



***Macoma* Leach, 1819 (Mollusca: Bivalvia: Tellinidae): the unavailability of *Limecola* Brown, 1844, and *Limicola* Leach, 1852**

JAN KRESTEN NIELSEN

Department of Geological Engineering, Süleyman Demirel University, Isparta, Turkey.

✉ taphofacies@hotmail.com; <https://orcid.org/0000-0003-0637-3492>

Tellinidae Blainville, 1814, is a diverse family of marine to brackish-water clams which contains, among others, the large genus *Macoma* Leach, 1819 (here: 1819a), within the subfamily Macominae Olsson, 1961. The genus' taxonomy, systematics, ecology and palaeontology has been studied for decades (e.g. Coan 1971: 19; Meijer 1993: 297; Coan & Scott 1997: 15; Hummel *et al.* 2001: 189; Huber *et al.* 2015: 742) and several benthic communities are named after it, such as the circumpolar *Macoma calcarea* community and the boreal *Macoma balthica* community (Thorson 1957: 505). Genetic studies have also been conducted by Meehan (1985: 69), Meehan *et al.* (1989: 235), Väinölä (2003: 935), Nikula *et al.* (2007: 928), Saunier *et al.* (2014: 1), Layton *et al.* (2016: 282), and Yurchenko *et al.* (2018: 58). Nevertheless, the nomenclature and classification of *Macoma* and its subordinate taxa remain unresolved. The present study provides a brief survey of the nomenclatorial history of the genus and type species; it also addresses the usage of *Limicola* Leach, 1852, *Macroma* as of Gray (1825) and others, and of *Limecola*, which has been recently revived as a valid genus by Huber *et al.* (2015: 290, 291, 737).

Macoma and *M. tenera*: The generic name *Macoma* was published four times during 1819, firstly in the first edition of the book “A Voyage of Discovery...” together with a single species *M. tenera* (Leach, 1819: lxii) (here: 1819a) which thus becomes the type species by monotypy. The 1st edition is authored by Ross. The genus and species in question, however, are described in Appendix II titled “List of invertebrate animals ...; corrected by W. E. Leach” where he figures as the author of the genus *Macoma* but not specifically of *tenera*, in contrast to other species which he marked as “(new species)”.

Appendix IV by Leach (1819b: 175) of the 2nd edition of the book essentially repeats the text of the 1st edition. Because its title reads “Descriptions of the new species of animals ... by Dr. W. E. Leach” (1819b: 169), however, the specific name *tenera* as well can be assumed to be authored by Leach (*cf.* Article 50.1.1 of the ICZN 1999: 52).

The date of the original publication remains problematic, though, because the cover pages of both the 1st and 2nd edition only state the year 1819 lacking other hints in these volumes towards the month and day of their publication. But Leach (1819c: 462) published another version of his “Descriptions ...” in the French *Journal de Physique, de Chimie et d'Histoire Naturelle*, vol. 88, in June 1819 and in which he referred to the 1st edition of the “Voyages ...” (Leach 1819c: 463; taxa described on p. 465) suggesting that the date of publication of the 1st edition must be no later than the end of June 1819. Lending further support to this interpretation, a footnote in Leach (1819d: 201) indicates that the 2nd edition was published contemporaneously or before end of September 1819. Based on this indirect evidence and Article 21.3.1 of the code (ICZN 1999: 22), it seems that the date of publication for *Macoma* and *M. tenera* must be deemed to be June 30, 1819. Concordantly with this interpretation, most later publications coincide with *Macoma* and *M. tenera* Leach, 1819. The type species, however, is usually considered a junior synonym of *Tellina calcarea* Gmelin, 1791 (e.g. Carpenter 1857: 221; Dall 1900: 299; Keen 1969: N623; Coan 1971: 19; Coan *et al.* 2000: 408).

Macroma: The combination *Macroma* [*sic*] *tenera* Leach appeared in Gray (1825: 136; 1847: 186), Forbes & Hanley (1848–1853: 307) and Middendorff (1851: 257). This combination was also mentioned by Jeffreys (1863: 378, 390) although he was aware that Mörch (1853: 11) spelled the generic name as *Macoma*. Gray's (1825) *Macroma* was regarded an inadvertent spelling error (lapsus calami) by Scudder (1882: 198), Neave (1940: 14) and Vokes (1980:145).

