

## Recent geographical distribution of the *Astarte borealis* species complex, its nomenclature and bibliography (Bivalvia: Astartidae)

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**Abstract:** The geographical distribution of the circumpolar panarctic *Astarte borealis* species complex and its bibliography is given. The study covers all literature sources worldwide that have dealt with some aspect of this complex. Only information on recent distribution was included. The contents of the publications are briefly reviewed in tabular form identifying the nomenclature used and the geographical distribution.

**Introduction:** Comprehensive literature studies are necessary before taxonomical or ecological work could be undertaken. The present study on distribution, nomenclature and bibliography covers almost all literature sources worldwide that have dealt with some aspects of the recent *Astarte borealis* species complex. All this literature were included which was possible to see or where other authors made recognizable notations. Especially the Russian literature were checked in respect to *Astarte borealis* in the Arctic Seas, its main distribution area. For the Baltic Sea, one of the best-investigated areas, several papers exist with information on *A. borealis*. For more information of this area see the bibliography on macrozoobenthos of the Kiel Bay from GERLACH (2000).



**Description:** *A. borealis* is a variable species with several forms and varieties (see Tab. 1 for synonyms and varieties). The shell is quadrate to subtriangular, compressed with a total shell length of 38 mm at boreal outposts (e.g. Baltic Sea, JAECKEL 1952) and 55 mm in the Arctic Sea (BERNARD 1979, COAN et al. 2000, FOSTER 1991) with a mean of 25-45 mm (DANCE 1977). The shell is generally longer than high and the height/length indices vary from 0.8 to 0.9 (DERJUGIN 1928, LUBINSKY 1980, OCKELMANN 1958). The surface is sculptured with smooth concentric ribs. These ribs are common in juveniles and on early portion of shell. The periostracum is thick, yellow to brownish in juveniles and brown to black in adults. At the umbones the periostracum is often eroded and the posterior edge is encrusted with ferro-manganese. The shell margins are always uncrenellated and the umbones are nearly central.

The great variability in morphological features resulted in a number of new species and subspecies descriptions in the past (e.g. BRODERIP & SOWERBY 1829, DALL 1903, MIDDENDORFF 1849, SOWERBY 1874) and in recent investigations (HÖPNER PETERSEN 2001). Due to the difficulties of species classification by literature and caused by the latest work of HÖPNER PETERSEN (2001), who described several new species of *Astarte*, I decided to speak about an *Astarte borealis* species complex.

**Distribution:** This species complex has a circumpolar panarctic distribution with boreal outposts (Fig. 1, see Table 1 for references). In North American Atlantic waters it is widely distributed from Canadian Archipelago via Newfoundland to Massachusetts Bay and along the American West coast from Alaska to British Columbia. Several locations are known from Greenland, Iceland, Spitzbergen and Jan Mayen. *A. borealis* was found in Norwegian, Russian and American Arctic waters (circumpolar). In Russia most observations were made in the Barents Sea, White Sea, Kara Sea and

Laptev Sea. In the Far East *A. borealis* occupied the East Siberian Sea, Chukchi Sea, Bering Sea, Okhotsk Sea, and the Kurile and Aleutian Islands. In Pacific waters the species reaches its southernmost distribution in the Japan Sea. Temperate boreal outposts are Massachusetts Bay (USA), Baltic Sea (Germany to Poland), Chatham Sound (British Columbia) and Tsushima Island (Japan Sea).

*A. borealis* is essentially a shallow water species (0-300 m), but drift shells have been recorded in more than 1600 m (CLARKE 1960) and 2000 m (HÄGG 1904, OCKELMANN 1958). Due to low salinities *A. borealis* submerges the brackish waters (e.g. Baltic Sea) and lives in deeper regions with higher salinity. The optimal salinity range lies between 14 and 30 psu (OERTZEN 1973). It can survive in salinities between 10 and 15 psu with its minimum tolerance at 6-8 psu (JAECKEL 1952, JÄRVEKÜLG 1979, RESHÖFT 1961, WARZOCHA 1995).

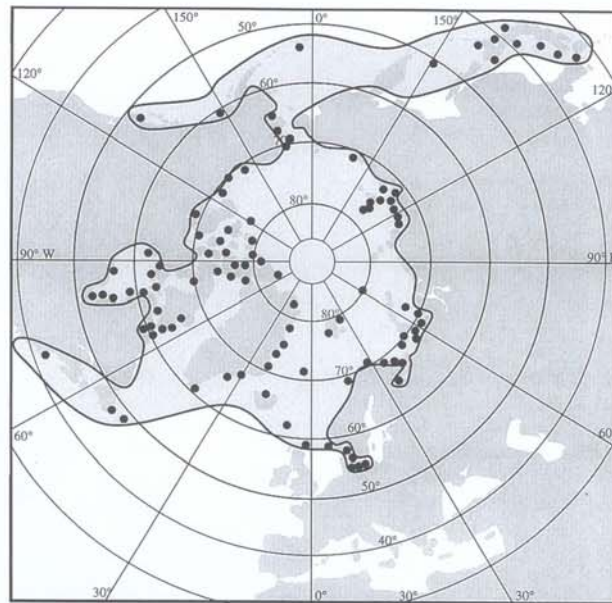


Fig. 1: The circumpolar panarctic distribution of *Astarte borealis* with several boreal outposts (● locations referred to literature cited in table 1)

**Nomenclature and bibliography:** The specimens figured by CHEMNITZ (1784, p. 26-28, pl. 39, fig. 412-414) under the name *Venus borealis* LINNEAI, are referable to more than one species of *Astarte*. *Venus borealis* described by LINNÉ is, according to MARTENS (1871) and SMITH (1881), not a species of the genus *Astarte*. SCHUMACHER (1817) referred to CHEMNITZ (1784, pl. 39, fig. 412) and described the species *Tridonta borealis*, the valid name (see also HÖPNER PETERSEN 2001).

The bibliography includes publications dealing directly with the bivalved mollusc itself as well as those mentioning *A. borealis* only marginally (Tab. 1). Table 1 gives an overview of the geographic area in each of the publication listed. The nomenclature given in the column 3 imply in no way that a complete revision of this taxa has been undertaken. The Table 1 is intended solely to indicate the nomenclature used hitherto and is based mainly on the taxonomic studies published by BERNARD (1979), COAN et al. (2000), FILATOVA (1948), LUBINSKY (1980), OCKELMANN (1958), SKARLATO (1987), SMITH (1881) and RICHLING (2000). Several other papers were used and cited. The reference gives the complete bibliography. The purpose of the bibliography is to enable the reader to see at a glance the nomenclature used in a publication referring to *Astarte borealis* species complex and the geographical area it deals with. Further the study gives the worldwide distribution of *A. borealis* for the first time.

Table 1:  
Bibliography on the *Astarte borealis* species complex and its geographical distribution and nomenclature, references with notations concerning to following literature; <sup>1</sup>(RICHLING, 2000), <sup>2</sup>(OCKELMANN, 1958), <sup>3</sup>(COAN et al., 2000), <sup>4</sup>(BERNARD, 1979), <sup>5</sup>(SKARLATO, 1987), <sup>6</sup>(JØRGENSEN et al., 1999), <sup>7</sup>(LUBINSKY 1980)

