Invertebrate Zoology, 2014, 11(1): 156–180

Deep-sea fauna of European seas: An annotated species check-list of benthic invertebrates living deeper than 2000 m in the seas bordering Europe. Holothuroidea

Andrey V. Gebruk[1], Alexey V. Smirnov[2] and Antonina V. Rogacheva[1]

[1] P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences, Nakhimovsky Pr., 36, Moscow, 117997, Russia. E-mails: agebruk@ocean.ru antonina@ocean.ru
[2] Zoological Institute, Russian Academy of Sciences, Universitetskaya nab., 1, St.-Petersburg, 199034, Russia. E-mail: sav_11@inbox.ru

ABSTRACT: An annotated check-list is given of Holothuroidea species occurring deeper than 2000 m in the seas bordering Europe. The check-list is based on published data. The check-list includes 78 species. For each species synonymy, data on localities in European seas and general species distribution are provided. Station data are presented separately in the present thematic issue.
How to cite this article: Gebruk A.V., Smirnov A.V., Rogacheva A.V. 2014. Deep-sea fauna of European seas: An annotated species check-list of benthic invertebrates living deeper than 2000 m in the seas bordering Europe. Holothuroidea // Invert. Zool. Vol.11. No.1. P.156–180.

KEY WORDS: deep-sea fauna, European seas, Holothuroidea.

Глубоководная фауна европейских морей: аннотированный список видов донных беспозвоночных, обитающих глубже 2000 м в морях, окружающих Европу. Holothuroidea

А.В. Гебрук, А.В. Смирнов, А.В. Рогачева

Институт океанологии им. П.П. Ширшова РАН, Нахимовский просп. 36, Москва, 117997, Россия. E-mails: agebruk@ocean.ru; antonina@ocean.ru
Зоологический институт РАН, Университетская наб., 1, Санкт-Петербург 199034 Россия. E-mail: sav_11@inbox.ru

РЕЗЮМЕ: Приводится аннотированный список видов Holothuroidea, обитающих глубже 2000 м в морях, окружающих Европу. Список основан на опубликованных данных. Список насчитывает 78 видов. Для каждого вида приведены синонимия, данные о нахождениях в европейских морях и сведения о распространении. Данные о станциях приводятся в отдельном разделе настоящего тематического выпуска.
Как цитировать эту статью: Gebruk A.V., Smirnov A.V., Rogacheva A.V. 2014. Deep-sea fauna of European seas: An annotated species check-list of benthic invertebrates living deeper than 2000 m in the seas bordering Europe. Holothuroidea // Invert. Zool. Vol.11. No.1. P.156–180.

КЛЮЧЕВЫЕ СЛОВА: глубоководная фауна, европейские моря, Holothuroidea.

Phylum Echinodermata
Class Holothuroidea
Order Apodida
Family Myriotrochidae
Genus *Acanthotrochus* Danielssen et Koren, 1879

TYPE SPECIES: *Acanthotrochus mirabilis* Danielssen et Koren, 1879.

COMPOSITION: 3 species (Belyaev, Mironov, 1981a).

DISTRIBUTION: Arctic — 1, Pacific — 1, Antarctic — 1 species.

Acanthotrochus mirabilis Danielssen et Koren, 1879

Acanthotrochus mirabilis Danielssen, Koren, 1879: 115, pl. 3–4, figs. 8–20; Danielssen, Koren, 1882: 35, pls. 5–6, figs. 8–20; Clark, 1908: 130, pl. 8 figs. 1–6; Djakonov, 1933: 158, fig. 83; Heding, 1935: 24, text-figs. 4, 5, pl. 3 figs. 3–10; Östergren, 1938: pl. 2 fig. 11; Belyaev, Mironov, 1981a: 522, fig. 1 figs. 1–3; Belyaev, Mironov, 1982: 108, fig. 17 (map); Madsen, Hansen, 1994: 127, figs. 91–93, map 38.

LOCALITIES: Norwegian North-Atlanic Expedition (1876–1878), St. 295 (Danielssen, Koren 1879, 1882); "Sebastopol", St. 1351 (Belyaev, Mironov, 1982), 1712, 1713, 1714, 1742, 2482 (Belyaev, Mironov, 1982 — only as dots on the map); "Polarstern" ARK XIII/2 cruise, St. 059-GKG(bio+geo), 068-GKG(bio), 093-GKG(bio) (det. A.V. Smirnov, unpublished); BIOICE, St. 3637 (unpublished).

DISTRIBUTION: Arctic: Norwegian and Greenland Seas, Litke Trough.

DEPTH RANGE: 1090–3705 m.

Genus *Myriotrochus* Steenstrup, 1851

TYPE SPECIES: *Myriotrochus rinkii* Steenstrup, 1851.

COMPOSITION: 16 species (Belyaev, Mironov, 1982; Gage, Billett, 1986; Smirnov, 1999).

DISTRIBUTION: Arctic — 2, Atlantic — 5, Atlantic and Pacific —2, Pacific — 6, Antarctic — 3 species.

Myriotrochus bathybius H.L. Clark, 1920

Myriotrochus bathybius Clark, 1920: 126, pl. 4, fig. 3; Carney, Carey, 1976: 69; Gage et al., 1985: 202; Gage, Billett, 1986: 234, figs. 3–6, 7A, B, 9A, B, 18B; Harvey et al., 1988: 190; Smirnov, 1999: 17.

REMARKS: The wheels of the North-East Atlantic specimens described by Gage, Billett (1986) differ somewhat from the wheels of the holotype of *M. bathybius* (see Smirnov, 1999, fig. 4). Only after examination of new findings of *M. bathybius* from the type locality (eastern tropical Pacific) it will be possible to justify the determination of the North-East Atlantic material as *M. bathybius*.

LOCALITIES: "Challenger" (1973–1985), St. ES 06, ES 27, ES 56, ES 118, ES 129, ES 137, ES 147, ES 152, ES 164, ES 169, ES 172, ES 180, ES 184, ES 185, SBC 188, ES 190, ES 204, ES 207, ES 231, AT 267, AT 282, ES 283, ES 289 (Gage et al. 1985; Gage, Billett, 1986; Harvey et al. 1988); "Discovery" (1977–1980), St. 9638#2, 9756#14; "Challenger, 50304, 50812#1, 50910 (Gage, Billett 1986); BIOICE, St. 2863 (unpublished data).

DISTRIBUTION: Cosmopolitian. In the North-East Atlantic: Rockall Trough and Porcupine Seabight. Described from the East Tropical Pacific (Clark, 1920), also found in the North-East Pacific (Carney, Carey, 1976).

DEPTH RANGE: 1800–4310 m.

Myriotrochus giganteus H.L. Clark, 1920

Myriotrochus giganteus Clark, 1920: 127, pl. 4, fig. 4; Gage et al., 1985: 203; Gage, Billett, 1986: 239, figs. 7C, 8, 9C, 10–12, 24B; Harvey et al., 1988: 190. *Myriotrochus* sp. ex gr. *macquoriensis — giganteus* Belyaev, Mironov, 1982: 102, figs. 13, 14, pl. II figs. 6, 7.

LOCALITIES: "Challenger" (1977–1985), St. AT 131, ES 137, ES 164, ES 169, ES 207, ES 231, ES 283 (Gage, Billett, 1986; Harvey et al., 1988).

DISTRIBUTION: Eastern Tropical Pacific and North-East Atlantic. In the North-East Atlantic: Rockall Trough.

DEPTH RANGE: 2898–3665 m. In the North-East Atlantic: 2898–2946 m.

Myriotrochus clarki Gage et Billett, 1986

Myriotrochus clarki Gage, Billett, 1986: 247, figs. 7D, 9D, 13–17, 18A; Harvey et al., 1988: 190; Smirnov, 1999: 17; Rogacheva et al., 2013: 612–613, fig. 17l. *Myriotrochus vitreus* — Cherbonnier, 1970: 1269. *Myriotrochus* sp. — Gage et al., 1985: 203.

LOCALITIES: "Challenger" (1975–1983), St. ES 34, ES 185, ES 197, ES 200, ES 218, ES 231, ES 232 (Gage et al., 1985; Gage, Billett, 1986; Harvey et al., 1988); "James Cook" ECOMAR, Sts. JC011/75, JC011/101, JC037/15, JC037/19, JC037/27, JC037/61, JC037/67, JC037/70, JC048/49, JC048/50, JC048/52 (Rogacheva et al., 2013).

DISTRIBUTION: North-East Atlantic: Rockall Trough, coast of Spain and northern Mid-Atlantic Ridge.

DEPTH RANGE: 480–2907 m.

Genus *Prototrochus* Belyaev et Mironov, 1982

TYPE SPECIES: *Myriotrochus zenkevitchi* Belyaev, 1970.

