		H I M
117.4																													
117.6	117.7	117.9	Skagen 3	59	752.93																				32.51	7.48	0.45		I M
117.8																													
118.0	118.0		Skagen 3	59																								0.493	W
118.2	118.2	118.3	Skagen 3	59	753.93	55.7	17.4	14.6	8.5	3.8	0	0	0	0.026	0.007	0.003									34.64	7.37	0.29		H I M
118.4																													
118.6																													
118.8	119.0	119.1	Skagen 3	60	754.93	49.2	17.4	20.2	9.9	3.3	0	0	0	0.025	0.010	0.004	0.002								34.52	6.15	0.82		H I M
119.0	119.2		Skagen 3	60																								0.45	W
119.2																													
119.4	119.6	119.7	Skagen 3	60	524.93	53.8	17	14.5	9.6	5.1	0	0	0	0.033	0.008	0.003										4.89	0.27		H I M
119.6																													
119.8	119.9		Skagen 3	60																								1.029	W
120.0	120.2	120.3	Skagen 3	61	755.93																				34.52	6.97	0.37		I M
120.2																													
120.4																													
120.6	120.7	120.8	Skagen 3	61	756.93	66.6	15.4	8	6.8	3.2	0	0	0	0.020	0.003										33.1	7.41	0.2		H I M
120.8																													
121.0																													
121.2	121.3		Skagen 3	61																								1.398	W
-	121.4	121.5	Skagen 3	61																					24.6	4.93	0.28		I M
121.4																													
121.6																													
121.8																													
122.0																													
122.2	122.3	122.5	Skagen 3	62	758.93																				29.49	5.5	0.26		I M
122.4	122.6		Skagen 3	62																								0.287	W
122.6																													
122.8	122.9	123.0	Skagen 3	62	525.93	53.4	16.3	14.1	10.5	5.7	0	0	0	0.043	0.008	0.003										7.94	0.16		H I M
123.0																													
123.2																													
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123.6	123.7	123.8	Skagen 3	63	759.93																				24.17	4.43	0.39		I M
123.8																													
124.0																													
124.2	124.3	124.5	Skagen 3	63	760.93	57.1	20.9	12.2	6.5	3.4	0	0	0	0.020	0.005	0.002									30.27	6.68	0.39		H I M
124.4																													
124.6																													
124.8																													
125.0	125.1	125.4	Skagen 3	64	761.93																				24.8	5.76	0.24		I M
125.2																													
125.4																													
125.6																													
125.8	125.9	126.0	Skagen 3	64	526.93	45.4	25.2	16.9	9	3.5	0	0	0	0.033	0.007	0.003	0.002									8.59	0.81		H I M
126.0																													
126.2	126.2		Skagen 3	65																								1.367	W
126.4																													
126.6	126.6		Skagen 3	65																								0.424	W
-	126.7	126.9	Skagen 3	65	762.93																				27.56	7.04	0.6		I M
126.8	127.0		Skagen 3	65																								0.319	W
127.0																													
127.2	127.3		Skagen 3	65																								1.21	W
-	127.4	127.5	Skagen 3	65	763.93																				22.5	5.96	0.51		I M
127.4																													
127.6																													
127.8	128.0		Skagen 3	66																								0.312	W
128.0	128.1	128.3	Skagen 3	66	764.93	50.8	24.7	14.5	7.4	2.6	0	0	0	0.020	0.006	0.003	0.002								30.94	7.91	0.87		H I M
128.2	128.4		Skagen 3	66																								0.457	W
128.4																													
128.6	128.8	128.9	Skagen 3	66	527.93	48.2	23	15.5	9.7	3.6	0	0	0	0.031	0.008	0.004	0.002									7.69	0.39		H I M

Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 22

Depth m b.s.	Number of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Polyplacophora	Lacuna pallidula	Hydrobia ulvae	Barleeia unifasciata	Onoba vitrea	Rissoa porifera	Rissoa albella	- drilled specimens	Turritella communis	- drilled specimens	Bittium reticulatum	Aporrhais pespelicani	Lunatia montagui	Lunatia alderi	- drilled specimens	Buccinum undatum	Colus sp	Hinia pygmaea	- drilled specimens	Hinia reticulata	Oenopota turricola	Mangelia brachystoma	Epitonium trevelyanum	Aclis minor	- drilled specimens	Hermaclis ventrosa	- drilled specimens	Graphis albida	Melanella alba	Melanella lubrica	Melanella frielei	Polygireulima sinuosa	Vitreolina philippii	- drilled specimens	Vitreolina collensi	Chrysallida decussata	Brachystomia albella	Odostomia conoidea	Odostomia umbilicaris
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Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 23

Depth m b.s.	Eulimella scillae	Turbonilla acuta	Opisthobranchia	Retusa truncatula	Retusa umbilicata	Cylichna alba	Philine catena	Clione limacina	Limacina retroversa	Limacina helicina	Scaphopoda	Dentalium vulgare	Cadulus jeffreysi	Entalina tetragona	Siphonodentalium lobatum	Nuculidae	Nucula hanleyi	Nucula nitidosa	- drilled specimens	Nucula nucleus	- drilled specimens	Nuculana minuta	Nuculana pernula	Yoldia hyperborea	Portlandia arctica	- drilled specimens	Portlandia fraterna	Yoldiella frigida	Yoldiella lenticula	Bathyarca glacialis	Mytilidae	Musculus discors	Mytilus edulis	- drilled specimens	Pectinidae	Chlamys varia	Palliolum greenlandicum	Delectopecten vitreus	Heteranomia squamula	Ostrea edulis	Thyasira flexuosa	Mysella bidentata	- drilled specimens	Tellimya ferruginosa
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Depth m b.s.	- drilled specimens	Turtonia minuta	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Laevicardium crassum	Parvicardium minimum	Mactra stultorum	Spisula subtruncata	- drilled specimens	Pharidae	Phaxas pellucidus	Macoma sp	Macoma calcarea	Tellina fabula	- drilled specimens	Tellina pusilla	Tellina tenuis	- drilled specimens	Donax vittatus	Gari fervensis	Abra sp	Abra alba	Abra nitida	Abra prismatica	Abra tenuis	Arctica islandica	Kelliella miliaris	- drilled specimens	Chamelea striatula	- drilled specimens	Timoclea ovata	Mysia undata	Corbula gibba	- drilled specimens	Hiatella arctica	Saxicavella jeffreysi	Barnea candida	Pholas dactylus	Lyonsia sp	Cochlodesma praetenue	Thracia phaseolina
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Depth m b.s.	Top	Base	Locality	Core	Lab.no.	Clay %	Fine Silt %	Medium Silt %	Coarse Silt %	Fine Sand %	Medium Sand %	Coarse Sand %	Gravel %	P_{10}	Q_1	P_{40}	Q_2	Q_3	P_{90}	Mean Grain Size	So	Geom. skewness	Kurtosis	P_{40}/P_{90}	Water (DS) %	Loss on ignition	Shell >0.5mm %	Mat >1.0mm (g)	Analysis
128.8	129.0		Skagen 3	66																								0.711	W
129.0																													
129.2	129.3		Skagen 3	67																								0.287	W
-	129.4	129.6	Skagen 3	67	765.93	45.3	21.7	18.5	10.8	3.7	0	0	0	0.030	0.009	0.004	0.002								28.21	7.28	0.67		H I M
129.4	129.4		Skagen 3	67																								0.624	W
129.6	129.7		Skagen 3	67																								0.761	W
129.8																													
130.0																													
130.2	130.2	130.4	Skagen 3	67	766.93	43.2	22.8	19.3	9.7	5	0	0	0	0.034	0.009	0.005	0.003								18.8	7.21	0.67		H I M
130.4																													
130.6																													
130.8	131.0	131.1	Skagen 3	68	767.93																				16.93	5.68	0.47		I M
131.0																													
131.2																													
131.4																													
131.6	131.6	131.7	Skagen 3	68	528.93	43	20.8	23.5	11.3	1.5	0	0	0	0.024	0.010	0.005	0.003									6.03	0.37		H I M
131.8	131.8		Skagen 3	68																								0.611	W
132.0																													
132.2																													
132.4																													
132.6	132.6		Skagen 3	69																								0.33	W
-	132.7	132.8	Skagen 3	69	768.93	43.2	20.9	20.6	14.9	0.5	0	0	0	0.031	0.010	0.005	0.003								24.6	5.6	0.31		H I M
132.8																													
133.0																													
133.2	133.3		Skagen 3	69																								2.213	W
-	133.4	133.5	Skagen 3	69	769.93	31.8	13	16.8	17.3	12.3	6.1	1.9	1	0.177	0.051	0.018	0.009								13.72	4.42	2.41		H I M
133.4																													
133.6																													
133.8																													
134.0	134.1		Skagen 3																									0.159	W
-	134.1		Skagen 3																									3.258	W
134.2																													
134.4																													
134.6																													
134.8	134.8		Skagen 3																									8.009	W
-	134.9	135.0	Skagen 3	70	529.93	16.5	7.2	6.7	16.9	28.6	15.4	3.8	5	0.486	0.193	0.104	0.071	0.009		0.091	4.700	0.334				2.35	8.67		H I M
135.0																													
135.2																													
135.4																													
135.6																													
135.8																													
136.0	136.1		Skagen 3																									60.803	W
-	136.2	136.3	Skagen 3	71	770.93	17.3	7.2	6.8	16.1	17.4	15.3	6.8	13.1	3.495	0.338	0.153	0.078	0.006		0.141	7.215	0.362			6.28	1.52	29.58		H I M
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137.4	137.4		Skagen 3																									20.371	W
137.6																													
137.8	137.9		Skagen 3																									99.767	W
-	137.9	138.0	Skagen 3	72	530.93	10	5.3	9.9	23.1	21.2	12.7	5.6	12.1	3.115	0.279	0.107	0.068	0.020	0.002	0.122	3.774	1.176	0.042	54.099		0.81	32.05		H I M
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139.2	139.4		Skagen 3																									1.114	W
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140.8	140.9	141.0	Skagen 3	74	531.93	5	3.7	5.4	12.3	30.4	33.8	3.7	5.7	0.543	0.287	0.212	0.173	0.058	0.008	0.173	2.214	0.562	0.214	25.930		0.41	4.66		H I M
141.0																													
141.2																													
141.4																													
141.6	141.7		Skagen 3																									4.81	W
141.8																													
142.0																													
142.2	142.4		Skagen 3																									3.582	W
142.4	142.5	142.5	Skagen 3	75	771.93																				10.09	3.06	4.57		I M
142.6	142.8		Skagen 3																									2.26	W
142.8	142.8	145.0	Skagen 3	76	772.93																				14.74	3.52	5.73		I M
143.0	143.1		Skagen 3																									10.393	W
143.2																													
143.4	143.4		Skagen 3																									9.457	W
143.6																													
143.8	143.9	144.0	Skagen 3	76	532.93	54.6	21	12.8	8.1	3.5	0	0	0	0.030	0.006	0.003										4.59	0.14		H I M
144.0																													
144.2																													
144.4																													
144.6	144.7	144.9	Skagen 3	77	773.93																				8.43	4.94	0.23		I M
144.8																													
145.0																													
145.2	145.4	145.5	Skagen 3	77	774.93																				2.68	3.43	0.29		I M
145.4																													
145.6																													
145.8																													
146.0	146.1		Skagen 3	78																								6.649	W
146.2	146.3		Skagen 3	78																								0.781	W
-	146.4	146.5	Skagen 3	78	533.93	22.6	13.7	24.3	28.3	7	3.3	0.6	0.3	0.072	0.039	0.019	0.012	0.003		0.018	3.889	0.681				2.86	1.6		H I M
146.4																													
146.6	146.7		Skagen 3	79																								2.573	W
146.8																													
147.0																													
147.2	147.3		Skagen 3	79																								0.406	W
-	147.4	147.5	Skagen 3	79	775.93																				6.36	3.84	1.21		I M
147.4																													
147.6																													
147.8	147.8		Skagen 3	80																								1.907	W
-	147.9		Skagen 3	80																								6.503	W
148.0																													
148.2	148.3		Skagen 3	80																								3.429	W
-	148.4	148.5	Skagen 3	80	534.93	27.1	9.8	10.1	14.3	19.3	16.2	2.6	0.7	0.299	0.157	0.058	0.026									2.54	3.97		H I M
148.4																													
148.6																													
148.8	149.0		Skagen 3	81																								3.239	W