Reference	Location	Nomenclature	Text	Figures
ABBOTT (1974)	Arctic Sea to Massachusetts, Alaska to	<i>Astarte borealis</i> (SCHUMACHER, 1817)	480	5515
ABBOTT (1974)	Japan		481	5524
AITKEN & GILBERT (1996)	Aleutian and Shumagin Islands, Alaska Canada, Axel Heiberg Island, Expedition Fjord	<i>Astarte (Astarte) polaris</i> DALL, 1903 <i>Astarte borealis</i>	33-37	
ANDERSIN et al. (1978)	Baltic Sea, Bornholm Basin	<i>Astarte borealis</i>	31-34	
ANTIPOVA (1978)	Russia, Arctic Sea, Barents Sea, Kara Sea	<i>Tridontia borealis</i>	739-741	
ARNITZ et al. (1976)	Baltic Sea, Kiel Bay	<i>Astarte borealis</i> (SCHUMACHER)	231	
BAKER (1919) <sup>1</sup>	Canada, Arctic Sea, Baffin Island	<i>Astarte borealis</i>	496	pl. 25 (fig. 5-7)
BAKER (1919) <sup>1</sup>	Canada, Arctic Sea, Baffin Island	<i>Astarte borealis sericea</i>	497	pl. 25 (fig. 8-9)
BECHER (1886) <sup>2</sup>	Norway, Jan Mayen	<i>Astarte (Tridontia) borealis</i>	69	
BECHER (1886) <sup>2</sup>	Norway, Jan Mayen	<i>Astarte producta</i>	70	
BERNARD (1979)	USA, Arctic Sea, Beaufort Sea	<i>Astarte (Tridontia) borealis</i> (SCHUMACHER 1817)	43-44	fig. 67-69
BRODERIP & SOWERBY (1829)	USA, Alaska, Icy Cape	<i>Astarte lactea</i>	365	
BROWN (1827) <sup>3</sup>	North Sea	<i>Crassina corrugata</i>		pl. 16
BROWN (1827) <sup>3</sup>	North Sea	<i>Crassina depressa</i>		pl. 18
BUCHNER (1913)	North and Baltic Sea, Arctic Seas	<i>Astarte borealis</i> CHEMNITZ	86	pl. 19 (fig. 3)
CHEMNITZ (1784)	Iceland, Færðer	<i>Venus borealis</i> LINNE (invalid binom., not of LINNE)	26-27	pl. 39 (fig. 412)
CHRISTENSEN (1980)	Norway, North Sea, Baltic Sea	<i>Astarte borealis</i>	69	p69
CLARKE (1960) <sup>4</sup>	USA, Arctic Sea	<i>Astarte (Tridontia) borealis</i> (SCHUMACHER 1817)	11	
COAN et al. (2000)	USA, Canada, Arctic Sea, Pacific	<i>Astarte borealis</i> (SCHUMACHER 1817)	287	pl. 56
CROSSE (1877) <sup>4</sup>	USA, Arctic and Bering Seas	<i>Astarte (Tridontia) borealis</i> (Schumacher 1817)	123	
DAHLE et al. (1998)	Russia, Arctic Sea, Pechora Sea	<i>Tridontia borealis</i> SCHUMACHER, 1817	206	

Reference	Location	Nomenclature	Text	Figures
DALL (1874)	USA, Bering Sea	<i>Astare semisulcata</i> LEACH	24	
DALL (1903)	USA, Arctic Sea, Aleutians, Alaska	<i>Astare polaris</i>	937, 939, 943	pl. 63 (fig. 5)
DALL (1903)	USA, Alaska, Bering Sea, Massachusetts Bay	<i>Astare borealis</i> SCHUMACHER, 1817	937, 941, 944	
DALL (1921) <sup>5</sup>	USA, Arctic Sea, Alaska	<i>Astare polaris</i> DALL, 1903	21	
DANCE (1977)	Arctic Sea to Massachusetts, Alaska to Japan	<i>Astare borealis</i> SCHUMACHER	245	p245
DEMEL & MULICKI (1954)	Baltic Sea, Arkona Basin to Slupsk Furrow	<i>Astare borealis</i> (CHEMNITZ)	97	
DENISENKO (1996)	Russia, Arctic Sea, Barents Sea	<i>Tridontia borealis</i>	70	
DERJUGIN (1928)	Russia, Arctic Sea, Barents Sea	<i>Astare borealis</i> (CHEMNITZ)	541	pl. 8 (fig. 6)
DERJUGIN (1932) <sup>3</sup>	Russia, Arctic Sea, Laptev Sea	<i>Astare borealis</i> var. <i>sibirica</i>	150	
DEUBEL (2000)	Russia, Arctic Sea, Laptev Sea	<i>Astare borealis</i> SCHUMACHER, 1817	30, 133, 145	
EYSEEV & KIVASHKO (1999)	Chukchi and Bering Seas, Japan Sea	<i>Tridontia borealis</i>	120-122	
FEDER et al. (1994)	USA, Alaska, Chukchi Sea	<i>Astare borealis</i> (SCHUMAKER, 1817)	149, 151, 160	
FEDYAKOV & NAUMOV (1989)	Arctic Seas, Russia to Canada, Greenland, Norway	<i>Tridontia borealis</i>	307	
FILATOVA (1948)	Russia, Arctic Sea	<i>Astare (Tridontia) borealis</i> CHEMNITZ	435	pl. 109 (fig. 11), pl. 110 (fig. 1)
FILATOVA (1948)	Russia, Arctic Sea	<i>Astare borealis</i> var. <i>placenta</i> MORCH	435	pl. 110 (fig. 2)
FILATOVA (1948)	Russia, Arctic Sea	<i>Astare borealis</i> var. <i>withami</i> WOOD	435	pl. 110 (fig. 3)
FILATOVA (1957) <sup>1</sup>	Russia, Arctic Sea	<i>Astare borealis</i> var. <i>arctica</i> GRAY	435	pl. 110 (fig. 4)
FILATOVA (1957) <sup>1</sup>	Russia, Arctic Sea	<i>Astare borealis ovata</i>	54	
FILATOVA (1957) <sup>1</sup>	Russia, Arctic Sea, Laptev Sea	<i>Astare (Tridontia) borealis plarenta</i>	54	
FILATOVA (1957) <sup>1</sup>	Russia, Arctic Sea, Laptev Sea	<i>Astare (Tridontia) sibirica</i>	54	
FORBES & HANLEY (1853)	Great Britain, North Sea, west coast of Shetlands	<i>Astare arctica</i> GRAY	461-464	pl. 30 (fig. 7)
FOSTER (1991)	Alaska, Point Barrow to Prince William Sound	<i>Astare borealis</i> (SCHUMACHER, 1817)	70	fig. 112-112
FRIELE (1878) <sup>2</sup>	Norway, Jan Mayen	<i>Astare borealis</i>	223	
GAGAEV (1989)	Russia, Arctic Sea, East Siberian Sea, Chauna Bay	<i>Tridontia borealis</i>	659-660	
GALKIN (1989)	Russia, Arctic Sea, Barents Sea	<i>Tridontia borealis</i>	162, 164	
GARDNER & THOMPSON (1999)	Canada, Newfoundland	<i>Astare borealis</i>	90	