Limecola: This name has been variably attributed to Brown (1844) or Leach in Brown (1844) in the literature. But the name was never published by Leach himself so that Brown (1844) has to be regarded as the author (*cf.* Article 50.1.1, ICZN 1999: 52). However, Brown (1844: 101, pl. xl, fig. 14) neither adopted *Limecola* as a valid taxon name nor treated it as a senior homonym, but rather referred to “*Limecola solidula*, Leach, MSS., p. 7” as a junior synonym of *Tellina solidula* sensu Brown (1827: pl. xvi, fig. 14) (Brown 1844: 101).

According to present knowledge, *Limecola* was never considered a valid name before 1961, meaning that the requirements for availability established in Article 11.6.1 (ICZN 1999: 11) are not met. Thus, Vokes (1967: 284; 1980: 145) found *Limecola* to be invalid nomenclatorially, whereas Keen (1969: N623) and Higo *et al.* (1999: 488) assumed that *Limecola* is a junior synonym of *Macoma*. Contrary to these views, Huber *et al.* (2015: 737) claimed *Limecola* to be a valid genus name.

Limicola: This genus name was introduced by Leach (1852: 296) to cover the British *Limicola carnaria* [*sic*] referring to *Tellina carnaria* sensu Pennant (1777), which he thought was not identical with *T. carnaria* Linnaeus, 1758 (p. 676). Later, Dall (1900: 292) deemed the generic name *Limicola* Leach, 1852, not Koch, 1816, as synonymous with the subgenus *Macoma* (*Macoma*) Leach, 1819, with *M. tenera* Leach (= *T. calcarea* Gmelin, 1791) as the type. Vokes (1967: 284; 1980: 143) stated that *Limicola* Leach, 1852, and *Limicola* Gray, 1857, are both invalid as they are junior homonyms of *Limicola* Koch, 1816, Class Aves.

Tellina vs. *Macoma* vs. *Limecola*: The original combination of the Baltic *Tellina balthica* Linnaeus, 1758 (p. 677), is a senior synonym of *T. carnaria* sensu Pennant, 1777 (p. 88, pl. xlix, fig. 32, non Linnaeus, 1758, = *Strigilla*), *T. rubra* Costa, 1778 (p. 211, pl. xii, fig. 4), and *T. solidula* Pulteney, 1799 (p. 29) (*cf.* Montagu 1803: 63; Brown 1844: 101; Forbes & Hanley 1848–1853: 304; Römer 1871: 15, 16; Oliver & Morgenroth 2018: 299).

The combination *Macoma balthica* (Linnaeus, 1758) (*balthica* being a lapsus calami) has been widely used until today (*e.g.* Mörch 1853:12; Dall 1900: 298; Jensen & Spärck 1934: 128; Thorson 1957: 505; Rasmussen 1973: 307; Tebble 1976: 149, pl. 9, figs. f, g; Meijer 1993: 297; Jensen & Knudsen 1995: 45; Kafanov *et al.* 1997: 298; Hummel *et al.* 2001: 189; Väinölä 2003: 935; Genelt-Yanovskiy *et al.* 2018: 13). Another combination is *Macoma* (*Macoma* s.l.) *balthica* (Linnaeus, 1758) used by Coan & Scott (1997: 16).

In recent years, however, some authors have begun to use the combination *Limecola balthica* (Linnaeus, 1758) as the presumed valid name for the Baltic tellinid. That usage, which probably began with Huber *et al.* (2015: 737) (see above), now appears in more than 25 publications by at least 10 authors (*e.g.* Beukema *et al.* 2017: 1; Pante *et al.* 2017: 226; Oliver & Morgenroth 2018: 299; Yurchenko *et al.* 2018: 58). Since 2015, the lack of consensus is reflected by the instability of generic and subgeneric naming such as “*Macoma (Limecola) balthica*” by Ducrotoy *et al.* (2019: 584) and “*Limecola (Macoma) balthica*” by Beukema *et al.* (2017: 1), Ehrnsten *et al.* (2019: 36) and Thornton *et al.* (2019: 708).