Depth m b.s.	Number of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Polyplacophora	Lacuna pallidula	Hydrobia ulvae	Barleeia unifasciata	Onoba vitrea	Rissoa porifera	Rissoa albella	- drilled specimens	Turritella communis	- drilled specimens	Bittium reticulatum	Aporrhais pespelicani	Lunatia montagui	Lunatia alderi	- drilled specimens	Buccinum undatum	Colus sp	Hinia pygmaea	- drilled specimens	Hinia reticulata	Oenopota turricola	Mangelia brachystoma	Epitonium trevelyanum	Aclis minor	- drilled specimens	Hermaclis ventrosa	- drilled specimens	Graphis albida	Melanella alba	Melanella lubrica	Melanella frielei	Polygireulima sinuosa	Vitreolina philippii	- drilled specimens	Vitreolina collensi	Chrysallida decussata	Brachystomia albella	Odostomia conoidea	Odostomia umbilicaris
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Depth m b.s.	Eulimella scillae	Turbonilla acuta	Opisthobranchia	Retusa truncatula	Retusa umbilicata	Cylichna alba	Philine catena	Clione limacina	Limacina retroversa	Limacina helicina	Scaphopoda	Dentalium vulgare	Cadulus jeffreysi	Entalina tetragona	Siphonodentalium lobatum	Nuculidae	Nucula hanleyi	Nucula nitidosa	- drilled specimens	Nucula nucleus	- drilled specimens	Nuculana minuta	Nuculana pernula	Yoldia hyperborea	Portlandia arctica	- drilled specimens	Portlandia fraterna	Yoldiella frigida	Yoldiella lenticula	Bathyarca glacialis	Mytilidae	Musculus discors	Mytilus edulis	- drilled specimens	Pectinidae	Chlamys varia	Palliolum greenlandicum	Delectopecten vitreus	Heteranomia squamula	Ostrea edulis	Thyasira flexuosa	Mysella bidentata	- drilled specimens	Tellimya ferruginosa
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Depth m b.s.	- drilled specimens	Turtonia minuta	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Laevicardium crassum	Parvicardium minimum	Mactra stultorum	Spisula subtruncata	- drilled specimens	Pharidae	Phaxas pellucidus	Macoma sp	Macoma calcarea	Tellina fabula	- drilled specimens	Tellina pusilla	Tellina tenuis	- drilled specimens	Donax vittatus	Gari fervensis	Abra sp	Abra alba	Abra nitida	Abra prismatica	Abra tenuis	Arctica islandica	Kelliella miliaris	- drilled specimens	Chamelea striatula	- drilled specimens	Timoclea ovata	Mysia undata	Corbula gibba	- drilled specimens	Hiatella arctica	Saxicavella jeffreysi	Barnea candida	Pholas dactylus	Lyonsia sp	Cochlodesma praetenue	Thracia phaseolina
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Depth m b.s.	Top	Base	Locality	Core	Lab.no.	Clay %	Fine Silt %	Medium Silt %	Coarse Silt %	Fine Sand %	Medium Sand %	Coarse Sand %	Gravel %	P_{10}	Q_1	P_{40}	Q_2	Q_3	P_{90}	Mean Grain Size	So	Geom. skewness	Kurtosis	P_{40}/P_{90}	Water (DS) %	Loss on ignition	Shell >0.5mm %	Mat >1.0mm (g)	Analysis
149.0	149.1		Skagen 3	81																								3.145	W
-	149.2	149.3	Skagen 3	81	776.93																				1.58	0.6	7.05		I M
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149.4																													
149.6																													
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150.0	150.0	151.5	Skagen 3	82																								13.098	W
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151.0																													
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151.4	151.5	154.5	Skagen 3	83																								21.203	W
-	151.5		Skagen 3	82	535.93	3.1	3.2	5.6	10.3	19.9	37.5	12.3	8.1	1.525	0.474	0.308	0.243	0.082	0.012	0.267	2.402	0.658	0.130	24.942		0.57	20.63		H I M
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154.4	154.5		Skagen 3	84																								3.147	W
-	154.5		Skagen 3	83	777.93																				12.79	0.64	12.72		I M
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156.0	156.0		Skagen 3	84	536.93	2.2	3.2	5.5	12.6	27	43.1	5.4	0.9	0.473	0.313	0.236	0.198	0.070	0.017	0.194	2.106	0.562	0.265	13.682		0.6	7.93		H I M
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157.4	157.5	160.5	Skagen 3	86																								6.392	W
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160.0																													
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160.4	160.5		Skagen 3	87																								7.745	W
-	160.5		Skagen 3	86	537.93	2.4	2.9	5.7	15.9	36.2	32.7	3.6	0.6	0.399	0.263	0.185	0.149	0.058	0.017	0.157	2.133	0.689	0.269	10.671		0.6	5.51		H I M
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163.4	163.5		Skagen 3	87	778.93																				6.92	0.63	16.21		I M
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166.4	166.5		Skagen 3	88	538.93	2.2	1.4	2	15.9	52.7	24.6	0.9	0.4	0.250	0.203	0.153	0.120	0.069	0.043	0.130	1.717	0.966	0.323	3.566		0.94	1.18		H I M
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167.0																													
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167.4	167.5	167.7	Skagen 3	89	779.93																				14.93	4.08	0.45		I M
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169.4	169.4	169.5	Skagen 3	90	539.93	56.5	17.4	10.2	6.7	6.1	1.9	0.9	0.4	0.057	0.006	0.002										6.24	1		H I M
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170.0																													
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170.4	170.6	170.7	Skagen 3	91	793.93																				5.18	1.68	1.36		I M