COMPOSITION: 20 species and subspecies (Belyaev, Mironov, 1982; Gage, Billett, 1986).

DISTRIBUTION: Arctic — 1, Atlantic — 5, Pacific — 10, Indian Ocean and Pacific — 1, Antarctic — 3 species.

Prototrochus zenkevitchi rockallensis Gage et Billett, 1986

Prototrochus zenkevitchi rockallensis Gage, Billett, 1986: 252, figs. 7E, F; 18C–E; 19–23; 24A; Harvey et al., 1988: 190. *P. zenkevitchi* (Belyaev, 1970) subsp. — Gage et al., 1985: 204.

LOCALITIES: "Challenger" (1973–1985), St. ES 06, ES 10, ES 34, ES 56, ES 57, ES 118, ES 129, ES 135, ES 137, ES 147, SBC 159, SBC 160, SBC 163, ES 169, ES 172, ES 176, ES 184, ES 185, ES 190, ES 197, ES 200, ES 204, ES 207, SBC 215, SB C216, ES 218, ES 231, ES 232, ES 283, ES 285, ES 289 (Gage et al., 1985; Gage, Billett, 1986; Harvey et al., 1988).

DISTRIBUTION: North-East Atlantic: Rockall Trough, Porcupine Seabight, Whittard Canyon, continental slope of northern Bay of Biscay.

DEPTH RANGE: 1000–2946 m.

Prototrochus mediterraneus Belyaev et Mironov, 1982

Prototrochus mediterraneus Belyaev, Mironov, 1982: 89–90, fig. 5a, pl. 1 figs. 5, 6.

LOCALITIES: "Vityaz", St. 7930 (Belyaev, Mironov, 1982).

DISTRIBUTION: Mediterranean Sea.

DEPTH RANGE: 2890 m.

Prototrochus theeli (Östergren, 1905)

Myriotrochus theeli — Östergren, 1905: CLIX–CLXI; 1938: taf. 3 figs. 1–4; Belyaev, Mironov, 1982: 86–87; Madsen, Hansen, 1994: 124, fig. 87, map 36. *Prototrochus theeli* — Smirnov, Smirnov, 2006: 105–106.

LOCALITIES: Swedish Zoological (Kolthoff's) Polar Expedition (1900), St. 29 (Östergren, 1905; 1938); "Polarstern" ARK XI/1 cruise (1995), St. 23a, 44-GKG (bio1), 44-GKG (bio2), 49-GKG (bio2) (det. A.V. Smirnov, unpublished).

DISTRIBUTION: Arctic: Norwegian and Greenland Seas, Laptev Sea, Amundsen Basin.

REMARKS: Hansen and Madsen (1994) indicate that this species "has been… found in several localities in the Norwegian Basin, between Iceland and Norwey, during the "Håkon Mosby" expeditions 1981–1984. (T. Brattegard, personal coomunication)" Unfortunatelly they published the findings of *P. theeli* only as dots on the map, without station data.

DEPTH RANGE: 600–3900 m.

Genus *Siniotrochus* Pawson, 1971

TYPE SPECIES: *Siniotrochus phoxus* Pawson, 1971.

COMPOSITION: 3 species (Pawson, 1971; Belyaev, Mironov, 1981b; Belyaev, Mironov, 1982; Gage, Billett, 1986).

DISTRIBUTION: North Atlantic and North Pacific; Atlantic — 2, Pacific — 1 species.

Siniotrochus myriodontus Gage et Billett, 1986

Siniotrochus myriodontus Gage, Billett, 1986: 266, figs. 28C–E, 29–31.

LOCALITIES: "Discovery" (1978), St. 9756#14; "Challenger" (1979–1982), 50603#1, 50604#1, 51415#1 (Gage, Billett, 1986).

DISTRIBUTION: North-East Atlantic: Porcupine Seabight.

DEPTH RANGE: 3490–4000 m.

Genus *Parvotrochus* Gage et Billett, 1986

TYPE SPECIES: *Parvotrochus belyaevi* Gage et Billett, 1986.

COMPOSITION: 1 species (Gage, Billett, 1986).

DISTRIBUTION: North Atlantic.

Parvotrochus belyaevi Gage et Billett, 1986

Parvotrochus belyaevi Gage, Billett, 1986: 263, figs. 24C–F, 26, 27.

LOCALITIES: "Challenger" (1976–1985), St. ES 57, ES 135, ES 143, ES 147, ES 152, ES 169, ES 172, ES 180, ES 204, ES 207, ES 285 (Gage, Billett, 1986; Harvey et al., 1988).

DISTRIBUTION: North-East Atlantic: Rockall Trough.

DEPTH RANGE: 1160–2921 m.

Family Synaptidae
Genus *Protankyra* Östergren, 1898, emend. Rowe et Pawson, 1967

TYPE SPECIES: *Synapta abyssicola* Théel, 1886 [=*Protankyra brychia* (Verrill, 1885)].

COMPOSITION: 35 species (Östergren, 1898; Clark, 1908; Heding, 1928).

DISTRIBUTION: Atlantic — 5, Indian Ocean — 10, Indian Ocean and Pacific — 4, Pacific — 15, Atlantic and Pacific — 1 species.

Protankyra brychia (Verrill, 1885)

Synapta brychia Verrill, 1885: 539. *Protankyra brychia* — Östergren, 1898: 116; Clark, 1908: 25, 105, pl. 4 figs. 12–14; Deichmann, 1930: 209; Deichmann, 1940: 229, pl. 41 figs. 1–3; Deichmann, 1954: 408; Madsen, 1953: 151, fig. l; Sibuet, 1977: 554; Gage et al., 1985: 201; Harvey et al., 1988: 190. *Synapta abyssicola* Théel, 1886a: 14, pl. 1 fig. 11. *Protankyra abyssicola* — Perrier, 1902: 538; Clark, 1908: 25, 105, Pl. 4 figs. 8–11; Clark, 1913: 227; Clark, 1920: 124; Clark, 1924: 496, pls. 11 figs 6–7, 12 fig. l; Hérouard, 1923: 140; Ludwig, Heding, 1935: 146, figs. 12–13. *Protankyra abyssicola* var. *pacifica* Ludwig, 1894: 174, pl. 18 figs. 13–19. *Protankyra pacifica* — Clark, 1908: 25, 105; Clark, 1920: 124; Heding, 1928: 252; Ludwig, Heding, 1935: 149; Carney, Carey, 1982: 69; Maluf, 1988: 163. *Synapta* sp. — Théel, 1886b: 20.

LOCALITIES: "Princesse Alice II" (1910), St. 2986 (Hérouard, 1923); "Challenger" (1975–1982), St. ES 32, ES 56, ES 118, ES 152, ES 164, ES 169, ES 172, ES 180, ES 185, SBC 188, ES 207 (Gage et al., 1985; Harvey et al., 1988; Pawson et al., 2003).

DISTRIBUTION: Atlantic, Pacific. In the North-East Atlantic: Rockall Trough, Bay of Biscay.

DEPTH RANGE: 869–4990 m. In the North-East Atlantic: 2871–4879 m.

Genus *Labidoplax* Östergren, 1898, sensu Heding, 1931

TYPE SPECIES: *Synapta tenera* Norman, 1864 (nomen nudum) = *Synapta buski* McIntosh, 1866.

COMPOSITION: 5 species (Östergren, 1898; 1905; Heding, 1931a; Gage, 1985; Smirnov, 1997).

DISTRIBUTION: North Atlantic — 4, Pacific — 1 species.

Labidoplax southwardorum Gage, 1985

Labidoplax southwardorum Gage, 1985: 255, figs. 1, 3a, d (left and bottom), e, f; Gage et al., 1985: 200; Harvey et al., 1988: 186, fig. 3a.

LOCALITIES: "Challenger" (1973–1985), St. ES 10, ES 27, ES 28, ES 34, SBC 48, ES 53, ES 56, ES 57, SBC 58, ES 59, SBC 61, ES 111, ES 118, ES 129, ES 135 (Gage, 1985; Gage et al., 1985), ES 137, ES 140, ES 143, ES 147, ES 152, ES 164, ES 169, ES 172, SBC 174, ES 176, ES 180, ES 184, ES 185, ES 190, ES 197, ES 200, ES 204, ES 218, ES 244, ES 283, ES 285, ES 289 (Gage, 1985; Gage et al., 1985; Harvey et al., 1988).

DISTRIBUTION: North-East Atlantic: Rockall Trough.

DEPTH RANGE: 1000–2946 m.

Labidoplax similimedia Gage, 1985

Labidoplax similimedia Gage, 1985: 259, figs. 2, 3b, d right and top; Gage et al., 1985: 201; Harvey et al., 1988: 187.