Reference	Location	Nomenclature	Text	Figures
GOLIKOV & SKARLATO (1967) <sup>4</sup>	Northern Japan	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	99	pl. 9 (fig. 4)
GOLIKOV & SKARLATO (1977) <sup>5</sup>	Russia, Arctic Sea, Franz Josef Land	<i>Tridonta (Tridonta) borealis</i>	360	
GOSSELCK (1985)	Baltic Sea, Arkona Basin	<i>Astarte borealis</i>	29	
GRISCHANKOV et al. (2000)	Russia, White Sea, Kandalakscha Bay	<i>Tridonta borealis</i> SCHUMACHER, 1817	54	
GUKOV (1991)	Russia, Arctic Sea, Laptev Sea	<i>Tridonta borealis</i>	454-455	
GUKOV (1992)	Russia, Arctic Sea, Laptev Sea	<i>Tridonta borealis</i>	4-6	
GULLIKSEN et al. (1985) <sup>6</sup>	Norway, Spitzbergen	<i>Tridonta borealis</i>	43	
HAAS (1926)	Arctic Seas, Atlantic, Baltic Sea, North Sea	<i>Astarte borealis</i> (CHEMNITZ)	33-36	
HÄGG (1904)	Greenland, Norway, Spitzbergen, Jan Mayen	<i>Astarte borealis</i> (CHEMNITZ)	165	
HAGMEIER (1930)	Baltic Sea, Bornholm Basin	<i>Astarte borealis</i>	165	
HIGO et al. (1999)	Japan Sea, Kurile Islands, Okhotsk Sea, Bering Sea	<i>Tridonta (Tridonta) borealis</i> SCHUMACHER, 1817	469	
HOPNER PETERSEN (2001)	Iceland, Greenland, Northern Norway	<i>Astarte borealis</i> (SCHUMACHER, 1817)	23	pl. 2-4
HOPNER PETERSEN (2001)	Iceland	<i>Astarte jenseni</i> n. sp.	26-27	pl. 7
HOPNER PETERSEN (2001)	West Greenland	<i>Astarte nauki</i> n. sp.	27-28	pl. 8
HOPNER PETERSEN (2001)	Spitsbergen	<i>Astarte moerhii</i> n. sp.	28-30	pl. 9
HOPNER PETERSEN (2001)	East Greenland, Spitsbergen	<i>Astarte sericea</i> POSSELT, 1895	30-31	pl. 11
HOPNER PETERSEN (2001)	Isefjord, Denmark	<i>Astarte fordi</i> n. sp.	53	pl. 20
HOPNER PETERSEN (2001)	Baltic Sea, Island of Fyn, Denmark	<i>Astarte belti</i> n. sp.	54-55	pl. 21
HOPNER PETERSEN (2001)	Northern North Sea	<i>Astarte nordi</i> n. sp.	55-56	pl. 22
HOPNER PETERSEN (2001)	Baltic Sea, Island of Bornholm, Denmark	<i>Astarte bornholmi</i> n. sp.	56-57	pl. 23
HOPNER PETERSEN (2001)	Baltic Sea, Island of Bornholm, Denmark	<i>Astarte sili</i> n. sp.	57-58	pl. 24
HOPNER PETERSEN (2001)	Baltic Sea, Island of Falster, Denmark	<i>Astarte falsieri</i> n. sp.	58	pl. 25
HÜLSEMANN (1962) <sup>7</sup>	USA, Beaufort Sea	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	71	
HUMPHREY et al. (1987)	Canada, Arctic Sea, Canadian Archipelago	<i>Astarte borealis</i>	150	
JAECKEL (1952)	Baltic Sea, Kiel Bay to Bornholm Basin	<i>Astarte borealis</i> CHEMNITZ	39-41	
JARVEKÜLG (1979)	Baltic Sea	<i>Astarte borealis</i>	128	
JAGNOW & GOSSELCK (1987)	Baltic Sea	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER, 1817)	237	pl. 9 (fig. 3a-c)
JENSEN (1912) <sup>1</sup>	Arctic Sea	<i>Astarte borealis</i> ("CHEMNITZ")	92-97	pl. 4 (fig. 1a-f)
JENSEN & SPARCK (1934)	Baltic Sea, Kattegat, northern North Sea	<i>Astarte (Tridonta) borealis</i> (CHEMNITZ)	83-84	fig. 63
JENSEN & KNUDSEN (1995)	Denmark, Orsund	<i>Tridonta borealis</i> SCHUMACHER, 1817	42	

Reference	Location	Nomenclature	Text	Figures
JOHANSEN (1916)	Baltic Sea, Northern North Sea	<i>Astarte borealis</i> CHEMNITZ	641, 648-651	fig. 5, 8-9
JOHNSON (1934)	Greenland to Massachusetts	<i>Astarte borealis</i> SCHUMACHER, 1817	37	
JORGENSEN et al. (1999)	Russia, Arctic Sea, Kara Sea	<i>Tridonta borealis</i> SCHUMACHER, 1817	399	pl. 34 (fig. 24-25, 28-29)
KOTAKA (1962) <sup>4</sup>	Russia, Okhotsk Sea	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	148	pl. 3 (fig. 8)
KÜHLMORGEN-HILLF (1963)	Baltic Sea, Kiel Bay	<i>Astarte borealis</i> CHEMNITZ	52	
KUZNETSOV (1961) <sup>3</sup>	Kamchatka	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	92-93	
KUZNETSOV (1963) <sup>3</sup>	Kamchatka	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	88-94	
LAMY (1919)	Spitsbergen, North East and West America, Japan	<i>Astarte (Tridonta) borealis</i> (CHEMNITZ)	93-94	
LAMY (1919)	Russia, Arctic Sea, Norway, Jan Mayen, Canada	<i>Astarte borealis</i> var. <i>semisulcata</i> LEACH	94-96	
LAMY (1919)	Iceland, Japan	<i>Astarte borealis</i> var. <i>lactea</i> BRODERIP et SOWERBY	96	
LEACH (1819) <sup>7</sup>	Canada, Arctic Sea, Baffin Island	<i>Crassina semisulcata</i>	172	pl. 1 (fig. 4a-c)
LECHE (1878) <sup>1</sup>	Russia, Arctic Sea	<i>Astarte semisulcata</i> var. <i>placenta</i>	440	pl. 34 (fig. 35-36)
LECHE (1883) <sup>1</sup>	Russia, Arctic Sea	<i>Astarte semisulcata</i> var. <i>placenta</i>	440	
LECHE (1883) <sup>3</sup>	Russia, Arctic Sea	<i>Astarte semisulcata rhomboidalis</i>	441	
LENZ (1875)	Baltic Sea, Mecklenburg Bight	<i>Astarte borealis</i> CHEMNITZ	18	
LENZ (1882)	Baltic Sea, Mecklenburg Bight	<i>Astarte borealis</i> CHEMNITZ	175	
LOWE (1963)	Baltic Sea, Arkona Basin	<i>Astarte borealis</i> CHEMNITZ	294-296	
LUBINSKY (1980)	Canada, Queen Elizabeth Islands to Newfoundland	<i>Astarte borealis</i> (SCHUMACHER, 1817)	3, 5-6, 30-31	pl. 5 (fig. 8-9)
MACGINITTE (1959) <sup>4</sup>	USA, Alaska, Point Barrow	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	165-166	pl. 22 (fig. 1-6)
MADSEN (1949) <sup>4</sup>	Iceland	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	43	
MARTENS (1871)	Baltic Sea, Mecklenburg Bight	<i>Astarte arctica</i> GRAY	72	
MATVEEVA (1977)	Russia, White Sea, Franz-Josef Land	<i>Tridonta borealis</i> (SCHUMACHER)	418-420	
MELVILL & STANDEN (1899)	Russia, Arctic Sea, Franz-Josef Land, Kolguev	<i>Astarte borealis</i> (CHEMNITZ)	4, 12	
MELVILL & STANDEN (1899)	Russia, Arctic Sea, Franz-Josef Land	<i>Astarte semisulcata</i> (LEACH)	4	
MESJATSEV (1931) <sup>4</sup>	Russia, Barents Sea	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	71	pl. A. <i>borealis</i> (fig. 1-4)
MEYER & MOBIUS (1872)	Baltic Sea, Kiel Bay	<i>Astarte borealis</i> CHEMNITZ	95-96	