As mentioned before, Huber *et al.* (2015: 737) regarded *Limecola* a distinct genus from *Macoma*. Yet, they placed the combination *Limecola balthica* in a *Macoma*-group including *Macoma* and other genera, without recognizing any subgenera or subspecies. However, the level of subspecies has been found useful in order to explain genetic lineages and hybridization of the North Atlantic *M. balthica* complex, commonly in relation to trans-Arctic invasions from the Pacific (*e.g.* Meehan 1985: 69; Väinölä 2003: 935; Nikula *et al.* 2007: 928; Saunier *et al.* 2014: 1; Layton *et al.* 2016: 282). In contrast, placing *M. balthica* and *M. calcarea* into different genera is unproven genetically. It still remains uncertain how much the two species differ from each other and at which level the separation between them should be implemented in systematic classification.

Macoma s.s. vs. *Macoma* s.l.: Concerning the distinction between *Macoma balthica* and *M. calcarea*, Huber *et al.* (2015: 737) emphasized the characteristics of the periostracum, shell color, and pallial sinus. However, thickness of the periostracum is related to water temperature (Olsson 1961: 410) serving as protection of the calcareous part of the shell against higher corrosion in cold waters (Cox 1969: N74) and shell color is very variable in *M. balthica* (Tebble 1976: 149; Kafanov *et al.* 1997: table 3; Coan *et al.* 2000: 417). Both characteristics are thus inadequate for a generic distinction. The pallial sinus was used by Coan *et al.* (2000: 409, 417) for a sort of “supraspecific” distinction between *Macoma* (*Macoma* s.s.) *calcarea* and *Macoma* s.l. *balthica* [*sic*]. The former is characterized by sinuses detached from the pallial line, being deep in the left valve and moderately deep in the right valve. In *M. balthica*, the sinus is deep in both valves and not detached (Coan *et al.* 2000: 409, 417).

According to Marinho & Arruda (2021: 1, table 4), pallial sinuses and adductor muscle scars might be useful to distinguish some species of the subfamily Macominae, whereas the shell shape and size are related to life habits. In contrast, Kafanov *et al.* (1997: 298) concluded that the pallial lines and sinuses as well as the muscle scars are insignificant to separate *M. balthica* and *M. calcarea*, due to their adaptive nature. It thus appears that only molecular phylogeny can solve this stalemate, which could then also address the potential polyphyly of the subfamily Macominae (*cf.* Coan *et al.* 2000: 398, 408).

Acknowledgements

Kathe Jensen (Natural History Museum of Denmark, University of Copenhagen) is thanked for valuable discussion. Nikolaus Malchus (Institut Català de Paleontologia Miquel Crusafont, Bellaterra), Simon Schneider (CASP, Cambridge) and Barbara Studencka (Polish Academy of Sciences, Warsaw) provided constructive critical reviews.