LOCALITIES: "Challenger" (1975–1985), St. ES 34, ES 118, ES 129, ES 137, ES 143, ES 147, ES 164, ES 169, ES 172, ES 176, ES 180, ES 185, ES 190, ES 200, ES 204, ES 218, ES 244, ES 283, ES 285, ES 289 (Gage, 1985; Gage et al., 1985; Harvey et al., 1988).

DISTRIBUTION: North-East Atlantic: Rockall Trough.

DEPTH RANGE: 1101–2946 m.

Order Elasipodida
Family Laetmogonidae
Genus *Benthogone* Koehler, 1896

TYPE SPECIES: *Benthogone rosea* Koehler, 1896.

COMPOSITION: 3 species.

DISTRIBUTION: Indian Ocean — 1, Indonesia — 1, cosmopolitan — 1 species.

Benthogone rosea Koehler, 1896

Benthogone rosea Koehler, 1896: 114–117, figs. 2, 3, 36, 46; Perrier, 1902: 399–405, pls. XIV: 1–2, XIX: 8–14; Grieg, 1921: 5–6; Hérouard, 1923: 38–39; Heding, 1940: 369; Madsen, 1947: 15–16; Pawson, 1965: 219–221, pl. 5. *Benthogone rosea* var. *cylindrica* Perrier, 1896: 900. *Benthogone rosea* var. 4-*lineata* Perrier, 1896: 900. *Benthogone quadrilineata* — Heding, 1940: 369; Heding, 1942a: 15. Non *Benthogone quatrolineata* — Augustin, 1908.

LOCALITIES: "Princesse Alice II", St. 2290; "Michael Sars", St. 25A; "Talisman", St. 35, 58, 59 (Perrier, 1902); Porcupine Abyssal Plain (Billett, 1991); BIOGAS, St. 1, 2, 3 (Sibuet, 1977); BIOGAS VII CP 26, BIOGAS IX CP 33 (Massin, 1984); numerous "Discovery" stations (Billett, 1988).

DISTRIBUTION: Eastern Atlantic from Ireland to the Cape Verde Islands; western Indian Ocean; north of New Zealand.

DEPTH RANGE: 1103–2480 m.

Genus *Laetmogone* Théel, 1879

COMPOSITION: 12 species.

TYPE SPECIES: *Laetmogone wyvillethomsoni* Théel, 1879.

DISTRIBUTION: Atlantic — 2, Pacific — 7, Antarctic and Pacific — 1, Pacific and Indian — 1, cosmopolitan — 1 species.

Laetmogone billetti Rogacheva et Gebruk in Rogacheva et al., 2013

Laetmogone billetti Rogacheva et al., 2013: 595–598, figs. 5, 6, 17h, i, 18k, 19g–i.

LOCALITIES: "James Cook" ECOMAR, Sts. JC048/24 Dive 165, JC048/16 Dive 162, JC048/56 Dive 180 (Rogacheva et al., 2013).

DISTRIBUTION: Known from its type locality on the Northern Mid-Atlantic Ridge, Charlie-Gibbs Fracture Zone area.

DEPTH RANGE: 2272–2758 m.

Family Psychropotidae
Genus *Benthodytes* Théel, 1882

TYPE SPECIES: *Benthodytes typica* Théel, 1882.

COMPOSITION: 10 species.

DISTRIBUTION: Atlantic and Indonesia — 1, Atlantic — 2, Indian — 3, Pacific — 1, Indonesia — 1, cosmopolitan — 2 species.

Benthodytes valdiviae Hansen, 1975

Benthodytes valdiviae Hansen, 1975: 82–84, figs. 30–31; Thandar, 1999: 384–386, fig. 7; Gebruk, 2008: 50, 51.

LOCALITIES: "Valdivia", St. 33 (Hansen, 1975); "G.O. Sars", MAR-ECO cruise, St. 46/372. (Gebruk, 2008).

DISTRIBUTION: North and South Atlantic (off South Africa).

DEPTH RANGE: 2480–3050 m.

Benthodytes lingua Perrier, 1896

Benthodytes lingua Perrier, 1896: 902; Perrier, 1902: 456–461, pls. XII: 1–2, XXI: 1–9; Deichmann, 1930: 124–125; Deichmann, 1940: 200–201, pl. XXXV: 3–4; Heding, 1942a: 15; Deichmann, 1954: 384; Rogacheva et al., 2013: 599, fig. 18b. *Benthodytes janthina* von Marenzeller, 1882 — Grieg, 1921: 11; Heding, 1942a: 15. *Pannychia glutinosa* Hérouard, 1902: 32, pl. IV: 17.

LOCALITIES: "M. Sars", St. 10; "Ingolf", St. 18, 20; "Talisman" and "Travailleur" St. 38, 39, 44 (Perrier, 1902); "Valdivia", St. 33 (Heding, 1942a); BIOGAS St. 2 (Sibuet, 1977); "Discovery" St. 11121#10 (Billett et al., 1985); "G.O. Sars", MAR-ECO cruise, St. 40/367, 46/372, 50/373 (Gebruk, 2008); "James Cook" ECOMAR, Sts. JC037/27, JC048/36 Dive 171, JC048/48 Dive 176 (Rogacheva et al., 2013).

DISTRIBUTION: North and South Atlantic.

DEPTH RANGE: 860–3192 m.

Benthodytes typica Théel, 1882

Benthodytes typica Théel. 1882a: 103–104, pls. XXVII: 7, XXXV: 4, XXXVIII: 5, XLIV: 8; Théel, 1886: 2; von Marenzeller, 1893b: 12; Grieg, 1921: 10, fig. 8, pl. III: 6–7; Hérouard, 1923: 101–102, pl. VI: 4; Deichmann, 1930: 123–124; Deichmann, 1940: 200, pl. XXXV: 1–2; Heding, 1940: 368; Madsen, 1953: 160–161, fig. 8; Deichmann, 1954: 384. *Benthodytes papillifera* Théel, 1882a: 102–103, pl. XXXIV: 14. *Benthodytes glutinosa* Perrier, 1896: 902–903; Perrier, 1902: 462–465, pls. XIII: 5, XX: 31; Koehler, Vaney, 1905: 72–74, pl. XII: 10; Clark, 1920: 141; Grieg, 1921: 10–11, pl. III: 1–2. *Benthodytes janthina* von Marenzeller, 1882 — Hérouard, 1902: 30; Hérouard, 1923: 103.

LOCALITIES: "Swedish Deep–Sea Expedition" St. 313, 357, 387 (Madsen, 1953); "Ingolf", St. 20; "Princesse Alice II", St. 2111; "Michael Sars", St. 35, 53; "Hirondelle", St. 248; "Talisman" and "Travailleur", 32°19′–34°46′N, 36°11′–38°04′W, 3175–3243 m (Perrier, 1902); Porcupine Abyssal Plain (Billett, 1991); numerous "Discovery" stations in the North-East Alantic (Billett, 1988); "G.O. Sars", MAR-ECO cruise, St. 40-367, 42-368, 46-372, 50-373, 52-374, 54-377.

DISTRIBUTION: cosmopolitan.

DEPTH RANGE: 1873–4700 m.

Benthodytes sanguinolenta Théel, 1882

Benthodytes sanguinolenta Théel, 1882a: 104–105, Pls. XXIII, XL: 4–5, XLII: 6; Ludwig, 1894: 53–60, Pl. I: 1–8; Koehler, Vaney, 1905: 72; Clark, 1913: 233; Ohshima, 1915: 245; Clark, 1920: 142; Clark, 1923a: 162; Clark, 1923b: 420; Heding, 1940: 367; Hansen, 1956: 44–45; Hansen, 1975: 94–96; Pls. III–VI, IX: 6–7, XII: 4–5; Carney, Carey, 1976: 69; Pawson, 1982: 129–145; Bluhm, Gebruk, 1999: 175, Fig. 3D; Gebruk, 2008: 50, 51; Rogacheva et al., 2009: 463–464, fig. 2.

LOCALITIES: "G.O. Sars", MAR-ECO cruise, St. 40/367, 54/377, 64/381, 66/383, 68/384, 74/387 (Gebruk, 2008); "James Cook" ECOMAR, St. JC037/19 (Rogacheva et al., 2013).

DISTRIBUTION: cosmopolitan.

DEPTH RANGE: 768–7250 m.

Benthodytes gosarsi Gebruk, 2008

Benthodytes gosarsi Gebruk, 2008: 49–52, figs. 1A, 2, 3.

LOCALITIES: "G.O. Sars", MAR-ECO cruise, St. 40/367, 54/377 (Gebruk, 2008); BIOICE St. 2862, 3572; "James Cook" ECOMAR, Sts. JC011/23, JC011/75, JC011/101, JC037/15, JC037/19, JC037/27, JC037/61, JC037/67, JC037/70; "James Cook", St. JC036/04, JC36/21 (Rogacheva et al., 2013).