Reference	Location	Nomenclature	Text	Figures
MIDDENDORFF (1849)	Russia, Arctic Sea, USA, Alaska	<i>Astarte corrugata</i> Brown	562-565	pl. 17 (fig. 4-10)
MÖBIUS (1873)	Baltic Sea	<i>Astarte borealis</i> CHEMNITZ	128	
MÖRCH (1869) <sup>3</sup>	Norway, Spitzbergen	<i>Astarte semisulcata placenta</i>	26	
MORRIS (1975)	Arctic Sea to Massachusetts, Greenland	<i>Astarte borealis</i> SCHUMACHER	40	pl. 20 (fig. 6)
NAUMOV & FEDIAKOV (1990) <sup>1</sup>	Russia, Arctic Sea, Laptev Sea	<i>Tridonta borealis</i>	399	
NORDSIECK (1969)	North Atlantic, North Sea, Baltic Sea, Aleutian Islands	<i>Tridonta borealis</i> SCHUMACHER 1817	70	pl. 12 (fig. 40, 10)
OCKELMANN (1958)	Greenland	<i>Astarte borealis</i> (CHEMNITZ)	74	
OERTZEN (1969)	Baltic Sea, Kiel Bay to Gdansk Deep	<i>Astarte borealis</i>	129-135	
OERTZEN (1972)	Baltic Sea, Mecklenburg Bight	<i>Astarte borealis</i>	144	
OERTZEN (1973)	Baltic Sea, Mecklenburg Bight	<i>Astarte borealis</i> (CHEMNITZ)	262	
OERTZEN & SCHULZ (1973)	Baltic Sea, Kiel Bay to Gdansk Deep	<i>Astarte borealis</i>	83-84	fig. 4, 6
OESCHGER (1990)	Baltic Sea, Kiel Bay	<i>Astarte borealis</i>	133-141	
OLDROYD (1925) <sup>4</sup>	USA, Alaska	<i>Astarte borealis</i> ("CHEMNITZ")	106	
PARAT & DEVILLERS (1936)	Norway, Jan Mayen	<i>Astarte borealis</i> CHEMNITZ	91	
PEMPKOWIAK et al. (1999)	Norway, Spitzbergen, Baltic Sea, Bay of Gdansk	<i>Astarte borealis</i>	316	
PETRYASHOV et al. (1999)	Russia, Arctic Sea, Laptev Sea	<i>Tridonta borealis</i>	172-175	
PFEFFER (1886) <sup>1</sup>	Russia, Arctic Sea, Kara Sea	<i>Astarte borealis</i>	10	fig. 5-7
PFEFFER (1886) <sup>3</sup>	Russia, Arctic Sea, Kara Sea	<i>Astarte borealis rassa</i>	11	
POLLONERA (1901) <sup>3</sup>	Arctic Sea	<i>Tridonta cavalli</i>	1	
POLLONERA (1903) <sup>3</sup>	Arctic Sea	<i>Tridonta cavalli</i>	622	
POPOV (1932) <sup>1</sup>	Russia, Arctic Sea, Laptev Sea	<i>Astarte borealis</i>	207	
POPOV (1932) <sup>1</sup>	Russia, Arctic Sea, Laptev Sea	<i>Astarte borealis</i>	206	
POPPE & GOTTO (1993)	Norway to British Isles, Baltic Sea	<i>Astarte borealis</i> var. <i>sibirica</i> <i>Astarte borealis</i> (SCHUMACHER, 1817)	90	pl. 15 (fig. 1a-c)
POSSELT (1895) <sup>3</sup>	Greenland	<i>Astarte borealis</i> var. <i>sericea</i>	71	pl. 1 (fig. 8-12)
PRENA et al. (1999)	Canada, Newfoundland, Grand Banks	<i>Astarte borealis</i>	tab. 7-9	
RASMUSSEN (1973)	Denmark, Kattegat, Isefjord	<i>Astarte borealis</i> (CHEMNITZ)	276-278	
REEVE (1855) <sup>3</sup>	Canada, Arctic Sea, Lancaster Sound	<i>Astarte richardsonii</i>	397	
RESHÖFT (1961)	Baltic Sea, Kiel Bay	<i>Astarte borealis</i>	74-75	
RICHLING (2000)	Russia, Arctic Sea, Laptev Sea	<i>Astarte borealis</i> (SCHUMACHER 1817)	53-54	fig. 58, 59
ROZYCKI (1995)	Norway, Spitzbergen	<i>Astarte borealis</i> SCHUMACHER, 1817	290-291	

Reference	Location	Nomenclature	Text	Figures
SALEUDDIN (1965)	Scotland and Denmark	<i>Astarte borealis</i>	229, 255	
SARS (1850) <sup>4</sup>	Norway	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	170	
SARS (1878)	Norway, Lofoten to Finmark	<i>Tridonta borealis</i> CHEMNITZ	50-51	pl. 5 (fig. 8)
SASAKI (1933) <sup>3</sup>	Japan Sea, Hokoaido, Sakhalin	<i>Astarte arctica</i>	15	pl. 3 (fig. 4)
SCHAEFER et al. (1985)	Baltic Sea, Kiel Bay	<i>Astarte borealis</i>	247	
SCHIOTTE (1989)	Greenland, Jorgen Bronlund Fjord	<i>Astarte borealis</i> (SCHUMACHER)	9, 18-19	fig. 14a,b
SCHLESCH (1937)	Baltic Sea	<i>Tridonta borealis</i> CHEMNITZ	56-57	
SCHULZ (1969a)	Baltic Sea, Mecklenburg Bight	<i>Astarte borealis</i> CHEMNITZ	25-26	
SCHULZ (1969b)	Baltic Sea, Mecklenburg Bight	<i>Astarte borealis</i> CHEMNITZ	50-51	
SCHUMACHER (1817)	partim Chemnitz (1784)	<i>Tridonta borealis</i>	147	pl. 17 (fig. 1)
SKARLATO (1955) <sup>4</sup>	Russia, Arctic Sea	<i>Astarte borealis</i> ("CHEMNITZ")	192	pl. 51 (fig. 8)
SKARLATO (1981)	Russia, Pacific, Chucky Sea, Okhotsk Sea, Japan Sea	<i>Astarte borealis borealis</i> SCHUMACHER, 1817	296	tot. 237-246
SKARLATO (1981)	Russia, Arctic Sea, Pacific, Spitzbergen, Greenland	<i>Astarte borealis placenta</i> (MÖRCH, 1869)	297	tot. 247-248
SKARLATO (1987)	Russia, White Sea	<i>Tridonta borealis</i> SCHUMACHER, 1817	237	145
SMITH (1881)	Arctic Seas of Russia, USA, Greenland, Norway	<i>Astarte borealis</i> (CHEMNITZ) SCHUMACHER	216	
SNELI & STEINNES (1975)	Norway, Jan Mayen	<i>Astarte borealis</i>	9	pl. 1 (fig. 1-3)
SOOT-RYEN (1939) <sup>4</sup>	Franz Josef Land	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	10	
SOOT-RYEN (1958) <sup>4</sup>	Greenland	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	19	
SOWERBY (1874)	North Europe	<i>Astarte lactea</i>		pl. 3 (fig. 18)
SOWERBY (1874)	North Europe	<i>Astarte producta</i>		pl. 3 (fig. 19)
SOWERBY (1874)	Northern Seas	<i>Astarte arctica</i>		pl. 3 (fig. 21)
TEBBLE (1966)	Northern North Sea	<i>Astarte borealis</i> (SCHUMACHER)	72-73	pl. 7 (fig. d)
THIELE (1928)	Northern Atlantic, Arctic Sea, Bering Sea	<i>Astarte borealis</i> (SCHUMACHER)	618	
THORARINSDOTTIR (1997)	Arctic Sea, Bennett Island, Bering Sea	<i>Astarte semisulcata</i> (Leach)	619	
VOIGT (1991)	Iceland, Eyjafjörður	<i>Astarte polaris</i> DALL	tab. 1	
	Baltic Sea, Mecklenburg Bight, Arkona Basin	<i>Astarte borealis</i> (SCHUMACHER, 1817)	Nov 01	
WACASEY (1975) <sup>4</sup>	USA, Beaufort Sea	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	27	
WAGNER (1977) <sup>4</sup>	USA, Beaufort Sea	<i>Astarte (Tridonta) borealis</i> (SCHUMACHER 1817)	2015	
WARZOCHA (1995)	Baltic Sea, Slupsk Furrow	<i>Astarte borealis</i>	230-233	
WERNER et al. (1974)	Baltic Sea, Kiel Bay	<i>Astarte borealis</i>	57	



Reference	Location	Nomenclature	Text	Figures
WIECHMANN (1869)	Baltic Sea, Mecklenburg Bight	<i>Astarte intermedia</i> (later see WIECHMANN (1869/70))	125	
WIECHMANN (1869/70)	Baltic Sea, Mecklenburg Bight	<i>Astarte arctica</i> GRAY (1821)= <i>corrugata</i> Brown (1827)	192	
WILLMANN (1989)	Baltic Sea, Northern North Sea	<i>Astarte borealis</i> (SCHUMACHER, 1817)	110	p.111
WOLLE & GAST (1988)	Baltic Sea, Mecklenburg Bight, Kadet trench	<i>Astarte borealis</i>	11	
WOOD (1828) <sup>3</sup>	North Sea	<i>Macraa veneriformis</i>	4	
ZETTLER et al. (2000)	Baltic Sea, Mecklenburg Bight	<i>Astarte borealis</i> SCHUMACHER, 1817	30-32	
ZIEGELMEIER (1957)	Baltic Sea, Northern North Sea	<i>Astarte borealis</i> CHEMNITZ	36	pl. 5 (fig. 5)