Depth m b.s.	Number of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Polyplacophora	Lacuna pallidula	Hydrobia ulvae	Barleeia unifasciata	Onoba vitrea	Rissoa porifera	Rissoa albella	- drilled specimens	Turritella communis	- drilled specimens	Bittium reticulatum	Aporrhais pespelicani	Lunatia montagui	Lunatia alderi	- drilled specimens	Buccinum undatum	Colus sp	Hinia pygmaea	- drilled specimens	Hinia reticulata	Oenopota turricola	Mangelia brachystoma	Epitonium trevelyanum	Aclis minor	- drilled specimens	Hermaclis ventrosa	- drilled specimens	Graphis albida	Melanella alba	Melanella lubrica	Melanella frielei	Polygireulima sinuosa	Vitreolina philippii	- drilled specimens	Vitreolina collensi	Chrysallida decussata	Brachystomia albella	Odostomia conoidea	Odostomia umbilicaris
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Depth m b.s.	Eulimella scillae	Turbonilla acuta	Opisthobranchia	Retusa truncatula	Retusa umbilicata	Cylichna alba	Philine catena	Clione limacina	Limacina retroversa	Limacina helicina	Scaphopoda	Dentalium vulgare	Cadulus jeffreysi	Entalina tetragona	Siphonodentalium lobatum	Nuculidae	Nucula hanleyi	Nucula nitidosa	- drilled specimens	Nucula nucleus	- drilled specimens	Nuculana minuta	Nuculana pernula	Yoldia hyperborea	Portlandia arctica	- drilled specimens	Portlandia fraterna	Yoldiella frigida	Yoldiella lenticula	Bathyarca glacialis	Mytilidae	Musculus discors	Mytilus edulis	- drilled specimens	Pectinidae	Chlamys varia	Palliolum greenlandicum	Delectopecten vitreus	Heteranomia squamula	Ostrea edulis	Thyasira flexuosa	Mysella bidentata	- drilled specimens	Tellimya ferruginosa
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Depth m b.s.	- drilled specimens	Turtonia minuta	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Laevicardium crassum	Parvicardium minimum	Mactra stultorum	Spisula subtruncata	- drilled specimens	Pharidae	Phaxas pellucidus	Macoma sp	Macoma calcarea	Tellina fabula	- drilled specimens	Tellina pusilla	Tellina tenuis	- drilled specimens	Donax vittatus	Gari fervensis	Abra sp	Abra alba	Abra nitida	Abra prismatica	Abra tenuis	Arctica islandica	Kelliella miliaris	- drilled specimens	Chamelea striatula	- drilled specimens	Timoclea ovata	Mysia undata	Corbula gibba	- drilled specimens	Hiatella arctica	Saxicavella jeffreysi	Barnea candida	Pholas dactylus	Lyonsia sp	Cochlodesma praetenue	Thracia phaseolina
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172.0	172.2	172.3	Skagen 3	92	780.93	42	9.9	7.2	8.9	18.8	4.2	5.9	3.2	0.444	0.081	0.029	0.005								6.25	2.78	3.52		H I M
172.2																													
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173.0																													
173.2																													
173.4																													
173.6	173.7	173.9	Skagen 3	94	781.93																							1.864	W
-	173.7	173.9	Skagen 3	94	781.93	50	13.9	7	28.1	0.6	0.3	0	0.1	0.056	0.038	0.004	0.002								5.48	3.79	6.2		H I M
173.8																													
174.0																													
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174.4	174.5																												
174.6																													
174.8																													
175.0	175.0																												
175.2	175.3		Skagen 3	95																								1.503	W
-	175.3	175.5	Skagen 3	95	794.93	51.4	20.2	15.2	8.3	4.9	0	0	0	0.035	0.007	0.003	0.002								7.67	3.65	0.56		H I M
175.4																													
175.6																													
175.8																													
176.0	176.1		Skagen 3	96																								0.28	W
176.2																													
176.4																													
176.6																													
176.8	176.8	177.0	Skagen 3	96	782.93	41.3	10.2	5.5	19.9	21	1.7	0.4	0	0.084	0.060	0.030	0.005								11	3.54	0.11		H I M
177.0																													
177.2	177.3																												
177.4																													
177.6	177.8																												
177.8	177.8	178.0	Skagen 3	97	795.93	49.2	16.8	12.7	12.5	7.2	1.5	0.3	0	0.059	0.013	0.004	0.002								3.02	3.07	4.58		H I M
178.0																													
178.2																													
178.4																													
178.6																													
178.8																													
179.0																													
179.2																													
179.4	179.4		Skagen 3	98		16.1	45.7	16.5	15.1	6.7	0	0	0	0.053	0.014	0.005	0.004	0.002		0.007	2.433	1.948			9.46	5.57	0.73		H I M
-	179.5	179.6	Skagen 3	98	796.93	16.1	45.7	16.5	15.1	6.7	0	0	0	0.053	0.014	0.005	0.004	0.002		0.007	2.433	1.948			9.46	5.57	0.73		H I M
179.6	179.6		Skagen 3	98		6	20.3	18.7	46	6.2	2.6	0.2	0	0.062	0.047	0.035	0.026	0.006	0.003	0.026	2.824	0.402	0.346	10.758	9.32	6.76	13.79		H I M
-	179.7	179.7	Skagen 3	98	483.93	6	20.3	18.7	46	6.2	2.6	0.2	0	0.062	0.047	0.035	0.026	0.006	0.003	0.026	2.824	0.402	0.346	10.758	9.32	6.76	13.79		H I M
179.8	179.9		Skagen 3	98																								0.393	W
-	180.0	180.0	Skagen 3	98																								0.393	W
180.0	180.2																												
180.2	180.3	180.3	Skagen 3	99																								0.08	W
180.4	180.4		Skagen 3	99		28.1	33.1	22.1	15	1.8	0	0	0	0.032	0.012	0.006	0.004	0.002		0.006	2.571	1.573			3.82	6.25	1.76		H I M
-	180.6	180.7	Skagen 3	99	797.93	28.1	33.1	22.1	15	1.8	0	0	0	0.032	0.012	0.006	0.004	0.002		0.006	2.571	1.573			3.82	6.25	1.76		H I M
180.6	180.7		Skagen 3	99																					3.93	6.11	0.39		I M
-	180.8	180.9	Skagen 3	99	798.93																				3.93	6.11	0.39		I M
180.8	180.9	180.9	Skagen 3	99																								0.404	W
-	181.0	181.0	Skagen 3	99																								0.404	W
181.0	181.0		Skagen 3	99																								0.12	W
-	181.1		Skagen 3	99																								0.12	W
-	181.1	181.2	Skagen 3	99																								0.12	W
-	181.2	181.2	Skagen 3	99																								0.12	W
181.2	181.3	181.3	Skagen 3	99																								1.943	W
-	181.4		Skagen 3	99																								1.943	W
181.4																													
181.6	181.7		Skagen 3	100																						7.68	0.04		I M
-	181.7	181.9	Skagen 3	100	940175																					7.68	0.04		I M
181.8	181.9																												
182.0																													
182.2	182.2																												
182.4	182.5																												
182.6	182.6		Skagen 3	100		43.2	27.7	18.7	10.4	0	0	0	0	0.021	0.007	0.004	0.002								21.61	7.57	0.94		H I M
-	182.6	182.8	Skagen 3	100	784.93	43.2	27.7	18.7	10.4	0	0	0	0	0.021	0.007	0.004	0.002								21.61	7.57	0.94		H I M
182.8	182.9																												
183.0	183.2	183.4	Skagen 3	101	940176																					8.01	0.33		I M
183.2																													
183.4	183.4																												
183.6	183.7		Skagen 3	101																					15.09	5.08	0.29		H I M
-	183.8	184.0	Skagen 3	101	799.93																				15.09	5.08	0.29		H I M
183.8																													
184.0	184.0																												
184.2	184.3																												
184.4	184.4		Skagen 3	102																								0.074	W
-	184.5	184.6	Skagen 3	102																								0.074	W
184.6	184.6		Skagen 3	102																								0.068	W
-	184.8	184.8	Skagen 3	102																								0.068	W
184.8	184.9																												
185.0	185.0	185.1	Skagen 3	102																								0.857	W
-	185.0	185.1	Skagen 3	102																								0.116	W
-	185.1	185.1	Skagen 3	102																								0.116	W
-	185.2		Skagen 3	102																								0.116	W
185.2	185.3		Skagen 3	102																								0.454	W
-	185.4	185.6	Skagen 3	102	785.93	66.5	17.4	5.8	10.3	0	0	0	0	0.022	0.003										14.87	8.87	0.26		H I M
185.4																													
185.6	185.7	185.9	Skagen 3	102	940177																					6.78	2.3		I M
185.8	185.9		Skagen 3	102																								2.419	W
186.0																													
186.2																													
186.4																													
186.6	186.8		Skagen 3	103																								3.55	W
186.8	186.9		Skagen 3	103																								3.085	W
-	186.9	187.0	Skagen 3	103	940178																					4.32	4.14		I M
187.0	187.0		Skagen 3	103																								1.316	W
-	187.2		Skagen 3	103																								1.433	W
-	187.2		Skagen 3	103																								6.944	W
-	187.2	187.4	Skagen 3	103	800.93	22.4	6	8.7	14.7	18.3	21.7	3.6	4.6	0.481	0.242	0.115	0.058	0.003		0.101	8.787	0.227			2.8	1.29	19.28		H I M
187.2																													
187.4	187.4		Skagen 3	103																								4.655	W
187.6																													
187.8																													

Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 34

Depth m b.s.	Number of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Polyplacophora	Lacuna pallidula	Hydrobia ulvae	Barleeia unifasciata	Onoba vitrea	Rissoa porifera	Rissoa albella	- drilled specimens	Turritella communis	- drilled specimens	Bittium reticulatum	Aporrhais pespelicani	Lunatia montagui	Lunatia alderi	- drilled specimens	Buccinum undatum	Colus sp	Hinia pygmaea	- drilled specimens	Hinia reticulata	Oenopota turricola	Mangelia brachystoma	Epitonium trevelyanum	Aclis minor	- drilled specimens	Hermiaclis ventrosa	- drilled specimens	Graphis albida	Melanella alba	Melanella lubrica	Melanella frielei	Polygireulima sinuosa	Vitreolina philippii	- drilled specimens	Vitreolina collensi	Chrysallida decussata	Brachystomia albella	Odostomia conoidea	Odostomia umbilicaris
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Depth m b.s.	Eulimella scillae	Turbonilla acuta	Opisthobranchia	Retusa truncatula	Retusa umbilicata	Cylichna alba	Philine catena	Clione limacina	Limacina retroversa	Limacina helicina	Scaphopoda	Dentalium vulgare	Cadulus jeffreysi	Entalina tetragona	Siphonodentalium lobatum	Nuculidae	Nucula hanleyi	Nucula nitidosa	- drilled specimens	Nucula nucleus	- drilled specimens	Nuculana minuta	Nuculana pernula	Yoldia hyperborea	Portlandia arctica	- drilled specimens	Portlandia fraterna	Yoldiella frigida	Yoldiella lenticula	Bathyarca glacialis	Mytilidae	Musculus discors	Mytilus edulis	- drilled specimens	Pectinidae	Chlamys varia	Palliolum greenlandicum	Delectopecten vitreus	Heteranomia squamula	Ostrea edulis	Thyasira flexuosa	Mysella bidentata	- drilled specimens	Tellimya ferruginosa
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Depth m b.s.	- drilled specimens	Turtonia minuta	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Laevicardium crassum	Parvicardium minimum	Mactra stultorum	Spisula subtruncata	- drilled specimens	Pharidae	Phaxas pellucidus	Macoma sp	Macoma calcarea	Tellina fabula	- drilled specimens	Tellina pusilla	Tellina tenuis	- drilled specimens	Donax vittatus	Gari fervensis	Abra sp	Abra alba	Abra nitida	Abra prismatica	Abra tenuis	Arctica islandica	Kelliella miliaris	- drilled specimens	Chamelea striatula	- drilled specimens	Timoclea ovata	Mysia undata	Corbula gibba	- drilled specimens	Hiatella arctica	Saxicavella jeffreysi	Barnea candida	Pholas dactylus	Lyonsia sp	Cochlodesma praetenue	Thracia phaseolina
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Depth m b.s.	Top	Base	Locality	Core	Lab.no.	Clay %	Fine Silt %	Medium Silt %	Coarse Silt %	Fine Sand %	Medium Sand %	Coarse Sand %	Gravel %	P_{10}	Q_1	P_{50}	Q_2	Q_3	P_{90}	Mean Grain Size	So	Geom. skewness	Kurtosis	P_{50}/P_{90}	Water (DS) %	Loss on ignition	Shell >0.5mm %	Mat >1.0mm (g)	Analysis
188.0																													
188.2	188.2		Skagen 3	104																								20.366	W
188.4	188.5		Skagen 3	104																								9.139	W
-	188.6	188.8	Skagen 3	104	786.93	17.7	11.2	11.4	18.6	18.9	13.8	3.8	4.6	0.462	0.172	0.068	0.039	0.004		0.072	6.907	0.398			3.69	2.48	8.46		H I M
188.6																													
188.8	188.9		Skagen 3	104																								11.195	W
189.0	189.2		Skagen 3	105																								12.84	W
189.2																													
189.4	189.6		Skagen 3	105																								8.797	W
189.6																													
189.8	189.8		Skagen 3	105																								6.991	W
190.0	190.1	190.2	Skagen 3	105	801.93	27.7	12	10.6	47.3	2.4	0	0	0	0.056	0.042	0.031	0.020								1.92	4.89	7.03		H I M
190.2	190.2		Skagen 3	105																								11.243	W
190.4	190.4		1	105																								16.626	W
190.6																													
190.8	191.0		Skagen 3	106																								15.556	W
191.0																													
191.2	191.4		Skagen 3	106																								3.697	W
191.4																													
191.6	191.6	191.8	Skagen 3	106	787.93	12.3	7.8	5.7	12.8	27.9	19.1	11.8	2.6	0.848	0.284	0.158	0.110	0.018		0.137	3.996	0.420			0.47	1.08	12.4		H I M
191.8	191.9		Skagen 3	106																								10.309	W
192.0																													
192.2																													
192.4																													
192.6																													
192.8																													
193.0																													
193.2	193.3		Skagen 3	107																								1.395	W
-	193.3	193.5	Skagen 3	107	802.93	6.9	6	7.2	14.7	20.3	21	17.7	6.1	1.352	0.561	0.248	0.152	0.036	0.004	0.250	3.935	0.880	0.195	64.315	9.68	0.49	26.85		H I M
193.4																													
193.6																													
193.8																													
194.0																													
194.2	194.3		Skagen 3	108																								35.127	W
-	194.4	194.5	Skagen 3	108	788.93	7.3	2.4	6.8	12.2	16.8	23.7	23.4	7.4	1.646	0.772	0.384	0.248	0.050	0.007	0.357	3.918	0.630	0.220	51.921	6.9	0.53	37		H I M
194.4	194.6		Skagen 3	108																								19.972	W
194.6																													
194.8	194.9		Skagen 3	109																								16.216	W
195.0	195.2	195.3	Skagen 3	109	789.93	12.9	8.1	8.9	13.7	51.1	3.7	1.3	0.5	0.172	0.136	0.106	0.087	0.010		0.077	3.770	0.172			11.86	1.75	8.3		H I M
195.2	195.4		Skagen 3	109																								6.496	W
195.4																													
195.6																													
195.8																													
196.0	196.1		Skagen 3	110																								4.877	W
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199.4	199.4		Skagen 3	115																								22.042	W
199.6																													
199.8																													
200.0																													
217.2	217.4		Skagen 3	129																								0.851	W

Appendix 3: Sedimentological and fossil data from the Skagen Wells 3 and 4, page 38

Depth m b.s.	Number of Species	Pyrite	Reworked	Cirripeds	Spatangoids	Ophiuroids	Fish	Other Fossils	Concretions	Polyplacophora	Lacuna pallidula	Hydrobia ulvae	Barleeia unifasciata	Onoba vitrea	Rissoa porifera	Rissoa albella	- drilled specimens	Turritella communis	- drilled specimens	Bittium reticulatum	Aporrhais pespelicani	Lunatia montagui	Lunatia alderi	- drilled specimens	Buccinum undatum	Colus sp	Hinia pygmaea	- drilled specimens	Hinia reticulata	Oenopota turricola	Mangelia brachystoma	Epitonium trevelyanum	Aclis minor	- drilled specimens	Hermiaclis ventrosa	- drilled specimens	Graphis albida	Melanella alba	Melanella lubrica	Melanella frielei	Polygireulima sinuosa	Vitreolina philippii	- drilled specimens	Vitreolina collensi	Chrysallida decussata	Brachystomia albella	Odostomia conoidea	Odostomia umbilicaris
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Depth m b.s.	Eulimella scillae	Turbonilla acuta	Opisthobranchia	Retusa truncatula	Retusa umbilicata	Cylichna alba	Philine catena	Clione limacina	Limacina retroversa	Limacina helicina	Scaphopoda	Dentalium vulgare	Cadulus jeffreysi	Entalina tetragona	Siphonodentalium lobatum	Nuculidae	Nucula hanleyi	Nucula nitidosa	- drilled specimens	Nucula nucleus	- drilled specimens	Nuculana minuta	Nuculana pernula	Yoldia hyperborea	Portlandia arctica	- drilled specimens	Portlandia fraterna	Yoldiella frigida	Yoldiella lenticula	Bathyarca glacialis	Mytilidae	Musculus discors	Mytilus edulis	- drilled specimens	Pectinidae	Chlamys varia	Palliolum greenlandicum	Delectopecten vitreus	Heteranomia squamula	Ostrea edulis	Thyasira flexuosa	Mysella bidentata	- drilled specimens	Tellimya ferruginosa
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Depth m b.s.	- drilled specimens	Turtonia minuta	Cardiidae	Acanthocardia echinata	Acanthocardia tuberculata	Laevicardium crassum	Parvicardium minimum	Mactra stultorum	Spisula subtruncata	- drilled specimens	Pharidae	Phaxas pellucidus	Macoma sp	Macoma calcarea	Tellina fabula	- drilled specimens	Tellina pusilla	Tellina tenuis	- drilled specimens	Donax vittatus	Gari fervensis	Abra sp	Abra alba	Abra nitida	Abra prismatica	Abra tenuis	Arctica islandica	Kelliella miliaris	- drilled specimens	Chamelea striatula	- drilled specimens	Timoclea ovata	Mysia undata	Corbula gibba	- drilled specimens	Hiatella arctica	Saxicavella jeffreysi	Barnea candida	Pholas dactylus	Lyonsia sp	Cochlodesma praetenue	Thracia phaseolina
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Analysis S, I, M, H and W signify:

S Sieve analysis
I Loss on ignition
M Mollusc weights
H Hydrometric
W Weight

Appendix 4

Radiocarbon dating of the Skagen Core

By J. Heinemeier
AMS ^{14}C Dating Laboratory, Institute of Physics and Astronomy, University of Aarhus, Denmark

An age profile for the Skagen Core has been established by extensive AMS ^{14}C dating on shells, foraminifera, organic matter and methane. The shell and foraminifera dates have been reported in Heier-Nielsen *et al.* (1995a), and it is argued here that the shell dates establish the most reliable chronology of the core.