DISTRIBUTION: Atlantic: Mid-Atlantic Ridge from Azores to Iceland and Northeast Atlantic, Whittard Canyon (Rogacheva et al., 2013).

DEPTH RANGE: 2967–3670 m.

Genus *Psychropotes* Théel 1882

TYPE SPECIES: *Psychropotes longicauda* Théel, 1882.

COMPOSITION: 10 species.

DISTRIBUTION: Atlantic — 3, Indian — 2, Antarctic — 1, Pacific — 2, cosmopolitan — 2 species.

Psychropotes semperiana Théel, 1882

Psychropotes semperiana Théel, 1882a: 100–101, pl. XXXIV: 10–11; Hansen, 1975: 102–105, figs. 41–42. *Psychropotes kerhervei* Hérouard, 1902: 27–30, pl. IV: 1–9. *Euphronides kerhervei* — Hérouard, 1923: 104, pl. III: 4–5; Deichman, 1940: 202–203, pl.XXXV: 9–12; Madsen, 1953: 161–163, fig. 9.

LOCALITIES: "Princesse Alice", St. 749, "Princesse Alice II", St. 1306, 2111; Porcupine Abyssal Plain (Billett, 1991); BIOGAS (1972–1974) "Jean Charcot", St.2.

DISTRIBUTION: Atlantic and the western part of Indian Ocean.

DEPTH RANGE: 1433–5600 m.

Psychropotes depressa (Théel, 1882)

Euphronides depressa — Théel, 1882a: 93–96, pls. XXVI, XXX: 5–6, XL: 7, XLVI: 4; Ohshima, 1915: 244–245, fig. 1; Ohshima, 1916–1919, with three figures. *Psychropotes depressa* — Hansen, 1975: 106–111, figs. 43–44; Gebruk, 2008: 50, 51; Rogacheva et al., 2013: 599, fig. 17f, g. *Euphronides depressa* var. *minor* Théel, 1886b: 2. *Euphronides cornuta* Verrill, 1884: 217; Verrill, 1885: 518, 538, figs. 32–33; Deichmann, 1930: 127–128; Heding, 1940: 368. *Euphronides tanneri* — Ludwig, 1894: 39–44, pls. III: 7, IV, V: 17–19. *Euphronides auriculata* Perrier, 1896: 901–902; Perrier, 1902: 434–438, pls. XIII: 1–2, XX: 12–13; Grieg, 1921: 8–9. *Euphronides violacea* Perrier, 1896: 902; Perrier, 1902: 438–441, pl. XX: 14; Deichmann, 1930: 128–129; Deichmann, 1940: 201–202; Heding, 1942a: 15–16; Madsen, 1947: 16; Deichmann, 1954: 384. *Euphronides talismani* Perrier, 1896: 902;

Perrier, 1902: 441–444, pl. XX: 15; Hérouard, 1902: 30–31, pl. II: 19–22; Deichmann, 1930: 129; Heding, 1942a: 15, fig. 15. *Benthodytes assimilis* Théel, 1886b: 2–3.

LOCALITIES: "Ingolf", St. 11, 18, "M. Sars", St. 25A; "Princesse Alice", St. 673; "Skagerak" (Madsen, 1947); "Talisman" and "Travailleur", St. 129, St.38, (Perrier, 1902); Porcupine Abyssal Plain (Billett, 1991); BIOGAS (1972–1974) "Jean Charcot", St. 2, 3; numerous "Discovery" stations (Billett, 1988); "G.O. Sars", MAR-ECO cruise, Sts. 40/367, 42/368, 46/372, 66/383, 72/386 (Gebruk, 2008). BIOICE, St., 2854, 2855, 3070, 3073, 3074, 3075, 3077, 3172, 3571, 3572, 3574 (unpublished); "James Cook" ECOMAR, Sts. JC011/23, JC011/101, St. JC037/15, St. JC037/19, JC037/27, JC037/61, JC037/67, JC037/70 (Rogacheva et al., 2013).

DISTRIBUTION: cosmopolitan.

DEPTH RANGE: 957–4060 m.

Psychropotes longicauda Théel, 1882

Psychropotes longicauda Théel, 1882a: 96–98, pls. XXVII: 1, XXVIII, XXXV: 13–17, XXXVII: 10; Agatep, 1967b: 67, pl. XI: 1–7; Hansen, 1975: 115–126, figs. 49–54; Billett et al., 1985: 405, figs. 1, 4; Walker et al., 1987: 277–282; Gebruk, 1993: 240, fig. 6: 4–5; Bluhm, Gebruk, 1999: 173–174; Wigham et al., 2003: 409–441; Gebruk, 2008: 50, 51; Rogacheva et al., 2009: 473–474, fig. 7. *Psychropotes longicauda* var. *monstrosa* Théel, 1882a: 98–99, pls. XXIX: 2, XXX, XXXIX: 1. *Psychropotes longicauda* var. *Fusco-purpurea* Théel, 1882a: 99, pls. XXIX: 1, XXXV: 11. *Psychropotes longicauda* var. *antarctica* Vaney, 1908: 419–420. *Psychropotes buglossa* E. Perrier, 1886: 283, fig. 200; R. Perrier, 1902: 445–453, fig. 7, pls. XIII: 3–4, XX: 16–28; Hérouard, 1923: 105–108, pls. I: 32, VI: 2. *Psychropotes raripes* Ludwig, 1894: 48–51, pl. IV: 1–16; Ohshima, 1915: 244; Ohshima, 1916–1919: with one figure; Clark, 1920: 140–141, pl. I: 1. *Psychropotes dubiosa* Ludwig, 1894: 52–53, pl. II: 5–7. *Psychropotes grimaldii* Hérouard, 1896: 167, fig. 2; Hérouard, 1902: 25–27, pl. III: 1–2. *Psychropotes fucata* Perrier, 1896: 902; Perrier, 1902: 453–455, pl. XX: 29–30. *Psychropotes laticauda* Vaney, 1908: 420–422, pl. II: 14, 24. *Psychropotes brucei* Vaney, 1908: 422–423, pls. I: 13, II: 21–22, III: 41–42. *Euphronides dyscrita* Clark, 1920: 139, pl. II: 3. *Nectothuria translucida* Belyaev, Vinogradov, 1969: 711–716, figs. 1–4. ?*Psychropotes longicaudata* — Carney, Carey, 1982: 597–607.

LOCALITIES: "Princesse Alice", St. 527, "Princesse Alice II", 2948, 2964, 2986; "Talisman" and "Travailleur", St. 135; localities without station numbers: 30°09′–44°29′N, 15°52′–23°37′W, 2110–5005 m (Perrier, 1902); BIOGAS (1972–1974) "Jean Charcot", Sts. 2, 3, 4, 5; Porcupine Abyssal Plain (Billett, 1991); "G.O. Sars", MAR-ECO cruise, Sts. 40/367, 54/377 (Gebruk, 2008).

DISTRIBUTION: cosmopolitan.

DEPTH RANGE: 2210–5173 m.

Family Elpidiidae
Genus *Peniagone* Théel, 1882

TYPE SPECIES: *Peniagone wyvillii* Théel, 1882.

COMPOSITION: about 20 species.

DISTRIBUTION: widely distributed in the world ocean, except for the Arctic. Highest species diversity is found in the Pacific and the Antarctic.

Peniagone azorica von Marenzeller, 1892

Peniagone azorica von Marenzeller, 1892: 64; von Marenzeller, 1893b: 12–13, pls. I: 4, II: 5; Hérouard, 1902: 42–43, pl. IV: 21–26; Hérouard, 1923: 87–88; Grieg, 1921: 8, fig. 4; Heding, 1942a: 20; Hansen, 1975: 138–142 (*partim*: fig. 63, 5–9); Gebruk, 1990: 110–111, fig. 45 (*partim*); Rogacheva et al., 2013: 603–605, figs. 9, 12h, i, 17j, 19d.

LOCALITIES: "Hirondelle", St. 248; "Princesse-Alice", St. 527, "Princesse Alice II", 2990, 3006; "Ingolf", Sts. 11, 41; "Michael Sars", St. 88; BIOGAS (1972–1974) "Jean Charcot", Sts. 1, 2, 4; other numerous localities in the North-East Atlantic (Gage et al., 1985; Tyler et al., 1985); "G.O. Sars" MAR-ECO cruise, St. 50/373; BIOICE, St. 734, Sample Nr 2862, 2863, 3169, 3170, 3172; "James Cook" ECOMAR, Sts. JC011/101, JC011/106, JC011/111, JC037/79, JC048/24 Dive 165 (Rogacheva et al., 2013).