## Literature:

- ABBOTT, R.T. (1974): American Seashells. The marine Mollusca of the Atlantic and Pacific coasts of North America. -- 663pp. New York (Nam Nostrand Reinhold Company).
- AITKEN, A.E. & GILBERT, R. (1996): Marine Mollusca from Expedition Fiord, Western Axel Heiberg Island, Northwest Territories, Canada. -- *Arctic* **49**: 29-43, Calgary.
- ANDERSIN, A.-B., LASSIG, J., PARKKONEN L. & SANDLER, H. (1978): The decline of macrofauna in the deeper parts of the Baltic proper and the Gulf of Finland. -- *Kieler Meeresforschungen Sonderheft* **4**: 23-52, Kiel.
- ANTIPOVA, T.V. (1978): The production of the populations of some species of bivalves from the south-eastern Barents and the southern Kara Seas. -- *Okeanologija* **18**(4): 737-741, Moskva.
- ARNTZ, W.E., BRUNSWIG, D. & SARNTHEIN, M. (1976): Zonierung von Mollusken und Schill im Rinnensystem der Kieler Bucht. -- *Senckenbergiana maritima* **8**: 189-269, Frankfurt am Main.
- BAKER, F.C. (1919): Mollusca of the Crocker Land Expedition to Northwest Greenland and Grinnell Land. -- *Bulletin of the American Museum of Natural History* **41**: 479-517, New York.
- BECHER, C. (1886): Mollusken von Jan Mayen. -- *Die Österreichische Polarstation Jan Mayen, Beobachtungen und Ergebnisse* **3**: 67-82, Wien.
- BERNARD, F.R. (1979): Bivalve mollusks of the western Beaufort Sea. -- *Contributions in Science, Natural History Museum of Los Angeles County* **313**: 1-80, Los Angeles.
- BRODERIP, W.J. & SOWERBY, G.B. (1829): Observations on new or interesting Mollusca contained, for the most part, in the Museum of the Zoological Society. -- *Zoological Journal* **4**(15): 359-379, London.
- BROWN, T. (1827): Illustrations of the conchology of Great Britain and Ireland. -- 59pls. London (Lizars & Highley).
- BUCHNER, O. (1913): Einführung in die europäische Meeresmollusken-Fauna an der Hand ihrer Hauptrepräsentanten. -- *Schriften des Deutschen Lehrer-Vereins für Naturkunde* **29**: 1-166, Stuttgart.
- CHEMNITZ, J.H. (1784): Neues systematisches Conchylien-Cabinet. Vol. 7 -- 356pp. Nürnberg (Raspe).
- CHRISTENSEN, J.M. (1980): Seashells. Bivalves of the British and northern European seas. -- 124pp. Harmondsworth (Penguin Books Ltd.).
- CLARKE, A.H. (1960): Arctic archibenthal and abyssal mollusks from drifting station Alpha. -- *Breviora* **119**: 1-17, Cambridge.
- COAN, E.V., SCOTT, P.V. & BERNHARD, F.R. (2000): Bivalve seashells of western North America. Marine bivalve mollusks from Arctic to Baja California. -- 764pp. Santa Barbara (Museum of Natural History).
- CROSSE, H. (1877): Catalogue des mollusques qui vivent dans le detroit de Bering et dans les parties voisines de L'Océan Arctique. -- *Journal de Conchyliologie (Series 3)* **17**: 101-128, Paris
- DAHLE, S., DENISENKO, S.G. DENISENKO, N.V. & COCHRANE, S.J. (1998): Benthic fauna in the Pechora Sea. -- *Sarsia* **83**: 183-210, Bergen.
- DALL, W.H. (1874): Catalogue of shells from Bering Strait and the adjacent portions of the Arctic Ocean, with description of three new species. -- *Proceedings of the California Academy of Science*: 1-7, San Francisco.
- DALL, W.H. (1903): Synopsis of the family Astartidae, with a review of the American species. -- *Proceedings of the United States National Museum* **26**: 933-951, Washington, D.C.
- DALL, W.H. (1921): Summary of the marine shellbearing mollusks of the northwest coast of America, from San Diego, California, to the Polar Sea, mostly contained in the collection of the United States National Museum, with illustrations of hitherto unfigured species. -- *Bulletin of the Smithsonian Institution, United States National Museum* **112**: 1-217, Washington, D.C.
- DANCE, P. (1977): Das große Buch der Meeresmuscheln. Schnecken und Muscheln der Weltmeere. -- 304pp. Stuttgart (Eugen Ulmer).
- DEMEL, K. & MULICKI, Z. (1954): Quantitative investigations on the biological bottom productivity of the South Baltic. -- *Prace Morskiego Instytutu Rybackiego w Gdyni* **7**: 75-126, Gdynia.
- DENISENKO, S.G. (1996): On the identification of bivalves *Tridonta borealis* and *Nicania montagui* in the south-eastern Barents Sea (in Russian). -- *Ruthenica* **6**: p70, Moskva.
- DERJUGIN, K. (1928): Der Reliktensee Mogilnoje (Insel Kildin im Barents-Meer). -- *Fauna Arctica* **5**(2): 491-560, Jena.
- DERJUGIN, K. (1932): Echinoderms and mollusks of the Laptev Sea (in Russian). -- *Gosudarstvennyi Gidrobiologicheskij Institut, Issledovannija Morei SSSR* **15**: 147-156, Leningrad.
- DEUBEL, H. (2000): Struktureigenschaften und Nahrungsbedarf der Zoobenthosgemeinschaften im Bereich des Lomonossowrückens im Arktischen Ozean. -- *Berichte zur Polarforschung* **370**: 147pp, Bremerhaven.
- EVSEEV, G.A. & KIYASHKO, S.I. (1999): Isotopic-microstructural analysis of shells and temperature conditions of inhabitation in the bivalve mollusk *Tridonta borealis* in the Chukchi and Bering Seas and the Sea of Japan. -- *Russian Journal of Marine Biology* **25**: 120-122, New York.
- FEDER, H.M., FOSTER, N.R., JEWETT, S.C., WEINGARTNER T.J. & BAXTER, R. (1994): Mollusks in the Northeastern Chukchi Sea. -- *Arctic* **47**: 145-163, Calgary.
- FEDYAKOV, V.V. & NAUMOV, A.D. (1989): Marine Bivalvia of the Arctic Ocean. -- In: HERMAN, Y. (ed.): *The Arctic seas. Climatology, oceanography, geology, and biology*: 303-324. New York (Van Nostrand Reinhold Company).
- FILATOVA, Z.A. (1948): Klass dvustvortschatych molljuskov (Bivalvia, Lamellibranchiata). -- In: GAJEVSKAJA, N.S. (ed.): *Opredeliteli fauny i flory severnykh morei SSSR*. 405-446 + 669-677. Moskva (Sovjetskaja Nauka).
- FILATOVA, Z.A. (1957): General review of the bivalve molluscs of the northern seas of the SSSR (in Russian). --