With a few additions, Table 10 lists the original data of this publication while the quoted calibrated ages have been calculated based on the new ^{14}C calibration curves (Stuiver *et al.* 1998b) using the Seattle Radiocarbon Calibration Programme 1999 Rev. 4.1.2. with the marine model of Stuiver *et al.* (1998a). This calibration model for marine samples takes into account the damping effect of the large marine ^{14}C reservoir in the world ocean which produces a marine calibration curve that is smoother than the faster-reacting atmospheric ^{14}C reservoir with its sharper wiggles in the calibration curve. The calibrations have been made with the assumption of the parameter $\Delta R=0$ for the sea around Skagen, indicating no reservoir age difference from the model world ocean, which has a reservoir age of about 400 years (see Heier-Nielsen *et al.* 1995b). The calibrated age is given as an age interval in calendar years B.P. (Before Present = 1950) corresponding to 1 sigma uncertainty in the measured conventional ^{14}C age.

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Table 10. ^{14}C dates on shell macrofossils from the Skagen cores 3 and 4

Depth (m)	Species	^{14}C age B.P.	Rcorr. B.P.*	Calibrated age B.P. (marine model)	Centre of age interval	$\delta^{13}C$(‰) (VPDB)	Lab no. (AAR-)
5.25	*Spisula subtruncata*	445 ± 55	45	110 – 0	50	1.3	2142
12.75	*Spisula subtruncata*	1255 ± 60	855	880 – 720	800	1.1	1482
15.75	*Spisula subtruncata*	1295 ± 60	895	910 – 760	840	1.2	1483
16.75	*Donax vittatus*	1900 ± 60	1500	1520 – 1370	1440	1.6	1485
16.75	*Spisula subtruncata*	1335 ± 60	935	930 – 820	870	1.2	1484
19.75	*Spisula subtruncata*	1410 ± 60	1010	1000 – 910	950	1.2	1486
25.25	*Spisula subtruncata*	1360 ± 55	960	950 – 870	910	1.4	1487
30.25	*Spisula subtruncata*	1500 ± 65	1100	1130 – 960	1050	1.9	1488
31.50	Fragment	1430 ± 130	1030	1120 – 870	1000	1.5	864
33.00	Fragment	1430 ± 130	1030	1120 – 870	1000	0.1	865
34.28	Echinoid fragment	2025 ± 80	1625	1690 – 1500	1600	–1.1	1028
38.22	Fragment	1630 ± 80	1230	1270 – 1100	1180	1.7	1033
53.12	Fragment	2520 ± 120	2120	2320 – 2020	2170	0.1	1319
69.43	Fragment	3570 ± 100	3170	3570 – 3350	3460	–0.4	1320
70.33	Echinoid fragment	3760 ± 80	3360	3810 – 3580	3700	–0.1	1030
78.28	Echinoid fragment	5540 ± 120	5140	6050 – 5770	5910	–0.5	1596
80.02	Fragment	5590 ± 105	5190	6110 – 5880	5990	2.5	1034
80.82	Fragment	5800 ± 120	5400	6310 – 6090	6200	0†	1321
90.42	Echinoid fragment	7110 ± 110	6705	7660 – 7480	7570	–0.8	1031
96.18	Echinoid fragment	7780 ± 100	7380	8340 – 8140	8240	–0.3	1032
104.50	Echinoid fragment	8520 ± 80	8120	9260 – 8910	9090	–0.8	1027
111.67	Echinoid fragment	9170 ± 80	8770	9930 – 9610	9770	–0.4	1029
114.64	Fragment	10 230 ± 125	9830	11 590 – 10 840	11 220	0.4	1102
114.76	Fragment	10 450 ± 100	10 050	11 900 – 10 880	11 390	0.1	1115
115.02	Fragment	10 700 ± 85	10 300	12 280 – 11 660	11 970	0.3	1103
115.11	*Macoma*	10 820 ± 130	10 420	12 610 – 11 730	12 170	0.6	1503
115.22	Fragment	10 800 ± 110	10 400	12 600 – 11 720	12 160	1.5	1117
115.29	Fragment	10 850 ± 110	10 450	12 620 – 11 750	12 190	–2.6	1104
115.91	Fragment	12 120 ± 140	11 720	13 820 – 13 420	13 620	2.4	1219
115.97	Fragment	12 070 ± 230	11 480	13 830 – 13 190	13 510	0.2	1119
116.86	Fragment	13 560 ± 130	13 160	15 970 – 15 460	15 720	–1.0	1120
119.19	Fragment	13 750 ± 145	13 350	16 200 – 15 650	15 930	–1.5	1105
128.37	Fragment	14 420 ± 170	14 020	17 010 – 16 400	16 700	0.7	1106
129.43	Fragment	14 850 ± 155	14 450	17 500 – 16 900	17 200	0.1	1107
137.44	Fragment	> 42 000				0.1	1108
143.14	Fragment	> 38 000				0.5	1109
143.44	Fragment	> 44 000				3.0	1110
148.32	Fragment	> 38 000				2.0	1111
175.26	Fragment	> 37 000				0.1	1112

*Rcorr. B.P. is the reservoir-corrected ^{14}C age B.P. (Before Present = A.D. 1950); it is calculated from the conventional ^{14}C age by subtracting a reservoir age of 400 years. The calibrated age interval in calendar years B.P. corresponding to 1 sigma uncertainty in the measured conventional ^{14}C age has been calculated with the Seattle Radiocarbon Calibration Programme Ver. 4.1.2 with calibration data from Stuiver *et al.* (1998b) and using the marine model of Stuiver *et al.* (1998a).
†Standard value assumed, no measurement.

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Appendix 5

Evaluation of the recent marine bivalve bottom community off the Limfjord isthmus based on 61 van Veen grab samples

The aim of this study was to figure the distribution pattern of the autochthonous bivalve faunas from the shore to a depth of about 20 m. The present channel through the isthmus at Thyborøn was also included in the sampling; here the maximum depth is about 9.5 m. In all, five lines were sampled, four out from the shore into the North Sea and 1 crossing the channel. The bottom samples were taken for every drop of 1.5 m from the shore and out to a depth of 20 m. The medium grain size is given for the sand and coarser sediment, while the clayey bottom is listed as clay in the tables, together with the sample number and the actual depth of each sample.

In the tables the bivalves are listed in four categories:

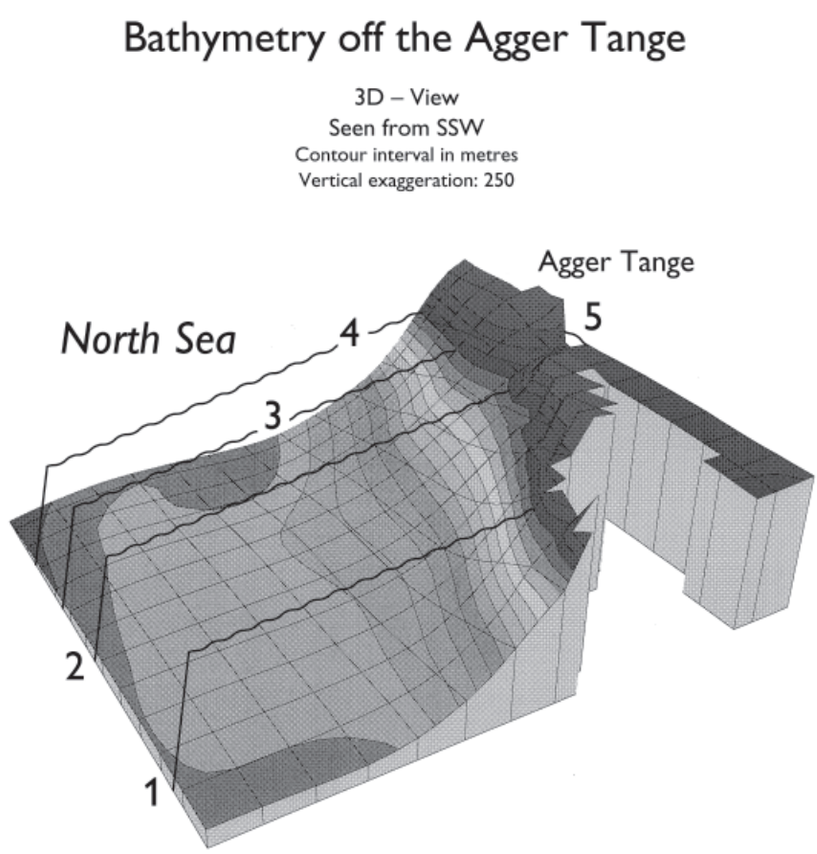
1. With connected valves – black square;
2. Single valves – circle;
3. Fragments – cross;
4. Rolled fragments – cross in a circle.