DISTRIBUTION: Reliable records in the central and eastern North Atlantic (Rogacheva et al., 2013).

DEPTH RANGE: 1385–4020 m.

Peniagone porcella Perrier, 1896

Peniagone porcella Perrier, 1896: 901; Perrier, 1902: 426–429, pls. XIII: 7–9, XIX: 13–23; Madsen, 1953: 155–156, fig. 4; Hansen, 1975: 134; Gebruk, 1990: 97–98, fig. 37: 1–9.

LOCALITIES: " Talisman" St. 134, 42°19′N, 23°36′W, 4060 m (Perrier, 1902).

DISTRIBUTION: Atlantic, North Indian Ocean and Antarctic.

DEPTH RANGE: 3400–5044 m.

Peniagone islandica Deichmann, 1930

Peniagone islandica Deichmann, 1930: 137; Heding, 1942a: 20–21, fig. 19; Hansen, 1975: 150; Gebruk, 1990: 95–96, fig. 35.

REMARKS: may be a synonym of *P. azorica* (Rogacheva et al., 2013).

LOCALITIES: "Ingolf", St. 18; "James Cook" ECOMAR, Sts. JC011/23, JC037/15, JC037/19, JC037/27, JC037/79, JC048/43 Dive 174, JC048/54 Dive 179 (Rogacheva et al., 2013).

DISTRIBUTION: Northern Mid-Atlantic Ridge, from Charlie-Gibbs Fracture Zone Area to Iceland.

DEPTH RANGE: 2137–2758 m.

Peniagone diaphana (Théel, 1882)

Scotoanassa diaphana Théel, 1882a: 55–56, pls. IX: 3–5, XXXV: 18, XLIV: 9. *Peniagone diaphana* — Hansen, 1975: 153–155, fig. 71; Gebruk, 1990: 91–93, fig. 33. *Scotoanassa translucida* Hérouard, 1899: 71–72, fig. 3; Hérouard, 1902: 43–45, pls. III: 4–6, VI: 17–20; Hérouard, 1923: 88–90, pls. III: 7–8, IV: 4; Madsen, 1953: 158–159, fig. 6.

LOCALITIES: “Princesse-Alice”, St. 749, 753, “Princesse Alice II”, 1558, 2983, 2997; “Vityaz”, St. 7943; “Meteor”, 1988/6 MOC1-11: B5, B8, B9; BIOGAS (1972–1974) “Jean Charcot“, Sts. 1, 2, 3, 4, 5, 6; also numerous stations of “Discovery” and “Challenger” in the North-East Atlantic (Billett et al., 1985; Gage et al., 1985; Billett, 1991); “G.O. Sars”, MAR-ECO cruise, St. 68/384.

DISTRIBUTION: throughout the North Atlantic, common in the North Pacific, Antarctic.

DEPTH RANGE: 1529–5600 m.

Peniagone longipapillata Gebruk, 2008

Peniagone longipapillata Gebruk, 2008: 56–59, figs. 1B, 9, 10; Rogacheva et al., 2013: 606–608, figs. 12k–m, 17o, 18f, g, p.

LOCALITIES: “G.O. Sars”, MAR-ECO cruise, St. 40/367, 46/372, 50/373, 52/374, 68/384, 72/386; “James Cook” ECOMAR, Sts. JC011/111, JC048/16 Dive 162, JC048/24 Dive 165. DISTRIBUTION: North Atlantic, Mid-Atlantic Ridge from the Azores to the Charlie-Gibbs Fracture Zone, and Northeast Atlantic (Porcupine Seabight and Whittard Canyon) [Rogacheva et al., 2013].

DEPTH RANGE: 2398–3036 m.

Peniagone marecoi Gebruk, 2008

Peniagone marecoi Gebruk, 2008: 54–56, figs. 7, 8.

LOCALITIES: “G.O. Sars”, MAR-ECO cruise, Sts. 42/368, 46/372, 50/373, 52/374, 54/377, 72/386.

DISTRIBUTION: Atlantic, Mid-Atlantic Ridge from the Azores to the Charlie-Gibbs Fracture Zone.

DEPTH RANGE: 1771–3509 m.

Peniagone purpurea (Théel, 1882)

Elpidia purpurea Théel, 1882a: 21–23, pls. VII: 4–6, XXXIII: 13–14, XLIV: 6. *Peniagone purpurea* — Hansen, 1975: 151–152; Gebruk, 1990: 111–113, fig. 46. *Elpidia ambigua* Théel, 1882a: 27–28, pl. XXXIII: 6. *Peniagone lacinora* Agatep, 1967: 53–55, pl. III: 1–9. *Peniagone vexillum* Perrier, 1902: 429, pls. XII: 6, XIX: 24–25.?*Peniagone ferruginea* Grieg, 1921: 7–8, fig. 3, pl. I: 4–6.

LOCALITIES: “Talisman”, St. 134, 42°19′N, 25°36′W, 4060 m (Perrier, 1896).

DISTRIBUTION: Antarctic, Atlantic, West Pacific.

DEPTH RANGE: 2800–5610 m.

Peniagone coccinea Rogacheva et Gebruk in Rogacheva et al., 2013

Peniagone coccinea Rogacheva et al., 2013: 608–610, figs. 13, 14, 18h, i, o, 19e, *in situ* video record (online suppl.).

LOCALITIES: “James Cook” ECOMAR, Sts. JC037/15, JC037/19, JC037/27, JC048/38 Dive 172, JC048/43, Dive 174, JC048/54, Dive 179.

DISTRIBUTION: Mid-Atlantic Ridge, Charlie-Gibbs Fracture Zone Area.

DEPTH RANGE: 2600–2750 m.

Genus *Achlyonice* Théel, 1879

TYPE SPECIES: *Achlyonice ecalcarea* Théel, 1879.

COMPOSITION: 5 species (Gebruk, 1990, 1997).

DISTRIBUTION: West Pacific — 3, central Atlantic — 1, cosmopolitan — 1 species.

Achlyonice myriamae Gebruk, 1997

Achlyonice myriamae Gebruk, 1997: 214–215, fig. 2.

LOCALITIES: BIOGAS III CV 26).

DISTRIBUTION: known only from type locality.

DEPTH: 2822 m.

Genus *Amperima* Pawson, 1965

TYPE SPECIES: *Periamma roseum* Perrier, 1896.

COMPOSITION: 8 species.

DISTRIBUTION: Pacific — 2, Antarctic — 2, Atlantic — 1, cosmopolitan — 3 species.

Amperima rosea (Perrier, 1896)

Periamma roseum Perrier, 1896: 901; Perrier, 1902: 419–423, pls. XIII: 10–12, XX: 1–11; Hérouard, 1923: 91–94. *Amperima rosea* — Hansen, 1975: 158–159, fig, 74; Gebruk, 1990: 140–141, fig.61: 3–6.

LOCALITIES: “Talisman” (Perrier, 1902): 42°19′–44°29′N, 15°52′– 23°36′W, 4060–5005 m; 44°20′N, 19°31′W, 4255 m; 44°29′N, 15°52′W, 5005 m; “Princesse-Alice II”, St. 2994; Porcupine Abyssal Plain (Billett, 1991; Wigham et al., 2003); BIOGAS (1972–1974) “Jean Charcot“, Sts. 1, 2, 3, 5, 6; “G.O. Sars”, MAR-ECO cruise, St. 50/373.

DISTRIBUTION: North Atlantic, North-West Pacific.

DEPTH RANGE: 4060–5740 m.

Amperima furcata (Herouard, 1899)

Kolga furcata Hérouard, 1899: 171, fig. 2; Hérouard, 1902: 40–41, pls. III: 7, VI: 4–10, VIII: 17. *Amperima furcata* — Hansen, 1975: 159, fig. 75; Gebruk, 1990: 141–142, fig. 61: 7–9; Rogacheva et al., 2013: 600–601, figs. 7a–e, 17k, 18m, n, 19c. *Pariamma furcata* — Hérouard, 1923: 91.

LOCALITIES: “Princesse-Alice II”, St. 2990; “G.O. Sars”, MAR-ECO cruise, St. 40/367 (Gebruk, 2008); “James Cook” ECOMAR, Sts. JC011/23, jc037/15, JC048/43 Dive 174, JC048/54 Dive 179 (Rogacheva et al., 2013).

DISTRIBUTION: North Atlantic, North Pacific.

DEPTH RANGE: 1846–3015 m.

Genus *Penilpidia* Gebruk, 1988

TYPE SPECIES: *Kolga ludwigi* von Marenzeller, 1893.

COMPOSITION: 4 species.

DISTRIBUTION: Atlantic — 2 species, Mediterranean — 1, Pacific — 1.

Penilpidia midatlantica Gebruk, 2008

Penilpidia midatlantica Gebruk, 2008: 52–56, figs. 4–6; Rogacheva et al., 2013: 610–611.