References

- Beukema, J.J., Dekker, R. & Drent, J. (2017) Dynamics of a *Limecola* (*Macoma*) *balthica* population in a tidal flat area in the western Wadden Sea: effects of declining survival and recruitment. *Helgoland Marine Research*, 71 (18), 1–12.
<https://doi.org/10.1186/s10152-017-0498-7>
- Blainville, M.H.[H.-M.D.] de (1814) Mémoire sur la classification méthodique des animaux mollusques, et établissement d'une nouvelle considération pour y parvenir. *Bulletin des Sciences, par la Société Philomatique de Paris*, 1814, 175–180. [in French]
- Brown, T. (1827) *Illustrations of the conchology of Great Britain and Ireland*. W.H. Lizars and D. Lizars, Edinburgh, S. Highley, London, [2] + v pp., 52 pls.
<https://doi.org/10.5962/bhl.title.62824>
- Brown, T. (1844) *Illustrations of the recent conchology of Great Britain and Ireland with the description and localities of all the species, marine, land, and fresh water. 2nd Edition, Greatly Enlarged*. Smith, Elder & Co., London, xiii + 144 pp., 62 pls.
<https://doi.org/10.5962/bhl.title.10336>
- Carpenter, P.P. (1857) Report on the present state of our knowledge with regards to the Mollusca of the West coast of North America. *Report of the British Association for the Advancement of Science*, 1856, 1–4 (list of plates) + 159–368, pls. VI–IX.
<https://doi.org/10.5962/bhl.title.60613>
- Coan, E.V. (1971) The Northwest American Tellinidae. *The Veliger*, 14 (Supplement), 1–63.
- Coan, E.V. & Scott, P.H. (1997) Checklist of the marine bivalves of the Northeastern Pacific Ocean. *Santa Barbara Museum of Natural History, Contributions in Science*, 1, 1–28.
- Coan, E.V., Scott, P.V. & Bernard, F.R. (2000) Bivalve seashells of western North America. Marine bivalve mollusks from Arctic Alaska to Baja California. *Santa Barbara Museum of Natural History Monographs, Studies in Biodiversity*, 2, i–viii + 1–764.
- Cox, L.R. (1969) General features of Bivalvia. In: Moore, R.C. (Ed.), *Treatise on invertebrate paleontology. Part N. Vol. 1. Mollusca 6. Bivalvia*. The Geological Society of America and the University of Kansas, Lawrence, pp. N2–N129.
- Costa, E.M. da (1778) *Historia naturalis testaceorum Britanniae, or, the British conchology; containing the descriptions and other particulars of natural history of the shells of Great Britain and Ireland*. Millan, B. White, Elmsley, and Robson, London, xii + [2] + 254 + vii + [1] pp., XVII pls.
- Dall, W.H. (1900) Synopsis of the family Tellinidae and of the North American species. *Proceedings of the United States National Museum*, 23 (1210), 285–326, 3 pls.
<https://doi.org/10.5479/si.00963801.23-1210.285>
- Ducrottoy, J.-P., Elliott, M., Cutts, N.D., Franco, A., Little, S., Mazik, K. & Wilkinson, M. (2019) Temperate estuaries: their ecology under future environmental changes. In: Wolanski, E., Day, J.W., Elliott, M. & Ramachandran, R. (Eds.), *Coasts and estuaries. The future*. Elsevier, Amsterdam, pp. 577–594.
<https://doi.org/10.1016/B978-0-12-814003-1.00033-2>
- Ehrnsten, E., Norkko, A., Timmermann, K. & Gustafsson, B.G. (2019) Benthic-pelagic coupling in coastal seas – Modelling macrofaunal biomass and carbon processing in response to organic matter supply. *Journal of Marine Systems*, 196, 36–47.
<https://doi.org/10.1016/j.jmarsys.2019.04.003>
- Forbes, E. & Hanley, S. (1848-1853) *A history of British Mollusca and their shells. Vols. 1 – 4*. John van Voorst, London, lxxx + 486 pp., [64] pls. (Vol. I), viii + 557 pp. (Vol. II), x + 616 pp. (Vol. III), vi + 301 pp., 133 pls. (Vol. IV).
- Genelt-Yanovskiy, E., Aristov, D., Poloskin, A. & Nazarova, S. (2018) Trends and drivers of *Macoma balthica* L. dynamics in Kandalaksha Bay, the White Sea. *Journal of the Marine Biological Association of the United Kingdom*, 98 (1), 13–24.
<https://doi.org/10.1017/S0025315417001473>
- Gmelin, J.F. (1791) Classis VI. Vermes. In: Gmelin, J.F. (Ed.), *Caroli a Linnaei Systema Naturae per regna tria naturae*,

- secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Tomus I. Pars VI. Editio decima tertia, aucta, reformata.* G.E. Beer, Lipsiae, pp. 3021–3910.
<https://doi.org/10.5962/bhl.title.36932>
- Gray, J.E. (1825) A list and description of some species of shells not taken notice of by Lamarck. *The Annals of Philosophy*, New Series, IX (II), 134–140.
- Gray, J.E. (1847) A list of genera of recent Mollusca, their synonyma and types. *Proceedings of the Zoological Society of London*, 15, 129–219.
- Gray, M.E. (1857) *Figures of molluscos animals, selected from various authors. Etched for the use of students. Vol. V. Conchifera and Brachiopoda.* Longman, Brown, Green, Longmans, and Roberts, London, pp. 1–13 (Figures of molluscos animals) + 15–49 (Systematic arrangement of the figures, continued from vol. IV), pls. 313–381.
<https://doi.org/10.5962/t.171558>
- Higo, S., Callomon, P. & Goto, Y. (1999) *Catalogue and bibliography of the marine shell-bearing Mollusca of Japan. Gastropoda, Bivalvia, Polyplacophora, Scaphopoda.* Elle Scientific Publications, Osaka, 749 pp.
- Huber, M., Langleit, A. & Kreipl, K. (2015) Tellinidae. In: Huber, M. (Ed.), *Compendium of bivalves 2. A full-color guide to the remaining seven families. A systematic listing of 8'500 bivalve species and 10'500 synonyms.* ConchBooks, Harxheim, pp. 564–745, CD-ROM.
- Hummel, H., Amiard, J.C., Amiard-Triquet, C., Bogaards, R.H., Löhr, A.J. & Coutaud, G. (2001) A comparison of the ecophysiological response on copper in Baltic clams from different populations in Europe. *Vie & Milieu-Life & Environment*, 51 (4), 189–194.
- ICZN [International Commission on Zoological Nomenclature] (1999) *International Code of Zoological Nomenclature. Fourth edition.* The International Trust for Zoological Nomenclature, London, xxix + 306 pp.
<https://doi.org/10.5962/bhl.title.50608>
- Jeffreys, J.G. (1863) *British conchology, or an account of the Mollusca which now inhabit the British Isles and the surrounding seas. Volume II. Marine shells, comprising the Brachiopoda, and Conchifera from the family of Anomiidae to that of Mactridae.* John van Voorst, London, xiv + 465 pp., viii pls.
<https://doi.org/10.5962/bhl.title.4110>
- Jensen, K.R. & Knudsen, J. (1995) *Annotated checklist of recent marine molluscs of Danish waters.* H.C. Ørsted Tryk, Copenhagen, 73 pp.
- Jensen, A.S. & Spärck, R. (1934) Bløddyr II. Saltvandmuslinger. G.E.C. Gads Forlag, København, *Danmarks Fauna*, 40, 1–208. [in Danish]
- Kafanov, A.I., Danilin, D.D. & Moshchenko, A.V. (1997) Morphometrical analysis of taxonomical characteristics of bivalve mollusks of the genus *Macoma*. *Russian Journal of Marine Biology*, 23 (6), 298–307.
- Keen, A.M. (1969) Superfamily Tellinacea de Blainville, 1814. In: Moore, R.C. (Ed.), *Treatise on invertebrate paleontology. Part N. Vol. 2. Mollusca 6. Bivalvia.* The Geological Society of America and the University of Kansas, Lawrence, pp. N613–N643.
- Koch, K.L. (1816) *Die Säugthiere und Vögel Baierns.* Steinische Buchhandlung, Nürnberg, xlvii + 435 pp., 13 pls. [in German]
<https://doi.org/10.5962/bhl.title.50218>
- Layton, K.K.S., Martel, A.L. & Hebert, P.D.N. (2016) Geographic patterns of genetic diversity in two species complexes of Canadian marine bivalves. *Journal of Molluscan Studies*, 82, 282–291.
<https://doi.org/10.1093/mollus/eyv056>
- Leach, W.E. (1819a) A list of invertebrate animals, discovered by His Majesty's ship *Isabella*, in a voyage to the Arctic regions; corrected by W. E. Leach. In: Ross, J., *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 the probability of a North-West Passage. Appendix II.* John Murray, London, pp. lxi–lxiv.
- Leach, W.E. (1819b) Descriptions of the new species of animals, discovered by His Majesty's ship *Isabella*, in a voyage to the Arctic regions; by Dr. W. E. Leach. In: Ross, J., *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 enquiring into the probability of a North-West Passage. Vol. II. 2nd Edition. Appendix IV.* Longman, Hurst, Rees, Orme, and Brown, London, pp. 169–179.
- Leach, W.E. (1819c) Descriptions des nouvelles espèces d'Animaux découvertes par le vaisseau *Isabelle* dans un voyage au pôle boréal. *Journal de Physique, de Chimie et d'Histoire Naturelle*, 88, 462–467. [June]
- Leach, W.E. (1819d) Descriptions of the new species of animals discovered by his Majesty's Ship *Isabella*, in a voyage to the Arctic regions. *Annals of Philosophy*, 14 (3), 201–206. [September]
- Leach, W.E. (1852) *A synopsis of the Mollusca of Great Britain, arranged according to their natural affinities and anatomical structure.* John van Voorst, London, xvi + 376 pp., 13 pls.
<https://doi.org/10.5962/bhl.title.13170>
- Linnaeus, C. (1758) *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Tom. I. Editio decima, reformata.* Laurentii Salvii, Holmiae, [4] + 824 pp.
<https://doi.org/10.5962/bhl.title.542>
- Marinho, T.A. & Arruda, E.P. (2021) Shell-specific differentiation: how geometric morphometrics can add to knowledge of Macominae species (Tellinidae, Bivalvia). *Marine Biodiversity*, 51 (40), 1–14.