In this graduation a falling probability for the species to be autochthonous is seen. In general, it can be stated that above the 6 m depth contour curve off the Limfjord isthmus no autochthonous specimens have been found – they all seem to be allochthonous or parautochthonous.

All the listed bivalves, except the *Ostrea edulis*, are found in category 1 with connected valves, and this can be taken to mean that they belong to the area.

The species represented only by a few finds are *Tellimya ferruginosa*, *Cerastoderma edule*, *Achanthocardia echinata* and *Mactra stultorum*. All of these species are found at places deeper than the 10 m contour line.

Next to the rare species mentioned above is *Spisula*



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Sediment sampling transect 1

Molluscan species	M.G.S. mm	clay	clay	clay	0.440	0.614	clay	0.690	0.245	0.272	0.356	0.409	0.426	0.475
	SAMPLE no.	184	183	182	181	180	179	178	177	176	175	174	173	172
	DEPTH m	18.2	18.1	16,6	15,0	13,6	12.1	10.5	9.0	7,6	6.2	4.8	3.1	1.3
Nucula sp			⊗			⊗	○	×	○	×	×			
Mytilus edulis Linnaeus 1758									○	■	■	○	○	○
Ostrea edulis (Linnaeus 1758)			⊗	⊗							○			
Mysella bidentata (Montagu 1803)					○				○	○				
Tellimya ferruginosa (Montagu 1803)														
Cerastoderma edule (Linnaeus 1758)				⊗							○	×		
Acanthocardia echinata (Linnaeus 1758)			⊗			⊗		⊗	⊗					⊗
Mactra stultorum (Linnaeus 1758)														
Spisula subtruncata (da Costa 1778)		○	⊗		○	○	×	⊗	■	○	○			⊗
Spisula solida (Linnaeus 1758)		○		■	○	○			×		○			
Phaxas pellucidus (Pennant 1777)			■		■				■	■	■			
Fabulina fabula (Gmelin 1791)									■					
Angulus tenuis (da Costa 1778)														
Chamelea striatula (da Costa 1778)		■		⊗					■		■	⊗		
Corbula gibba (Olivi 1792)			⊗	⊗	○	⊗	⊗	⊗	⊗		○	○		
Barnea candida (Linnaeus 1758)				⊗			×	⊗	⊗	×	×	×	⊗	

solida, which has been found only autochthonous at four sampling localities – and there at depths of more than 13 m – three of them on clayey bottoms.

Corbula gibba is found also at depths of more than 13 m and often on clayey bottoms.

Out of the remaining seven species not yet mentioned, six are autochthonous from the 6 m depth contour curve and out to about 20 m (where the sampling stopped). These species are: *Mysella bidentata*, *Spisula subtruncata*, *Phaxas pellucidus*, *Fabulina fabula*, *Angulus tenuis* and *Chamelea striatula*. These species are found on both sandy and clayey bottoms.

Barnea candida has been found in category 1 – with connected valves – in two of the profiles off the Limfjord isthmus and also in the channel at Thyborøn. The species is connected with clay bottom as a substrate for its boring activity.

As an exception, specimens of *Mytilus edulis* with connected valves have been taken at depths of about 3 m – but only juveniles, which are also found at greater depths. These occurrences are taken as parautochthonous, originating from the nearby groynes protecting the Limfjord isthmus.

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Sediment sampling transect 2

Molluscan species	M.G.S. mm	clay	clay	clay	0.464	0.985	1.959	0.268	0.248	0.261	0.432	0.511	0.601	16.280
	SAMPLE no.	185	186	187	188	189	190	191	192	193	194	195	196	197
	DEPTH m	19.9	17.9	16.5	15.0	13.6	12.1	10.4	9.0	7.3	6.0	4.5	3.0	1.4
Nucula sp								⊗	×	×	×			
Mytilus edulis Linnaeus 1758									×	○	×	○	×	×
Ostrea edulis (Linnaeus 1758)							⊗							
Mysella bidentata (Montagu 1803)								×	×	■				
Tellimya ferruginosa (Montagu 1803)								×	⊗					
Cerastoderma edule (Linnaeus 1758)					○						○			
Acanthocardia echinata (Linnaeus 1758)						×	×	×						×
Mactra stultorum (Linnaeus 1758)		×	×											
Spisula subtruncata (da Costa 1778)		■	○	■				■	■	■	○			
Spisula solida (Linnaeus 1758)		○	○		○	■	○	○	○	○				
Phaxas pellucidus (Pennant 1777)			■	○				■	■					
Fabulina fabula (Gmelin 1791)		■	■	■	■		■	■	■		×			
Angulus tenuis (da Costa 1778)		■	■											
Chamelea striatula (da Costa 1778)		■		■	■		○						⊗	
Corbula gibba (Olivi 1792)		○	○	×	○				○			×		
Barnea candida (Linnaeus 1758)					×			×	×		×			

Sediment sampling transect 3

Molluscan species	M.G.S. mm	clay	clay	clay	clay	0.264	0.183	0.271	0.257	0.202	0.216	0.265	0.369	0.446	0.538
	SAMPLE no.	212	213	214	215	216	217	218	219	220	221	222	223	224	225
	DEPTH m	21.0	19.4	18.0	16.7	15.1	13.7	12.0	10.5	9.0	7.6	6.1	4.4	3.0	1.5
Nucula sp					×		○	×	×	×	×	×	×	×	⊗
Mytilus edulis Linnaeus 1758				○	■	■	■	■	■	○	○	■	×	×	⊗
Ostrea edulis (Linnaeus 1758)											⊗				
Mysella bidentata (Montagu 1803)		■			■	■	■		■		○				
Tellimya ferruginosa (Montagu 1803)															
Cerastoderma edule (Linnaeus 1758)			×		○	○	■	○	○		○				
Acanthocardia echinata (Linnaeus 1758)			×		⊗		×	⊗				⊗			⊗
Mactra stultorum (Linnaeus 1758)			■			×		⊗							
Spisula subtruncata (da Costa 1778)		■		○	■	■	■	○	■	■	○	○			⊗
Spisula solida (Linnaeus 1758)				■		■									
Phaxas pellucidus (Pennant 1777)		■	■		×	×		■							
Fabulina fabula (Gmelin 1791)		■	■		■	■		■	■	■	■				
Angulus tenuis (da Costa 1778)		■	■			○		○		■	■				
Chamelea striatula (da Costa 1778)		■	■	○	■	■		○	○	○	×	○	○		
Corbula gibba (Olivi 1792)		■	○	○	■	○	○				○	○	○		
Barnea candida (Linnaeus 1758)			○		×	■	■	○	⊗	×	×	×	×		⊗

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Sediment sampling transect 4

Molluscan species	M.G.S. mm	clay	clay	clay	clay	0.228	clay	0.215	0.276	0.237	0.312	0.350	0.533	10.427	0.581
	SAMPLE no.	211	210	209	208	207	206	205	204	203	202	201	200	199	198
	DEPTH m	21.2	19.3	17.9	16.3	14.9	13.7	12.1	10.4	8.9	7.6	6.1	4.8	3.2	1.6
Nucula sp								○		×		×	×		
Mytilus edulis Linnaeus 1758			■	■	■		■	○	○	■	○	■	×	■	×
Ostrea edulis (Linnaeus 1758)															
Mysella bidentata (Montagu 1803)			■	■	■	■	■	○	○	○					
Tellimya ferruginosa (Montagu 1803)			■		○		○								
Cerastoderma edule (Linnaeus 1758)					○			○	○	○	○	○			
Acanthocardia echinata (Linnaeus 1758)							×	■							
Mactra stultorum (Linnaeus 1758)		×				○			×		×				
Spisula subtruncata (da Costa 1778)		○	■	■	■	■	○	○	○	○	■	■	○		
Spisula solida (Linnaeus 1758)		○			○										
Phaxas pellucidus (Pennant 1777)		■			■	■		■	■		×				
Fabulina fabula (Gmelin 1791)			■	■	■	■	■	○	■	■		■			
Angulus tenuis (da Costa 1778)			■	■	■	■		■	■		■				
Chamelea striatula (da Costa 1778)		○	■	■	■	■	■	○				○			
Corbula gibba (Olivi 1792)		○	○	■	○	○	■	○		○	○	×			
Barnea candida (Linnaeus 1758)		×	×	■		○	■	×	×	×	×	×	⊗		⊗

Sediment sampling transect 5

Molluscan species	M.G.S. mm	0.532	0.483	0.556	0.407	0.506	0.441	0.452
	SAMPLE no.	226	227	228	229	230	231	232
	DEPTH m	5.2	6.5	8.8	9.4	6.3	5.0	1.7
Nucula sp		×	×	×		×		
Mytilus edulis Linnaeus 1758		■	⊗	■	○	■	■	×
Ostrea edulis (Linnaeus 1758)						×		
Mysella bidentata (Montagu 1803)			■		○	○		
Tellimya ferruginosa (Montagu 1803)				×				
Cerastoderma edule (Linnaeus 1758)				○		○	■	
Acanthocardia echinata (Linnaeus 1758)		⊗		⊗				⊗
Mactra stultorum (Linnaeus 1758)						×		
Spisula subtruncata (da Costa 1778)		⊗	○	○	○	○	×	
Spisula solida (Linnaeus 1758)						○		
Phaxas pellucidus (Pennant 1777)								
Fabulina fabula (Gmelin 1791)		⊗	■	×		■		
Angulus tenuis (da Costa 1778)						○		
Chamelea striatula (da Costa 1778)						○		
Corbula gibba (Olivi 1792)		■		■	○	■	■	
Barnea candida (Linnaeus 1758)		×	⊗	×	■	○		⊗

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Appendix 6

The species recorded within the seven areas through the seven stages.