Locality: "G.O. Sars", MAR-ECO cruise, St. 46/368; "James Cook" ECOMAR, St. JC037/19.

DISTRIBUTION: Atlantic, Mid-Atlantic Ridge.

DEPTH RANGE: 2063–2750 m.

Genus *Kolga* Danielssen et Koren, 1879

TYPE SPECIES: *Kolga hyalina* Danielssen et Koren, 1879.

COMPOSITION: 1 (probably 3) species.

DISTRIBUTION: Cosmopolitan, 652–6235 m.

Kolga hyalina Danielssen et Koren, 1879

Kolga hyalina Danielssen, Koren, 1879: 83–106, pl. I, II; Danielssen, Koren, 1882: 3–20, pls. I–III, Théel, 1882a: 39; Ludwig, 1898: 12; Ludwig, 1901: 140; Michailovskij, 1903:4; Mortensen, 1927: 27; Deichmann, 1930: 132–133; Mortensen, 1932: 43, fig. 5; Djakonov, 1933: 135, fig. 69c; Heding, 1942a: 19, textfig. 18; Gorbunov, 1946: 47; Gurjanova, 1957: 361; Koltun, 1964: 46, 47, 53, 62, 68–69, 76, 77, 78; Baranova, 1964: 368; Agatep, 1967a: 140 (*partim*); Hansen, 1975: 170, figs. 86, 95, *2–3*, pl. 9: 8, pl. 12: 11; Gebruk, 1990: 121, fig. 51; Hansen, Madsen, 1994: 88, fig. 56, 57, map 22; Rogacheva, 2007: 384–391, figs. 11–13; Rogacheva, 2012: 1185–1186, figs. 2–3; non *Kolga hyalina* — Billett, Hansen, 1982: 799, fig. 1–8; Gage et al., 1985: 200; Harvey et al., 1988: 185; non *Kolga nana* — Théel, 1882a: 39–42, pls. 2, 34, 33 (1–2), 34 (5), 36 (26), 42 (5, 8); non *Elpidia nana* Théel, 1879: 15–16, figs. 20–22.

LOCALITIES: "Vøringen", Norwegian North–Atlantic Expedition (1876–1878), St. 295, 303, 353 (Danielssen, Koren, 1879, 1882); "Ingolf" (1895–1896), St. 20, 36, 37, 112 (Heding, 1942a); Second Test Cruise on the Icebreaker "Ermak" (1899), St. 31 (Michailovskij, 1903); Swedish Zoological Polar Expedition (1898), St. 26, 27; Swedish Zoological Polar Expedition (1900), St. 13 (unpublished data); I High Latitude Arctic Expedition on the Ice Steamer "Sadko" (1935), St. 3/16 (Rogacheva, 2007), 6, 10 (det. G.P. Gorbunov, unpublished), 59 (Gorbunov, 1946); III High Latitude Arctic Expedition on the Ice Steamer "Sadko" (1937–1938), St. 97, 100 (Gorbunov, 1946); Drifting Station "Severnyi Polus–3" ["North Pole"–3] (1954–1955), St. 18 (Gurjanova, 1957; Koltun, 1964); Drifting Station "Severnyi Polus–4" ["North Pole"–4] 1st shift (1954–1955), St. 4, 7, 8 (Gurjanova, 1957; Koltun, 1964); Drifting Station "Severnyi Polus–4" ["North Pole"–4] 2nd shift (1955), St. 2, 4 (Rogacheva, 2007), 3 (det. T. S. Saveljeva, unpublished); Drifting Station "Severnyi Polus–5" ["North Pole"–5] (1955), St. 1, 2, 4 (Rogacheva, 2007, original identification by T.S. Saveljeva); High Latitude Oceanographic Expedition on the Ice Steamer "Lena" (1955), St. 35, 37 (Koltun, 1964; Baranova, 1964); High Latitude Oceanographic Expedition on the Ice Steamer "Ob" (1956), St. 6, 22, 45 (Koltun, 1964); "Sevastopol'", St. 1709 (Rogacheva, 2007); Arctic Research Laboratory Ice Station 2, St. 380 (Agatep, 1967a); Drifting Station "Severnyi Polus–22" ["North Pole"–22] (1976–1980), St. 58; Drifting Station "Severnyi Polus–23" ["North Pole"–23] (1977), St. 4 (Rogacheva, 2007, original identification by G.M. Belyaev); "Håkon Mosby" St. 82.11.21.2, 82.11.21.4, 83.06.10.1, 83.06.11., St. 84.03.17.1, 84.03.17.2, 86.06.12.1, 86.07.24.1, 86.07.26.1, 86.07.28.1, 87.06.14.1 (Rogacheva, 2007); "Polarstern" ARK IX/4 cruise (1993): St. 32, 50, 54 (Rogacheva, 2007, original identification by A.V. Smirnov); "Polarstern" ARK XI/1 cruise (1995), St. 44-GKG(bio1), 49-GKG(bio1) (det. A.V. Smirnov, unpublished); "Polarstern" ARK XV/1 cruise (1999), Dive 4 [as *Irpa abyssicola* in Gebruk et al. (2003)]; "Healy", St. 11, 13 (Rogacheva, 2007).

REMARKS. *Kolga hyalina* was regarded as cosmopolitan for many years. Evidence from recent revision of Arctic elpidiids suggests that this species is confined to the Arctic deep-sea biogeographical subregion (Rogacheva, 2007).

DISTRIBUTION: confirmed as common in the Arctic Basin and the Norwegian Sea north of the Faroe-Iceland Ridge.

DEPTH RANGE: 659–4106 m.

Kolga nana (Théel, 1979)

Elpidia nana Théel, 1879: 15–16, figs. 20–22. *Kolga nana* — Théel, 1882a: 39–42, pls. 2, 34, 33 (1–2), 34 (5), 36 (26), 42 (5, 8); Rogacheva, 2012: 1186–1190, figs. 4–7. *Kolga hyalina* — Hansen, 1975: 170–171 (*partim*); Billett, Hansen, 1982: 804–806, Figs. 2 (1–9), 4–6; Gage et al., 1985: 200; Harvey et al., 1988: 185; Gebruk, 1990: 121–122 (*partim*); *Kolga* sp. — Gebruk, 2008: 50, 51, 52, 58, fig. 1c.

LOCALITIES: "Discovery", St. 7711#62, 7711#85, 9756#9, 9756#14 10113#1, 10114#1, 10115#1, "Challenger", St. 50603#1, 50604#1, 50605#1, (Billett, Hansen, 1982); "Challenger" (1980–1983), St. ES 172 (Gage et al., 1985), ES 266 (Harvey et al., 1988); "G.O. Sars", MAR-ECO cruise, St.64-381 (Gebruk, 2008); BIOICE, St. 3176, 3571.

DISTRIBUTION: North Atlantic, Antarctic and Subantartic.

DEPTH RANGE: 1484–6235 m (Rogacheva, 2012).

Genus *Ellipinion* Hérouard, 1923

TYPE SPECIES: *Scotoplanes delagei* Hérouard, 1896.

COMPOSITION: 9 species.

DISTRIBUTION: Atlantic — 2, Pacific — 3, Atlantic and Pacific — 1, Indian — 1, Antarctic — 1, cosmopolitan — 1.

Ellipinion delagei (Hérouard, 1896)

Scotoplanes delagei Hérouard, 1896: 167–168, fig. 3. *Ellipinion delagei* — Gebruk, 1990: 133, fig. 58 (list); Rogacheva et al., 2013: 601, figs. 8, 17n, 19f.

LOCALITIES: "James Cook" ECOMAR, Sts. JC037/15, JC037/19, JC048/24 Dive 165 (Rogacheva et al., 2013).

DISTRIBUTION: North Atlantic.

DEPTH RANGE: 1165–2750 m.

Ellipinion alani Rogacheva et Gebruk in Rogacheva et al., 2013

Ellipinion alani Rogacheva et al., 2013: 601–603, figs. 8, 17n, 19f.

LOCALITIES: "James Cook" ECOMAR, Sts. JC048/24 Dive 165, JC048/43 Dive 174 (Rogacheva et al., 2013).

DISTRIBUTION: Known from its type locality on the Northern Mid-Atlantic Ridge, Charlie-Gibbs Fracture Zone area.

DEPTH RANGE: 2398–2620 m.

Genus *Elpidia* Théel, 1876

TYPE SPECIES: *Elpidia glacialis* Théel, 1876.

COMPOSITION: 22 species.

DISTRIBUTION: cosmopolitan, especially common in trenches, most diversity in the Pacific (Belyaev, 1975).