- Trudy Instituta Okeanologii Akademiya Nauk SSSR **20**: 3-59, Moskva.
- FORBES, E. & HANLEY, S. (1853): A history of British Mollusca, and their shells. Vol. 1. -- 486pp. London (John van Voorst).
- FOSTER, N.R. (1991): Intertidal bivalves. A guide to the common marine bivalves of Alaska. -- 152pp. Fairbanks (University of Alaska Press).
- FRIELE, H. (1878): Jan Mayen Mollusca from the Norwegian North Atlantic Expedition in 1877. -- *Nytt Magazin for Naturvidenskaberne* **24**: 221-226, Oslo.
- GAGAEV, S.Y. (1989): The growth and production of populations of common molluscan species in the Chauna Bay of the East Siberian Sea (in Russian). -- *Okeanologija* **29**(4): 658-662, Moskva.
- GALKIN, Y.I. (1989): Mnoogoletnije ismenija donnoi fauny v perechodnykh biogeografičeskikh paionach na primere molluskov Barentseva morja. -- In: SKARLATO, O.A. & MATISHOV, G.G. (eds.): Schisn i sreda poljarnykh morei. 157-164. Leningrad (Nauka).
- GARDNER, J.P.A. & THOMPSON, R.J. (1999): High levels of shared allozyme polymorphism among strongly differentiated congeneric clams of the genus *Astarte* (Bivalvia: Mollusca). -- *Heredity* **82**: 89-99, Oxford.
- GERLACH, S.A. (2000): Checkliste der Fauna der Kieler Bucht und eine Bibliographie zur Biologie und Ökologie der Kieler Bucht. -- In: BUNDESANSTALT FÜR GEWÄSSERKUNDE (ed.): Die Biodiversität in der deutschen Nord- und Ostsee. Band 1.: 376pp. Bericht BfG-1247: Koblenz.
- GOLIKOV, A.N. & SKARLATO, O.A. (1967): Molluscs of Possiet Bay (Sea of Japan) and its ecology (in Russian). -- *Trudy Zoologičeskaja Instituta Akademija Nauk SSSR* **42**: 5-154, Moskva.
- GOLIKOV, A.N. & SKARLATO, O.A. (1977): Distribution and ecology of gastropod and bivalved molluscs of the Franz Joseph Land (in Russian). -- *Issledovanija fauny morej* **14**: 313-390, Leningrad.
- GOSELCK, F. (1985): Untersuchungen am Makrozoobenthos des Arkonabeckens (südliche Ostsee). -- *Fischerei-Forschung* **23**: 28-32, Rostock.
- GRISCHANKOV, A.V., NINBURG, E.A. & SCHKLJAREVITSCH, G.A. (2000). Makrozoobenthos Kandalakščskogo Zapovednika (Belomorskaja Akvatoria). -- Komissija Rossijskoy Akademii Nauk po Zapovednomu Delu. Institut Problem Ekologii i Evoljuzii „A.N. Severzova“ Flora i Fauna Zapovednikov **83**: 1-74, Moskva.
- GUKOV, A.Y. (1991): The bottom fauna of the Yanksi Gulf of the Laptev Sea (in Russian). -- *Okeanologija* **31**: 454-456, Moskva.
- GUKOV, A.Y. (1992): Bottom biocenoses of the Laptev Sea in the zone of continental runoff effect. -- *Gidrobiologičeskij Zhurnal* **28**(5): 3-6, Kiev.
- GULLIKSEN, B., HOLTE, B. & JAKOLA, K.J. (1985): The soft bottom fauna in Van Mijenfjord and Raudfjord, Svalbard. -- In: GRAY, J.S. & CHRISTIANSEN, M.E. (eds.): Marine biology of polar regions and effects of stress on marine organisms. 199-211. Chichester (Wiley).
- HAAS, F. (1926). Lamellibranchia. -- In: GRIMPE, G. & WAGLER, E. (eds.): Die Tierwelt der Nord- und Ostsee. 1-96. Leipzig (Akademische Verlagsgesellschaft).
- HÄGG, R. (1904): Mollusca und Brachiopoda gesammelt von der schwedisch zoologischen Polarexpedition nach Spitzbergen, dem nordöstlichen Grönland und Jan Mayen i.J. 1900. I. Lamellibranchia. -- *Arkiv för Zoologi* **2**: 1-66, Stockholm.
- HAGMEIER, A. (1930): Die Bodenfauna der Ostsee im April 1929 nebst einigen Vergleichen mit April 1925 und Juli 1926. -- *Berichte der Deutschen Wissenschaftlichen Kommission für Meeresforschung N.F.* **5**: 156-173, Hamburg.
- HIGO, S., CALLOMON, P. & GOTO, Y. (1999): Catalogue and bibliography of the marine shell-bearing mollusca of Japan. -- 749pp. Osaka (Elle Scientific Publications).
- HØPNER PETERSEN, G. (2001): Studies on some Arctic and Baltic *Astarte* species (Bivalvia, Mollusca). -- *Meddelelser om Grønland, Bioscience* **52**: 1-71, Copenhagen.
- HÜLSEMANN, K. (1962): Marine Pelecypoda from the north Alaskan coast. -- *The Veliger* **5**: 67-73, Berkeley.
- HUMPHREY, B., BOEHM, P.D., HAMILTON, M.C. & NORSTROM, R.J. (1987): The fate of chemically dispersed and untreated crude oil in Arctic benthic biota. -- *Arctic* **40**: 149-161, Calgary.
- JAECKEL, S. (1952): Zur Oekologie der Molluskenfauna in der westlichen Ostsee. -- *Schriften des Naturwissenschaftlichen Vereins für Schleswig-Holstein* **26**: 18-30, Kiel.
- JÄRVEKÜLG, A. (1979): Macrozoobenthos of the eastern part of the Baltic Sea (in Russian). -- 382pp. Tallin (Balgus).
- JAGNOW, B. & GOSELCK, F. (1987): Bestimmungsschlüssel für die Gehäuseschnecken und Muscheln der Ostsee. -- *Mitteilungen aus dem Zoologischen Museum in Berlin* **63**: 191-268, Berlin.
- JENSEN, A.S. (1912): Lamellibranchiata I. -- *Danish Ingolf-Expedition* **2**(5): 1-119, København.
- JENSEN, A.S. & SPÄRCK, R. (1934): Bloddyr. II: Saltvandsmuslinger. -- In: *Danmarks Fauna*, 208 pp. København (G.E.C. Gad Forlag).
- JENSEN, K.R. & KNUDSEN, J. (1995): Annotated checklist of recent marine molluscs of Danish waters. -- 73pp. Copenhagen (Zoological Museum).
- JOHANSEN, A.C. (1916): Om hydrografiske Faktorerers Indflydelse paa Molluskernes Udbredelse i Østersøen. -- *Forhandlinger ved det Skandinaviske Naturforskersmøde* **16**: 633-654, Christiania.
- JOHNSON, C.W. (1934): List of marine Mollusca of the Atlantic coast from Labrador to Texas. -- *Proceedings of the Boston Society of Natural History* **40**: 1-204, Boston.
- JØRGENSEN, L.L., PEARSON, T.H., ANISIMOVA, N.A., GULLIKSEN, B., DAHLE, S., DENISENKO, S.G. & MATISHOV, G.G. (1999): Environmental influence on benthic fauna associations of the Kara Sea (Arctic Russia). -- *Polar*