During the Holocene the first occurrences among dated species are given, and so are the occurrences of species within each period for region 7. Holocene subfossil and recent occurrences of molluscan species are also shown. At the base of the table, the total of recorded species within each area and through time is enumerated.

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Appendix 6: The Molluscan species recorded within the 7 areas through the 7 stages, page 1

	Late Pleistocene																					Subfossil	Holocene																											Recent
	Eemian							Early/Middle Weichselian							Late Weichselian								Preboreal/ Boreal							Atlantic							Subboreal							Subatlantic							
Molluscan Species	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7		1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	
Leptochiton asellus																																																				X
Hanleya hanleyi																																																				X
Callochiton septemvalvis																																																				X
Ischnochiton albus																																																				X
Lepidochitona cinereus																																																				X
Tonicella marmorea																					X																																X
Tonicella rubra																																																				X
Scissurella crispata			X																																																		
Patella vulgata																						X																													X
Helcion pellucidum																						X															X													X
Lepeta caeca																																																				X
Iothia fulva																						X											X																	X
Acmaea tessulata																						X															X													X
Acmaea virginea																						X															X													X
Emarginula fissura																																																				X
Puncturella noachina																																																				X
Margarites helicinus																						X															X													X
Gibbula cineraria					X																	X											X	X																X
Gibbula tumida																						X															X													X
Jujubinus clelandi																																																				X
Calliostoma formosa																																																				X
Calliostoma zizyphinum																																																				X
Skenea serpuloides																						X																													
Skenea basistriata																						X															X													X
Theodoxus fluviatilis																						X																													X
Littorina littorea	X	X	X		X																	X					X			X	X	X	X																		X
Melaraphe neritoides																																																				X
Littorina mariae																																																				X
Littorina obtusata					X																	X											X								X												X
Littorina saxatilis					X																X		X								X			X																	X			X
Littorina tenebrosa																						X								X										X	X													X
Lacuna pallidula																						X															X	X										X	X
Lacuna crassior																																																				X
Lacuna parva					X																	X															X													X
Lacuna vincta					X	X								X							X		X								X			X	X																	X
Hydrobia neglecta																																																				X
Hydrobia ulvae	X	X	X		X																	X					X			X	X	X	X																		X	X
Hydrobia ventrosa																						X								X	X	X	X																	X			X
Potamopyrgus antipodarum																																																				X
Skeneopsis planorbis																						X										X	X																				
Barleeia unifasciata																						X																													X	
Alvania abyssicola						X																																															X
Alvania jeffreysi																																																				X
Alvania lactea																						X															X													
Alvania cimicoides																						X																													
Alvania punctura																						X																													X
Alvania cruenta														X																																					
Alvania scrobiculata														X																																					
Alvania jan-mayeni														X																																					
Cingula semistriata																						X															X													X
Cingula turgida																						X																X												X
Obtusella alderi																																																				X
Onoba aculeus																																																				X
Onoba semicostata																						X								X			X								X														X
Onoba proxima																						X															X													
Onoba vitrea					X																	X										X	X	X		X							X							X	X
Rissoa albella					X																	X					X			X	X	X	X																		X	X
Rissoa inconspicua	X		X		X																	X								X			X																					X
Rissoa membranacea	X				X																	X					X			X		X	X																				X
Rissoa parva	X				X	X																X											X																	X
Rissoa violacea			X		X																	X												X						X										X	X
Assiminea grayana																																																				X
Caecum glabrum	X				X																	X															X	X												X
Bittium reticulatum	X		X		X	X																X								X	X	X	X	X															X	X
Turritella communis		X	X		X	X																X											X								X							X	X
Turritella erosa														X																																					
Aporrhais pespelicani	X	X			X	X																X										X			X							X										X	X
Aporrhais serresianus																																																				X
Crepidula fornicata																																																				X
Capulus ungaricus																																																				X
Lamellaria perspicua																																																				X
Velutina plicatilis																																																				X
Velutina velutina																																																				X
Trivia arctica																																																				X
Trivia monacha																						X																													
Amauropsis islandicus																																																				X
Lunatia alderi		X	X		X	X	X															X					X							X			X							X							X	X
Lunatia catena																						X																													X
Lunatia montagui																						X																													X	X
Lunatia pallida														X							X																														X
Natica affinis														X							X																														
Triphora adversa	X				X																	X											X								X												X
Cerithiella metula																																																				X
Cerithiopsis barleei																						X																													X
Cerithiopsis tubercularis					X																	X																													
Epitonium clathratulum																																																				X
Epitonium clathrus	X				X																	X											X								X												X
Epitonium trevelyanum																						X																				X							X	X
Epitonium turtonis																						X															X													X
Aclis ascaris																						X					X																								X
Aclis minor																						X					X							X			X							X							X	X
Aclis walleri																						X												X																		X

Appendix 6: The Molluscan species recorded within the 7 areas through the 7 stages, page 2

Molluscan Species	Late Pleistocene																					Subfossil	Holocene																												Recent
	Eemian							Early/Middle Weichselian							Late Weichselian								Preboreal/ Boreal							Atlantic							Subboreal							Subatlantic							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7		1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	
Eulima bilineata																																																			x
Haliella stenostoma																																																			x
Polygireulima sinuosa																						x																												x	x
Polygireulima monterosatoi																																																			x
Vitreolina collensi																						x																					x							x	
Vitreolina philippii						x																x																		x										x	x
Graphis albida																						x																												x	
Melanella lubrica																						x														x														x	x
Melanella alba																						x																					x								
Hemiaclis ventrosa																						x																												x	
Pelseneeria stylifera																																																			x
Enteroxenos oestergreni																																																			x
Nucella lapillus																						x											x	x																	x
Boreotrophon clathratus																				x																															x
Boreotrophon truncatus																																																			x
Ocenebra erinacea																																																			x
Trophonopsis barvicensis																																																			x
Buccinum undatum			x		x	x														x		x											x														x		x	x
Buccinum cyaneum																				x																															
Colus gracilis																																																			x
Colus jeffreysianus																																																			x
Colus sabini																																																			x
Liomesus ovum																																																			x
Neptunea antiqua																						x																													x
Neptunea despecta																				x																															
Turrisipho moebii																																																			x
Hinia incrassata						x																x																		x											x
Hinia pygmaea	x		x		x																	x											x	x																x	x
Hinia reticulata	x	x	x		x	x																x								x	x	x	x	x																x	x
Troschelia berniciensis																																																			x
Cytharella coarctata					x																	x																													x
Oenopota incisula						x								x																																					
Oenopota trevelliana						x																																														x
Oenopota turricola																				x		x											x																	x	x
Oenopota violacea						x																																													
Bela exarata						x																																													x
Mangelia attenuata																																																			x
Mangelia brachystoma						x																x																												x	x
Mangelia nebula																																																			x
Raphitoma purpurea																						x																		x											
Raphitoma asperrima																																																			x
Raphitoma leufroyi																																																			x
Raphitoma linearis						x																x																		x											x
Taranis borealis																																																			x
Taranis moerchi																																																			x
Admete viridula														x																																					x
Omalogyra atomus																						x										x																			x
Brachystomia carozzai																																																			x
Brachystomia eulimoides					x																	x										x	x								x										x
Odostomia scalaris	x				x																	x																													x
Chrysallida decussata																						x																		x										x	x
Chrysalida exima						x																x																													
Chrysallida indistincta																						x																		x	x										x
Chrysallida obtusa	x				x																	x											x																		x
Chrysallida spiralis	x		x		x																	x					x						x																		x
Ebala nitidissima	x				x																	x																		x											x
Eulimella laevis																						x												x						x											x
Eulimella scillae						x																x											x			x							x								x
Ondina divisa						x																x																		x											x
Ondina diaphana																						x												x						x											x
Liostomia clavula																																																			x
Odostomia acuta																						x																													x
Odostomia conoidea																						x								x											x									x	x
Odostomia turrita						x																x																													x
Odostomia albella					x																	x																			x										x
Odostomia plicata																						x											x																		x
Odostomia umbilicaris																						x														x														x	
Turbonilla crenata	x				x																	x																													x
Turbonilla delicata																						x					x						x																	x	x
Turbonilla lactea	x		x		x																	x																													x
Turbonilla sinuosa																						x																												x	
Acteon tornatilis					x	x																x											x	x																	x
Haminoea navicula	x		x		x																																														
Cylichna cylindracea																						x											x																		x
Cylichna alba														x							x		x					x						x																	x	
Cylichna occulta										x			x							x																															
Scaphander lignarius																																																			x
Scaphander punctostriatus																																																			x
Philine aperta	x				x																	x																													x
Philine catena							x																																												x
Philine denticulata																																																			x
Philine punctata																						x																													x
Philine quadrata																																																			x
Philine scabra																																																			x
Philinoglossa helgolandica																																																			x
Diaphana minuta																						x																													x
Retusa obtusa														x						x		x					x													x											x
Retusa truncatula	x				x																	x					x			x	x	x	x										x							x	x
Retusa umbilicata	x					x																x												x									x							x	x
Rhizorus acuminatus																																																			x
Akera bullata	x				x																	x																		x											x
Limacina retroversa						x	x													x																															x