<https://doi.org/10.1007/s12526-021-01176-x>

- Meehan, B.W. (1985) Genetic comparison of *Macoma balthica* (Bivalvia: Tellinidae) from the eastern and western North Atlantic Ocean. *Marine Ecology Progress Series*, 22, 69–76.
<https://doi.org/10.3354/meps022069>
- Meehan, B.W., Carlton, J.T. & Wenne, R. (1989) Genetic affinities of the bivalve *Macoma balthica* from the Pacific coast of North America: evidence for recent introduction and historical distribution. *Marine Biology*, 102, 235–241.
<https://doi.org/10.1007/BF00428285>
- Meijer, T. (1993) Stratigraphical notes on *Macoma* (Bivalvia) in the southern part of the North Sea Basin and some remarks on the arrival of Pacific species. *Scripta Geologica, Special Issue*, 2, 297–312.
- Middendorff, A.T. von (1851) Meeres-Mollusken. In: Middendorff, A.T. von (Ed.), *Reise in den äussersten Norden und Osten Sibiriens. Band II. Zoologie. Theil I.* Buchdruckerei der Kaiserlichen Akademie der Wissenschaften, St. Petersburg, pp. 163–464. [in German]
- Montagu, G. (1803) *Testacea Britannica or natural history of British shells, marine, land, and fresh-water; including the most minute: systematically arranged and embellished with figures. Vols. 1 & 2.* J.S. Hollis, Romsey, 606 pp. xvi pls. [pp. i–xxxvii + 1–291, pp. 293–606, xvi pls.]
<https://doi.org/10.5962/bhl.title.33927>
- Mörch, O.A.L. (1853) *Catalogus conchyliorum quae reliquit D. Alphonso d'Aguirra & Gadea Comes de Yoldi, regis daniae cubiculariorum princeps, ordinis dannebrogici in prima classe & ordinis caroli tertii eques. Fasciculus secundus. Acephala. Annulata cirripedia. Echinodermata. Ludovici Kleinii, Hafniae, [2] + 74 + [2] pp.*
<https://doi.org/10.5962/bhl.title.12921>
- Neave, S.A. (Ed.) (1940) *Nomenclator zoologicus. A list of the names of genera and subgenera in zoology from the tenth edition of Linnaeus 1758 to the end of 1935. Vol. III M–P.* The Zoological Society of London, London, 1065 pp.
<https://doi.org/10.2307/1439031>
- Nikula, R., Strelkov, P. & Väinölä, R. (2007) Diversity and trans-arctic invasion history of mitochondrial lineages in the North Atlantic *Macoma balthica* complex (Bivalvia: Tellinidae). *Evolution*, 61 (4), 928–941.
<https://doi.org/10.1111/j.1558-5646.2007.00066.x>
- Oliver, P.G. & Morgenroth, H. (2018) Additional type and other notable specimens of Mollusca from the Montagu collection in the Royal Albert Memorial Museum & Art Gallery, Exeter. *Zoosystematics and Evolution*, 94 (2), 281–303.
<https://doi.org/10.3897/zse.94.24776>
- Olsson, A.A. (1961) *Mollusks of the tropical eastern Pacific, particularly from the southern half of the Panamic-Pacific faunal province (Panama to Peru). Panamic-Pacific Pelecypoda.* Paleontological Research Institution, Ithaca, New York, 574 pp, 86 pls.
<https://doi.org/10.5962/bhl.title.6853>
- Pante, E., Poitrimol, C., Saunier, A., Becquet, V. & Garcia, P. (2017) Putative sex-linked heteroplasmy in the tellinid bivalve *Limecola balthica* (Linnaeus, 1758). *Journal of Molluscan Studies*, 83 (2), 226–228.
<https://doi.org/10.1093/mollus/eyw038>