- Biology **22**: 395-416, Berlin.
- KOTAKA, T. (1962): Marine mollusca dredged by the „S.S. Hokuho-maru“ during 1959 in the Okhotsk Sea. -- Scientific Reports Tohoku University, Second Series (Geol.), Special Vol. **5**: 127-158, Tohoku.
- KÜHLMORGEN-HILLE, G. (1963): Quantitative Untersuchungen der Bodenfauna in der Kieler Bucht und ihre jahreszeitlichen Veränderungen. -- Kieler Meeresforschungen **19**: 42-66, Kiel.
- KUZNETSOV, A.P. (1961): Materials for the ecology of some common forms of benthos in the regions of eastern Kamchatka and the northern Kurile Islands (in Russian). -- Trudy Instituta Okeanologii Akademii Nauk SSSR **46**: 85-97, Moskva.
- KUZNETSOV, A.P. (1963): Bottom invertebrate fauna of the Kamchatka waters of the Pacific Ocean and its northern Kurile Islands (in Russian). -- 271pp. Moskva (Akademija Nauk SSSR, Institut Okeanologii).
- LAMY, E. (1919): Revision des Astartidae vivants du Museum d'Histoire Naturelle de Paris. -- Journal de Conchologie **64**(2): 70-119, Paris.
- LEACH, W.A. (1819): A list of invertebrates animals, discovered by H.M.S. Isabella, in a voyage to the Arctic regions. -- In: ROSS, J.A. (ed.): A voyage of discovery, made under the orders of the Admiralty in His Majesty's ships Isabella and Alexander, for the purpose of exploring Baffin's Bay, and inquiring into probability of a North-West Passage. 169-179. London (John Murray).
- LECHE, W. (1878): Öfersigt öfter de af svenska expeditionerna till Novaja Semlja och Jenissej 1875 och 1876 in samlade Hafsmollusker. -- Kongliga Svenska Vetenskaps-Akademiens Handlingar **16**: 1-86, Stockholm.
- LECHE, W. (1883): Öfersigt öfter de af Vega-Expeditionen insamlade Arktiska Hafsmollusker. I. Lamellibranchiata. -- Vega-Expeditionens Vetenskapelige lakttagelser **3**: 433-453, Stockholm.
- LENZ, H. (1875): Die wirbellosen Thiere der Travemünder Bucht. Theil I. -- Bericht der Commission zur Wissenschaftlichen Untersuchung der deutschen Meere in Kiel für die Jahre 1874 bis 1875, (4.-6. Jahrgang, Anhang 1) **3**: 1-24, Berlin.
- LENZ, H. (1882): Die wirbellosen Thiere der Travemünder Bucht. Teil II. -- Bericht der Commission zur Wissenschaftlichen Untersuchung der deutschen Meere in Kiel für die Jahre 1877 bis 1881 (7.-11. Jahrgang, I. Abtheilung) **4**: 169-180, Berlin.
- LÖWE, F.-K. (1963): Quantitative Benthosuntersuchungen in der Arkonasee. -- Mitteilungen aus dem Zoologischen Museum in Berlin **39**: 247-349, Berlin.
- LUBINSKY, J. (1980): Marine bivalve molluscs of the Canadian central and eastern Arctic: faunal composition and zoogeography. -- Canadian Bulletin of Fisheries and Aquatic Science **207**: 1-111, Ottawa.
- MACGINITIE, G.E. (1959): Marine Mollusca of Point Barrow, Alaska. -- Proceedings of the United States National Museum **109**: 59-208, Washington, D.C.
- MADSEN, F.J. (1949): Marine Bivalvia. -- The Zoology of Iceland **4**(No. 63): 1-116, Copenhagen.
- MARTENS, E. VON (1871): Die Astarte der Ostsee. -- Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg **24**: 71-72, Rostock.
- MATVEEVA, T.A. (1977): Osobennosty razmnoshenia dvustvortschatykh molljuskov cemejstva Astartidae. -- Issledovanija fauny morej **14**: 418-427, Leningrad.
- MELVILL, J.C. & STANDEN, R. (1899): Report on the Mollusca of the „Jackson-Harmsworth“ Expedition to Franz-Josef Land (1896-97), and of the „Andrew Coats“ Cruise (1898) to Kolguev etc. -- Memoirs and Proceedings of The Manchester Literary and Philosophical Society **44**(Part 1, No. 4): 1-14, Manchester.
- MESIATSEV, I. (1931): Mollusks of the Barents Sea (in Russian). -- Trudy Gosudarstvennogo Okeanograficeskogo Instituta **1**: 1-167, Moskva.
- MEYER, H.A. & MÖBIUS, K. (1872): Die Prosobranchia und Lamellibranchia der Kieler Bucht. -- In: Fauna der Kieler Bucht Bd. 2. 439pp. Leipzig (Wilhelm Engelmann Verlag).
- MIDDENDORF, A.T. (1849): Beiträge zu einer Malacozoologia Rossica. III. Aufzählung und Beschreibung der zur Meeresfauna Russlands gehörigen Zweischaler. -- Memoires de l'Academie Imperiale des Sciences de Saint-Petersbourg **6**: 517-610, St. Petersburg.
- MÖBIUS, K. (1873): IV. Die faunistischen Untersuchungen. A. Die wirbellosen Thiere der Ostsee. -- Jahresbericht der Commission zur Wissenschaftlichen Untersuchung der Deutschen Meere in Kiel **1**: 97-144, Berlin.
- MÖRCH, O.A.L. (1869): Catalogue des mollusques du Spitzberg recueillis par le Dr. H. Krøyer pendant le voyage de la corvette La Recherche en Juin 1838. -- Annales de Societe Malacologique de Belgique **4**: 7-32, Bruxelles.
- MORRIS, P.A. (1975): A field guide to shells of the Atlantic and Gulf coasts and the West Indies. -- 330pp. Boston (Houghton Mifflin Company).
- NAUMOV, A.D. & FEDYAKOV, V.V. (1990): Bivalvia of the Novosibirskie Islands region (in Russian). -- Issledovanija fauny morej **37**: 385-410, Leningrad.
- NORDSIECK, F. (1969): Die europäischen Meeresmuscheln (Bivalvia). Vom Eismeer bis Kapverden, Mittelmeer und Schwarzes Meer. -- 256pp. Stuttgart (Fischer).
- Ockelmann, W.K. 1958. The Zoology of East Greenland. Marine Lamellibranchiata. -- Meddelelser om Grønland **122**: 1-256, København.
- OERTZEN, J.-A. VON (1969): Erste Ergebnisse zur experimentellen Ökologie von postglazialen Relikten (Bivalvia) der Ostsee. -- Limnologica **7**: 129-137, Jena.
- OERTZEN, J.-A. VON (1972): Cycles and rates of reproduction of six Baltic Sea bivalves of different zoogeographical origin. -- Marine Biology **14**: 143-149, Berlin.
- OERTZEN, J.-A. VON (1973): Abiotic potency and physiological resistance of shallow and deep water bivalves. -- Oikos Supplementum **15**: 261-266, Copenhagen.