Appendix 6: The Molluscan species recorded within the 7 areas through the 7 stages, page 3

	Late Pleistocene																					Subfossil	Holocene																												Recent
	Eemian							Early/Middle Weichselian							Late Weichselian								Preboreal/ Boreal							Atlantic							Subboreal							Subatlantic							
Molluscan Species	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7		1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	
Clione limacina																					x																														x
Ovatella myosotis																																																			x
Lymnaea peregra																						x									x																				x
Cadulus subfusiforme							x																																												x
Siphonodentalium lobatum							x														x																														
Entalina tetragona							x																																												
Antalis agile																																																			x
Antalis entalis							x																																												x
Dentalium vulgare							x																																												
Nucula nitidosa	x	x			x																	x					x						x																	x	x
Nucula nucleus		x				x																x												x						x										x	x
Nucula sulcata	x				x	x																x																			x										x
Nuculoma hanleyi																																																			x
Nuculoma tenuis						x				x			x							x		x											x	x																	x
Nuculana minuta						x															x	x																					x							x	x
Nuculana pernula						x	x			x			x	x						x	x																														x
Yoldia hyperborea													x	x							x																														
Portlandia arctica										x			x	x						x	x																														
Yoldiella lucida						x																																													x
Yoldiella lenticula						x							x							x	x																														
Yoldiella frigida						x	x						x								x																														
Yoldiella philippiana						x																																													
Malletia obtusa																																																			x
Acar nodulosa																																																			x
Bathyarca glacialis													x								x																														
Bathyarca pectunculoides																																																			x
Mytilaster lineatus			x		x																																														
Mytilaster solidus	x																																																		
Mytilus edulis	x	x	x		x	x														x		x					x			x	x	x	x									x								x	x
Modiolula phaseolina	x				x																	x																													x
Modiolus adriaticus																						x																													x
Modiolus modiolus		x			x																	x											x																		x
Musculus discors																						x																			x									x	x
Musculus laevigatus													x							x																															
Musculus niger						x							x							x																															x
Modiolaria tumida					x																	x																													x
Crenella decussata													x																																						x
Adipicola simpsoni																																																			x
Chlamys islandica													x							x																															
Aequipecten opercularis					x																	x																													x
Chlamys varia					x																	x											x															x		x	x
Delectopecten vitreus							x															x																		x											x
Palliolum greenlandicum													x	x																																					
Palliolum striatum																						x																		x											x
Palliolum tigerinum																						x																		x											x
Pecten maximus																						x																													x
Pseudamussium septemrad.						x																																													x
Similipecten similis						x																																													x
Pododesmus patelliformis																						x											x																		x
Pododesmus squama																																																			x
Anomia ephippium																						x																													
Heteranomia squamula	x				x																	x											x																	x	x
Ostrea edulis	x		x		x																	x					x			x		x	x		x															x	x
Limaria hians																																																			x
Limaria loscombi																																																			x
Limatula subauriculata																																																			x
Lucinella divaricata	x		x		x																																														
Lucinoma borealis																						x											x																		x
Myrtea spinifera																																																			x
Axinopsida orbiculata													x							x																															
Thyasira croulinensis																																																			x
Thyasira flexuosa					x															x		x											x								x									x	x
Thyasira sarsi																																																			x
Leptaxinus ferruginosus						x																																													
Mysella bidentata	x	x			x	x																x					x		x	x		x	x										x							x	x
Mysella tumidula																																																			x
Mysella dawsoni																																																			x
Montacuta substriata																																																			x
Tellimya ferruginosa	x				x																	x											x										x							x	x
Turtonia minuta																						x																												x	
Lepton nitidum	x				x																	x																			x										x
Lepton squamosum																																																			x
Devonia perrieri																																																			x
Kellia suborbicularis																						x																													x
Astarte sulcata																																																			x
Tridonta borealis													x							x		x																													x
Tridonta elliptica					x								x																																						x
Tridonta montagui					x								x																																						x
Acanthocardia echinata	x		x		x	x																x											x	x									x							x	x
Parvicardium exiguum	x		x		x																	x					x			x		x	x																		x
Parvicardium ovale					x	x																x																										x			x
Parvicardium scabrum					x																	x								x			x	x																	x
Plagiocardium papillosum					x																																														
Parvicardium minimum						x																x					x		x							x							x							x	x
Cerastoderma edule	x	x	x		x																	x					x			x	x	x	x																		x
Cerastoderma glaucum																						x									x	x	x																		x
Clinocardium ciliatum						x							x																																						
Laevicardium crassum			x																			x																													x
Serripes groenlandicus						x							x																																						
Mactra stultorum	x																					x												x						x										x	x
Lutraria lutraria																						x																		x											x
Spisula elliptica	x																					x																													x

Appendix 6: The Molluscan species recorded within the 7 areas through the 7 stages, page 4

Molluscan Species	Late Pleistocene																							Subfossil	Holocene																									Recent
	Eemian							Early/Middle Weichselian							Late Weichselian										Preboreal/ Boreal							Atlantic							Subboreal							Subatlantic							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7		1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	
Spisula solida			■																																																■
Spisula subtruncata	■	■	■		■																	■											■	■		■						■	■							■	■
Solecurtus chamasolen																																																			■
Solecurtus scopula																																																			■
Ensis arcuatus																																																			■
Ensis ensis	■				■	■																■																		■	■									■
Ensis siliqua																																																			■
Phaxas pellucidus					■	■																■					■						■										■							■	■
Angulus tenuis	■				■																	■								■			■																		■	■
Arcopagia crassa																																																			■
Tellina donacina					■																																															
Fabulina fabula					■																	■					■						■																		■	■
Tellina pygmaea																																																			■	■
Gastrana fragilis	■		■		■																																															■
Macoma balthica	■	■			■															■		■					■			■	■	■	■																		■	■
Macoma calcarea		■				■				■			■							■		■																														■	■
Macoma torelli																				■																																	
Macoma loveni																				■																																	
Donax vittatus					■																																										■	■			■	■
Gari depressa																																																			■	■
Gari fervensis																																	■																		■	■
Gari tellinella																																																			■	■
Scrobicularia plana	■	■	■		■																									■	■	■	■	■																	■	■
Abra alba	■				■	■																					■			■		■	■										■								■	■
Abra nitida						■																					■						■										■								■	■
Abra prismatica	■		■		■	■																					■						■										■								■	■
Abra segmentum	■				■																																															■	■
Arctica islandica	■	■			■															■										■			■		■							■									■	■
Kelliella miliaris						■	■																																													■
Glossus humanus																																																			■	■
Chamelea striatula	■				■	■																					■	■															■								■	■
Clausinella fasciata																											■																									■
Paphia senescens	■		■		■																																															
Paphia aurea			■																											■			■	■																		■
Tapes decussatus					■																									■		■		■																		■
Timoclea ovata	■		■		■																						■																		■			■		■	■
Venerupis rhomboides																											■																									■
Venerupis pullastra					■																									■			■									■									■
Dosinia exoleta																																											■								■	■
Dosinia lincta	■				■																																									■					■
Gouldia minima	■				■																																															
Mysia undata					■																																															■
Mya arenaria																																																			■	■
Mya truncata	■	■			■	■				■			■							■							■			■			■																			■
Corbula gibba	■	■	■		■	■														■							■			■	■	■	■										■								■	■
Hiatella arctica			■		■	■	■			■			■							■													■	■									■								■	■
Hiatella rugosa																																																			■	■
Saxicavella jeffreysi					■																													■																	■	■
Panomya arctica																																																			■	■
Barnea candida	■				■																									■			■	■																		■
Pholas dactylus																																									■										■	■
Zirfaea crispata	■																			■													■									■										■
Xylophaga dorsalis																																																			■	■
Teredo navalis																																																			■	■
Nototeredo norvegica																																																			■	■
Psiloteredo megotara																																																			■	■
Pandora glacialis																																																				
Lyonsia norvegica																																																			■	■
Lyonsia arenosa																																																				
Cochlodesma praetenue							■																																												■	■
Thracia convexa																																																			■	■
Thracia phaseolina	■				■																												■																		■	■
Thracia gracilis																																																			■	■
Thracia villosiuscula					■																																														■	■
Cupidaria cuspidata																																																			■	■
Number of species	59	19	32	0	91	55	14	0	0	7	0	0	36	4	0	0	0	0	0	35	9	183	0	0	0	0	26	0	3	31	15	23	77	27	2	8	0	0	2	36	19	3	23	0	0	0	1	8	0	68	278
Total for period	140							36							41								27							93							77							72							
No of new species in period																							27							69							38							14							
																							148 new species in Holocene																												