- Pennant, T. (1777) *British zoology. Vol. IV. Crustacea. Mollusca. Testacea.* Benjamin White, London, viii + 154 pp., 93 pls.
<https://doi.org/10.5962/bhl.title.62481>
- Pulteney, R. (1799) *Catalogues of the birds, shells, and some of the more rare plants, of Dorsetshire. From the new and enlarged edition of Mr. Hutchins's history of that county.* J. Nichols, London, [1] + 92 pp.
- Römer, E. (1871) Die Tellinen der XII. Auflage des Systema naturae von Linné. In: *Programm der höheren Bürgerschule zu Cassel für das Schuljahr 1870|71.* Friedr. Scheel, Cassel, pp. 1–18. [in German]
<https://doi.org/10.5962/bhl.title.12144>
- Rasmussen, E. (1973) Systematics and ecology of the Isefjord marine fauna (Denmark): With a survey of the eelgrass (*Zostera*) vegetation and its communities. *Ophelia*, 11, i–xvi + 1–495.
<https://doi.org/10.1080/00785326.1973.10430115>
- Saunier, A., Garcia, P., Becquet, V., Marsaud, N., Escudié, F. & Pante, E. (2014) Mitochondrial genomes of the Baltic clam *Macoma balthica* (Bivalvia: Tellinidae): setting the stage for studying mito-nuclear incompatibilities. *BMC Evolutionary Biology*, 24 (259). [published online]
<https://doi.org/10.1186/s12862-014-0259-z>
- Scudder, S.H. (1882) Nomenclator zoologicus. An alphabetical list of all generic names that have been employed by naturalists for recent and fossil animals from the earliest times to the close of the year 1879. *Bulletin of the United States National Museum*, 19, i–xxi + 1–340.
<https://doi.org/10.5962/bhl.title.1143>
- Tebble, N. (1976) *British bivalve seashells. A handbook for identification. 2nd Edition.* British Museum (Natural History), Her Majesty's Stationary Office, Edinburgh, 212 pp., 12 pls.
- Thornton, A., Herbert, R.J.H., Stillman, R.A. & Franklin, D.J. (2019) Macroalgal mats in a eutrophic estuarine marine protected area: implications for benthic invertebrates and wading birds. In: Humphreys, J. & Clark, R.W.E. (Eds.), *Marine protected areas: science, policy and management.* Elsevier, Amsterdam, pp. 703–727.
<https://doi.org/10.1016/B978-0-08-102698-4.00036-8>
- Thorson, G. (1957) Bottom communities (sublittoral or shallow shelf). In: Hedgepeth, J.W. (Ed.), *Treatise on marine ecology*

- and paleoecology. *Geological Society of America, Memoir*, 67 (1), pp. 461–534.
<https://doi.org/10.1130/MEM67V1-p461>
- Väinölä, R. (2003) Repeated trans-Arctic invasions in littoral bivalves: molecular zoogeography of the *Macoma balthica* complex. *Marine Biology*, 143, 935–946.
<https://doi.org/10.1007/s00227-003-1137-1>
- Vokes, H.E. (1967) Genera of the Bivalvia: A systematic and bibliographic catalogue. *Bulletins of American Paleontology*, 51 (232), 103–394.
- Vokes, H.E. (1980) *Genera of the Bivalvia: A systematic and bibliographic catalogue. Revised, updated*. Paleontological Research Institution, Ithaca, New York, xxvii + 307 pp.
- Yurchenko, A.A., Katolikova, N., Poley, D., Shcherbakova, I. & Strelkov, P. (2018) Transcriptome of the bivalve *Limecola balthica* L. from Western Pacific: A new resource for studies of European populations. *Marine Genomics*, 40, 58–63.
<https://doi.org/10.1016/j.margen.2018.03.007>