Elpidia gracilis Belyaev, 1975

Elpidia gracilis Belyaev, 1975: 266–267, fig. 6; Gebruk, 1993: 235–236, fig. 3(1–5); Thandar, 1999: 392–396, figs. 11, 15e.

LOCALITIES: "Discovery", Sts. 9754#3, 9753, 9756#14, "Challenger", Sts. 50602#2, 50603#1, 50604#1 (Budaeva, Rogacheva, 2013).

REMARKS: Perier described the species *Tutela echinata* based on specimens collected off Morocco (Perrier, 1896). In the description details on body and ossicle morphology and illustrations were lacking. Later Perrier (1902) assigned *Tutela echinata* to *Elpidia glacialis*. Belyaev (1971) considered this species as *Elpidia* sp. 2 since insufficiency of description. According to Belyaev, the species name «echinata» implies ossicles with long vertical apophyses similar to those in *E. gracilis*. If the two species are conspecific, the name *E. echinata* has a priority.

E. gracilis is the only species in the genus reliably known from the north and equatorial Atlantic. There are two records of *Elpidia* in the Atlantic that may be related to *E. gracilis* (*E. echinata*): south of Canaries (Heding, 1940 as *E. glacialis*) and in the Romanche Trench (Belyaev, 1971 as *Elpidia* sp. 3).

DISTRIBUTION: South Atlantic (off the South Orkney islands), Weddell Sea, North-East Atlantic (Porcupine Seabight and Porcupine Abyssal Plain).

DEPTH RANGE: 1484–6145 m, in the North Atlantic up to 4000 m.

Elpidia heckeri Baranova, 1989

Elpidia heckeri Baranova, 1989: 218–222, figs. 1–3; Smirnov, Smirnov, 2006: 102–103 fig. 13 (*partim*); Rogacheva, 2007: 376–378, figs. 3, 4. *Elpidia glacialis* — Danielssen, Koren, 1882: 80 (*partim*); Heding, 1942a: 16–19 (*partim*); Gorbunov, 1946: 47, 98 (*partim*); Baranova, 1964: 367–368; Koltun, 1964: 46, 47, 68–69, 76; Bluhm, 1999: 10, 11. *Elpidia glacialis glacialis* — Agatep, 1967a: 135–139, fig. 1a–d; Hansen, 1975: 176–178, figs. 90, 91 (*partim*).

LOCALITIES: "Vøringen", Norwegian North-Atlantic Expedition (1876–1878), St. 53, 295, 353; "Ingolf", St. 113; "Ermak", St. 14/50, 34/60; "Sadko", St. 10/32, 59, 100; Drifting station "Severnyi Polus –2", St. 9; "Fedor Litke", Sts. 35, 37; Drifting station "Severnyi Polus –4/(2)" ["North Pole"–4/(2)], St. 2, 3, 4; Drifting station "Severnyi Polus –5" ["North Pole"–5], St. 5; "Ob'", St. 45; Drifting station "ARLIS II", St. 29; "NORBI", St. 10; Drifting station "Severnyi Polus–22" ["North Pole"–22], St. 14, 21, 27, 58; "Alaid", Sts. 30.4, 30.5; "Håkon Mosby", Sts. 81.08.14.5, 82.11.24.1, 83.06.11.1, 85.01.10.1; "Polarstern", ARKTIS IX/4, Sts. 32, 54; "Polarstern", ARKTIS XI/1, St. 23a; "Polarstern", ARKTIS XV/1, dive 3; "Polarstern", ARKTIS XVII/1, St.81-1; "Polarstern", ARKTIS XVIII/1a, St. 62-42, 62-60; "Healy", St. 6, 15 (Rogacheva, 2007); Swedish Zoological Polar Expedition (1898), St. 26, 27; Swedish Zoological Polar Expedition (1900), 72Ú50'N 3Ú8'W (station number unknown) and St. 29 (unpublished data); BIOICE, St. 3203, 3204, 3211, 3213, 3214, 3649 (Budaeva, Rogacheva, 2013 and unpublished data).

DISTRIBUTION: Arctic Basin and the Norwegian Sea north of the Faroe-Iceland Ridge.

DEPTH RANGE: 1700–5550 m.

Elpidia belyaevi Rogacheva, 2007

Elpidia belyaevi Rogacheva, 2007: 378–382, figs. 6–9. *Elpidia glacialis* — Danielssen, Koren, 1882: 80 (*partim*). Mortensen, 1932: 41–43, pl. 1 figs. 4–5; Heding, 1942a: 16–19, tables I, II (*partim*); Gorbunov, 1946: 47, 98 (*partim*); Koltun, 1964: 77; Piepenburg et al., 1996: 440, 444; Vinogradova et al., 1996: 203, 204, 206. *Elpidia glacialis glacialis* — Hansen, 1975: 176–178, figs. 90 *1–3*, 91 *3–8*. *Elpidia* sp.1 — Belyaev, 1971: 356–357. *Elpidia heckeri* — Smirnov, Smirnov, 2006: 102–103 fig. 13 (*partim*).

LOCALITIES: "Vøringen", Norwegian North-Atlantic Expedition (1876–1878), St. 40; "Michael Sars" St. 9; "Sadko", St. 98; Drifting station "Severnyi Polus–3" ["North Pole"–3], St. 6; "Håkon Mosby", Sts. 81.06.07.3, 81.08.15.4, 85.01.11.3, 87.06.13.2; "Akademik Mstislav Keldysh", St. 2079, 2091, 2679, 2702, 2737, 3153, 3177, 3287, 3291, 3318; "Polarstern", ARKTIS VIII/2, St. 108; BIOICE, Sts. 3204, 3207, 3210, 3230, 3637, 3638, 3648, 3649 (Rogacheva, 2007, and unpublished data).

REMARKS: Both *Elpidia heckeri* and *E. belyaevi* are often confused with *Elpidia glacialis*, an

upper bathyal and sublittoral species occurring at depths of 70–610 m in the Kara and north–eastern Barents Seas (Rogacheva, 2007) and at 250 m off Franz Josef Fjord in East Greenland (unpublished data).

DISTRIBUTION: Arctic basin, Norwegian Sea north of the Faroe-Iceland Ridge, Baffin Bay.

DEPTH RANGE: 610–2222 m.

Genus *Psychroplanes* Gebruk, 1988

TYPE SPECIES: *Elpidia rigida* Théel, 1882.

COMPOSITION: 4 species.

DISTRIBUTION: circumtropical and in part in mid latitudes. Atlantic — 1, Indian — 2, Pacific — 3 species.

Psychroplanes obsoleta (Herouard, 1899)

Kolga obsoleta Hérouard, 1899: 170, fig. 1; Hérouard, 1902: 41–42, pls. VI: 11–15, VIII: 16, 18. *Psychroplanes obsoleta* — Gebruk, 1990: 82–84, fig. 29. *Kolga foliacea* Hérouard, 1912: 5–6, figs. 3–4. *Peniagone foliacea* — Hérouard, 1923: 86–87, pls. I: 31, IX: 1–2. *Peniagone nybelini* — Madsen, 1953: 157–158, fig. 5. *Peniagone obsoleta* Hansen, 1975: 134–135, fig. 56.

LOCALITIES: "Princesse-Alice", St. 753, "Princesse-Alice II", St. 1306; "Vityaz", St. 7943.

DISTRIBUTION: Atlantic and Pacific (one locality east of the Japanese Trench).

DEPTH RANGE: 4275–6096 m.

Family Pelagothuriidae
Genus *Enypniastes* Théel, 1882

TYPE SPECIES: *Enypniastes eximia* Théel, 1882.

COMPOSITION: 1 species.

DISTRIBUTION: cosmopolitan (Gebruk, 1989).

Enypniastes eximia (Théel, 1882)

Enypniastes eximia Théel, 1882a: 56–57, pl. VIII: 6–7 (full synonymy in Gebruk, 1989).

LOCALITIES: "Meteor", 1988/6 MOC1-11: B-7; "Discovery", St. 9756#6 (Gebruk et al., 1997); numerous other localities in the North-East Atlantic (Billett et al., 1985); "James Cook" ECOMAR, St. JC048/43 Dive 174 (Rogacheva et al., 2013).

DISTRIBUTION: cosmopolitan, in the North-East Atlantic very common (Billett et al., 1985; Gebruk, 1989).

DEPTH RANGE: from surface to 5433 m.

Family Deimatidae
Genus *Deima* Théel, 1879

TYPE SPECIES: *Deima validum* Théel, 1879.

COMPOSITION: 1 species with 2 subspecies.

DISTRIBUTION: cosmopolitan.