- OERTZEN, J.-A. VON & SCHULZ, S. (1973): Beitrag zur geographischen Verbreitung und ökologischen Existenz von Bivalviern der Ostsee. -- Beiträge zur Meereskunde **32**: 75-88, Berlin.
- OESCHGER, R. (1990): Long-term anaerobiosis in sublittoral marine invertebrates from the Western Baltic Sea: *Halicryptus spinulosus* (Priapulida), *Astarte borealis* and *Arctica islandica* (Bivalvia). -- Marine Ecology Progress Series **59**: 133-143, Oldendorf.
- OLDROYD, I.S. (1925): The marine shells of the west coast of North America. Vol. 1: Pelecypoda and Branchiopoda. -- Stanford University Publications, Geological Science **1**: 248pp, Stanford.
- PARAT, M. & DEVILLERS, C. (1936): Sur les associations animales des cotes de l'île Jan Mayen. Comptes Rendus hebdomadaires des Seances de l'Academie des Science **202**: 90-92, Paris.
- PEMPKOWIAK, J., SIKORA, A. & BIERNACKA, E. (1999): Speciation of heavy metals in marine sediments vs their bioaccumulation by mussels. -- Chemosphere **29**: 313-321, Oxford.
- PETRYASHOV, V.V., SIRENKO, B.I., GOLIKOV, A.A., NOVOZHILOV, A.V., RACHOR, E., PIEPENBURG, D. & SCHMID, M.K. (1999): Macrobenthos distribution in the Laptev Sea in relation to hydrology. -- In: KASSENS, H., BAUCH, H.A., DMITRENKO, I., EICKEN, H., HUBBERTEN, H.-W., MELLES, M., THIEDE, J. & TIMOKHOV, L. (eds.): Land-Ocean systems in the Siberian Arctic: Dynamics and history. 169-180. Berlin (Springer).
- PFEFFER, G. (1886): Übersicht der im Jahre 1881 vom Grafen Waldburg-Zeil im Karischen Meere gesammelten Mollusken. -- Abhandlungen des Naturwissenschaftlichen Vereins zu Hamburg **9**: 1-14, Hamburg.
- POLLONERA, C. (1901): Diagnosi preventive di alcune specie nuove di molluschi. -- Bollettino dei Musei di Zoologia ed Anatomia Comparata **16**: pl 1, Turin.
- POLLONERA, C. (1903): Molluschi. -- In: A.G.M.F.F. LUIGI, DUKE OF ABRUZZI (ed.): Osservazioni scientifiche eseguite durante la spedizione polare ... 1899-1900. 621-623. Milano (Hoepli).
- POPOV, A.N. (1932): Hydrobiological characteristics of the Laptev Sea (in Russian). -- Gosudarstvennyi Gidrobiologicheskij Institut, Issledovannija Morei SSSR **15**: 189-229, Leningrad.
- POPPE, G. & GOTO, Y. (1993): European seashells. Vol. II (Scaphopoda, Bivalvia, Cephalopoda). -- 221pp. Wiesbaden (Christa Hemmen).
- POSSELT, H.J. (1895): Østgrønlandske Mollusker. -- Meddelelser om Grønland **19**(2): 59-94, København.
- PRENA, J., SCHWINGHAMMER, P., ROWELL, T.W., GORDON, D.C., GILKINSON, K.D., VASS, W.P. & MCKEOWN, D.L. (1999): Experimental otter trawling on a sandy bottom ecosystem of the Grand Banks of Newfoundland: analysis of trawl bycatch and effects on epifauna. -- Marine Ecology Progress Series **181**: 107-124, Oldendorf.
- RASMUSSEN, E. (1973): Systematics and ecology of the Isefjord marine fauna (Denmark). -- Ophelia **11**: 1-507, Helsingør.
- REEVE, L.A. (1855): Account of the shells collected by Captain Sir Edward Belcher, C.B., north of Beechey Island. -- In: BELCHER, E. (ed.): The last of the Arctic voyages. Vol. 2. 392-399. London (Reeve).
- RESHÖFT, K. (1961): Untersuchungen zur zellulären osmotischen und thermischen Resistenz verschiedener Lamellibranchier der deutschen Küstengewässer. -- Kieler Meeresforschungen **17**: 65-84, Kiel.
- RICHLING, I. (2000): Arktische Bivalvia – eine taxonomische Bearbeitung auf Grundlage des Materials der Expeditionen Transdrift I und ARK IX/4 (1993) in das Laptevmeer. -- Schriften zur Malakozoologie **15**: 1-93, Cismar.
- ROZYCKI, O. (1995): Checklist of benthic molluscs of Gipsvika (Isfjorden, Svalbard). -- Polish Polar Research **16**: 289-291, Warszawa.
- SALEUDDIN, A.S.M. (1965): The mode of life and functional anatomy of *Astarte* spp. (Eulamellibranchia). -- Proceedings of the Malacological Society of London **36**: 229-257, London.
- SARS, G.O. (1878): Bidrag til kundskaben om Norges arktiske Fauna. I. Mollusca Regionis Arcticae Norvegiae. -- 466pp. Christiania (Brøgger).
- SARS, M. (1850): Beretning om en I sommeren 1849 Foretagen zoologisk Reix I Lofoten og Finmarken. -- Nytt Magazin for Naturvidenskaberne **6**: 121-211, Oslo.
- SASAKI, M. (1933): A list of lamellibranches from Hokkaido and Saghalin. -- Bulletin of the Faculty of Fisheries, Hokkaido University **3**: 7-21, Hakodate.
- SCHAEFER, R., TRUTSCHLER, K. & RUMOHR, H. (1985): Biometric studies on the bivalves *Astarte elliptica*, *A. borealis* and *A. montagui* in Kiel Bay (Western Baltic Sea). -- Helgoländer Meeresuntersuchungen **39**: 245-253, Hamburg.
- SCHIÖTTE, T. (1989): Marine Mollusca from Jørgen Brønlund Fjord, North Greenland, including the description of *Diaphana vedelsbyae* n. sp. -- Meddelelser om Grønland, Bioscience **28**: 1-24, Copenhagen.
- SCHLESCH, H. (1937): Bemerkungen über die Verbreitung der Süßwasser- und Meeresmollusken im östlichen Ostseegebiete. -- Sitzungsberichte der Naturforschenden Gesellschaft der Universität Jurjew **43**: 37-64, Dorpat.
- SCHULZ, S. (1969a): Benthos und Sediment in der Mecklenburger Bucht. -- Beiträge zur Meereskunde **24/25**: 15-55, Berlin.
- SCHULZ, S. (1969b): Das Makrozoobenthos der südlichen Beltsee (Mecklenburger Bucht und angrenzende Gebiete). -- Beiträge zur Meereskunde **26**: 21-46, Berlin.
- SCHUMACHER, C.F. (1817): Essai d'un nouveau systeme des habitations des vers testaces. -- 287pp. Copenhague (Schultz).
- SKARLATO, O.A. (1955): Class of bivalve molluscs – Bivalvia (Lamellibranchiata, Pelecypoda) (in Russian). -- In: PAVLOVSKII, E.N. (ed.): Atlas of the invertebrates of the eastern seas of the USSR (in Russian). 185-197. Moskva (Akademija Nauk SSSR, Zoologiceskij Institut).
- SKARLATO, O.A. (1981): Dvustvortschatye molljuskij umerennyh schirot zapadnoj tschasti Tichogo Okeana. --

- Akademija Nauk SSSR, Zoologiceskij Institut. Opredeliteli po faune SSSR **126**: 479pp, Moskva.
- SKARLATO, O.A. (1987): Molljuskj Belogo Morja. -- Akademija Nauk SSSR, Zoologiceskij Institut, Opredeliteli po faune SSSR **151**: 328pp, Moskva.
- SMITH, E.A. (1881): Observations on the genus *Astarte*, with a list of the known recent species. -- *Journal of Conchology* **3**: 196-232, London.
- SNELI, J.-A. & STEINNES, A. (1975): Marine Mollusca of Jan Mayen Island. -- *Astarte* **8**: 7-16, Tromsø.
- SOOT-RYEN, T. (1939): Some pelecypods from Franz-Josef Land, Victoriaøya and Hopen collected on the Norwegian Scientific Expedition 1930. -- *Meddelelser om Norges Svalbard- og Ishavs-Undersøkelser* **43**: 1-21, Oslo.
- SOOT-RYEN, T. (1958): Polecypods from East-Greenland. -- *Skrifter om Norsk Polarinstittutt* **113**: 1-32, Oslo.
- SOWERBY, G.B. (1874): Monograph of the genus *Astarte*. -- In: SOWERBY, G.B. (ed.): *Conchologia iconica: or, illustrations of the shells of molluscous animals*, 3 pls. London (Reeve & Co.).
- TEBBLE, N. (1966): *British bivalve seashells. A handbook for identification*. -- 212pp. London (The British Museum (Natural History)).
- THIELE, J. (1928): Arktische Loricaten, Gastropoden, Scaphopoden und Bivalven. -- *Fauna Arctica* **5**(2): 561-632, Jena.
- THORARINSDOTTIR, G. (1997): Distribution and abundance of juvenile ocean quahog (*Arctica islandica*) in Eyjafjörður North Iceland. -- International Council for the Exploration of the Sea (ICES), Council Meeting 1997/BB 17: 1-5, Copenhagen.
- VOIGT, A. (1991): *Astarte*-Arten in ihrer Verbreitung und Altersstruktur in der Lübecker Bucht, Mecklenburger Bucht und Arkona-See. -- Diplom Universität Rostock: 48pp. Rostock.
- WACASEY, J.W. (1975): Biological productivity of the southern Beaufort Sea: Zoobenthic studies. -- Canada Department of Environment Beaufort Sea Project, Technical Report **12B**: 1-39, Ottawa.
- WAGNER, F.J.E. (1977): Recent mollusc distribution patterns and palaeobathymetry, southeastern Beaufort Sea. -- *Canadian Journal of Earth Sciences* **14**: 2013-2028, Ottawa.
- WARZOCHA, J. 1995. Classification and structure of macrofaunal communities in the southern Baltic. -- *Archive of Fishery and Marine Research* **42**: 225-237, Stuttgart.
- WERNER, F., ARNTZ, W.E. & TAUCHGRUPPE KIEL (1974): Sedimentologie und Ökologie eines ruhenden Riesenrippelfeldes. -- *Meyniana* **26**: 39-62, Kiel.
- WIECHMANN, C.M. (1869): Mecklenburgische Mollusken. -- *Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg* **22**: 125-126, Rostock.
- WIECHMANN, C.M. (1869/70): Die *Astarte* der Ostsee. -- *Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg* **23**: 192-194, Rostock.
- WILLMANN, R. (1989): Muscheln und Schnecken der Nord- und Ostsee. -- 310pp. Melsungen (Neumann-Neudamm).
- WÖLLE, C. & GAST, S. (1988): Qualitative und quantitative Untersuchungen des Makrozoobenthos der Kadet-Rinne (Westliche Ostsee). -- Diplom Universität Rostock: 26pp, Rostock.
- WOOD, W. (1828): *Supplement to the index Testaceologicus; or a catalogue of shells, British and foreign*. -- 59pp. London (Wood).
- ZETTLER, M.L., BÖNSCH, R. & GOSSELCK, F. (2000): Verbreitung des Makrozoobenthos in der Mecklenburger Bucht (südliche Ostsee) – rezent und im historischen Vergleich. -- *Meereswissenschaftliche Berichte* **42**: 144pp, Rostock.
- ZIEGELMEIER, E. (1957): Die Muscheln (Bivalvia) der deutschen Meeresgebiete. -- *Helgoländer wissenschaftliche Meeresuntersuchungen* **6**: 1-64, Hamburg.

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