Deima validum validum Théel, 1879

Deima validum Théel, 1879: 5, figs. 36–38 ; Théel, 1882a: 68–70, pls. XVIII, XIX, XXXI: 4–9, XXXVI: 4, XXXVII: 8, XLIII: 7, XLIV: 13, XLVI: 5 ; Sluiter, 1901b: 60. *Deima validum validum* — Hansen, 1967: 488–490, fig. 5; Rogacheva et al., 2013: 595, fig. 18e. *Deima fastosum* Théel, 1879: 5–6, figs. 1–3; Théel, 1882a: 71–73, pls. XX, XXI: 1, XXXI: 10–13, XXXV: 7–10, XXXVI: 7, XXXVII: 3, XLIII: 2–3, 5, XLVI: 8. *Deima blakei* Théel, 1886b: 1–2, figs. 1–2; Koehler, Vaney, 1905: 55–57, pl. XI: 13–15; Hérouard, 1923: 40–41, pls. V: 7, VI: 5; Deichmann, 1930: 115–116, pls. X: 7–11, XI: 1–3; Deichmann, 1940: 198–199. *Deima atlanticum* Hérouard, 1898: 88–89, figs. 1–2; Hérouard, 1902: 32–35, pls. III: 3, IV: 18, V: 1–5, VIII: 26–29, Grieg, 1921: 4, pl. I: 2–3. *Deima mosaicum* Ohshima, 1915: 233–234, Ohshima, 1916–1919.

LOCALITIES: "Princesse Alice", St. 753, "Princesse Alice II", St. 3006; BIOGAS (1972–1974), "Jean Charcot", St. 2, 3, 4, 5 (Sibuet, 1977); "Challenger" (1981–1982), 51216#1, 51414#2, 51415#1, 51608#1; "G.O. Sars" MAR-ECO cruise, St. 40-367 (Gebruk, 2008); "James Cook" ECOMAR, Sts. JC011/23, JC048/36 Dive 171, JC048/43 Dive 174 (Rogacheva et al., 2013).

DISTRIBUTION: cosmopolitan.

DEPTH RANGE: 724–4820 m. In the North-East Atlantic: 2779–4360 m.

Genus *Oneirophanta* Théel, 1879

TYPE SPECIES: *Oneirophanta mutabilis* Théel, 1879.

COMPOSITION: 3 species.

DISTRIBUTION: Pacific — 1, Indian — 1, cosmopolitan — 1 species.

Oneirophanta mutabilis mutabilis Théel, 1879

Oneirophanta mutabilis Théel, 1879: 6–7, figs. 4–6; Théel, 1882a: 62–68, pls. XXI: 2, XXII, XXXI: 1–3, XXXVI: 1–2, 8–11, XXXVII: 4, 13, XXXVIII: 11–12, XL: 1–3, XLI: 1–2, 4, XLII: 9, XLIII: 1,6, XLV, XLVI: 6–7; Perrier, 1902: 374–380, pl. XVIII: 10–15; Clark, 1913: 232; Grieg, 1921: 5, pl. II: 1–2; Hérouard, 1923: 39–40, pls. IV: 10, V: 3–4; Ekman, 1927: 364–366, figs. 1–2; Agatep, 1967b: 63–65, pl. X: 1–7. *Oneirophanta mutabilis mutabilis* — Hansen, 1967: 485–488, figs. 3–4. *Oneirophanta alternata* Perrier, 1900: 117–118; Perrier, 1902: 380–386, pls. XIV: 3–4, XVIII: 16–22. *Oneirophanta alternata* var. *talismani* Perrier, 1902: 386–388, fig. 6.

LOCALITIES: "Princesse Alice II", St. 2986; "Travailleur" and "Talisman" St. 133, 134, 135, 137, 138, 139 (Perrier, 1902); "M. Sars", St. 10 (Grieg, 1921); "Discovery" St. 12930#26, 12930#46, 12930#64, 12930#78, 13078#29, 13078#37, 13200#09, 13925#1, 14317#1; "Challenger" St. 54301#06 (Witbaard et al., 2003); BIOGAS (1972–1974) "Jean Charcot", St. 1, 2, 3, 4, 5; INCAL WS 04, CP 10, CP 11 (Massin, 1984); "G.O. Sars", MAR-ECO cruise, St. 40-367, 46/372 (Gebruk, 2008).

DISTRIBUTION: cosmopolitan; in the North-East Atlantic very common.

DEPTH RANGE: 3200–6000 m.

Order Aspidochirotida
Family Synallactidae[1]
Genus *Bathyplotes* Östergren, 1896

TYPE SPECIES: *Bathyplotes natans* (M. Sars, 1868).

COMPOSITION: ca. 20 species.

DISTRIBUTION: Pacific — 7; Indo–Pacific — 2; Indian Ocean — 5; Caribbean — 1; North Atlantic — 1; Antarctic — 1; cosmopolitan — 2 species.

Bathyplotes natans (M. Sars, 1868)

Holothuria natans M. Sars, 1868: 20. *Bathyplotes natans* — Östergren, 1896: 352–353, pl. 18: 27–35; Östergren, 1902: 6; Ludwig, 1901: 137; Grieg, 1921: 7; Mortensen, 1927: 384–385, textfigs. 228: 2, 229; Deichmann, 1930: 100–102, pl. 9:1,–2, 9; Deichmann, 1954: 386; Heding, 1942a: 10–12, textfigs. 10, 11: 1–10, textfig. 12: 1–2; Pawson, 1963b: 90–94, pl. 7: 1–7; Pawson, 1965: 16–18, fig. 4; Gage et al., 1985: 194; Harvey et al., 1988: 183; Miller, Pawson, 1990: 4; Madsen, Hansen, 1994: 79–82, figs.48–50, map 20; Rowe, Gates, 1995: 328; Liao, 1997: 73–74, fig. 39. *Stichopus natans* — G.O. Sars, 1872: 30; M. Sars, 1877: 58, pl. 7: 18–41; Théel, 1886a: 193; Bell, 1892: 51. *Stichopus pourtalesii* Théel, 1886a: 4. *Stichopus tizardi* Théel, 1882b: 696; Bell, 1892: 51; Koehler, 1895: 48–50, textfigs. 13–14. *Bathyplotes tizardi* — Östergren, 1896: 354; Ludwig, 1901: 138, pl. 12: 3–4, pl. 18: 19; Perrier, 1902: 350; Mitsukuri, 1912: 35–39, textfig. 8; Grieg, 1921: 4. *Bathyplotes pourtalesii* — Mortensen, 1927; Deichmann, 1930: 102, pl. 9: 3–7; Deichmann, 1940: 186, pl. 31: 34; Deichmann, 1954: 386; Rowe, Gates, 1995: 328. *Bathyplotes fallax* Östergren, 1896: 355, pl. 18: 44. *Herpysidia reptans* Perrier, 1898: 247–248. *Bathyplotes reptans* — Perrier, 1902: 352–358, pl. 12: 3–4, pl. 18: 1–9; Mortensen, 1927: 384. *Bathyplotes assimilis* Koehler, Vaney, 1905: 25–26, pl. 3: 3, pl. 10: 1–3. *Bathyplotes papillosus* — Koehler, Vaney, 1905: 28–29, pl. 10: 21–24. Non *Bathyplotes papillosa* Koehler, Vaney, 1905: 2 (list). *Bathyplotes patagiatus* Fisher, 1907: 688–690, pl. 72: 1, 1a–k. *Bathyplotes östergreni* Ohshima, 1915: 225–226, pl. 8: 3a–d. *Bathyplotes heterostylides* Heding, 1942a: 12–13, textfig. 12: 3–5, textfig. 13: 1–15. *Bathyplotes bipartitus* Hérouard, 1923: 34–36.

LOCALITIES: "Talisman", St. 42 (Perrier, 1902); "James Cook" ECOMAR, Sts. JC037/19 (Rogacheva et al., 2013).

DISTRIBUTION: essentially cosmopolitan. In the East Atlantic known from the Lofoten Islands (Norway) to Cap Vert. Reported from the eastern and northern Gulf of Mexico; the Rockall Trough (Gage et al., 1985). Also recorded from Wanganella Bank (New Zealand), Tasman Sea, East China Sea (Liao, 1997) and Japan (Ohta, 1983).

DEPTH RANGE: 193–2750 m.

Genus *Benthothuria* Perrier, 1898

TYPE SPECIES: *Benthothuria funebris* Perrier, 1898.

COMPOSITION: 5 species.

DISTRIBUTION: Indian Ocean — 3; Indo–Pacific — 1; Atlantic — 1 species.

Benthothuria funebris Perrier, 1898

Benthothuria funebris Perrier, 1898: 1665; Perrier, 1899: 248; Perrier, 1902: 365–371; Mortensen, 1927: 378; Deichmann, 1930: 91; Heding, 1940: 363–364; Heding, 1942a: 6; Gage et al., 1985: 194–195; Harvey et al., 1988: 183.

Localities (not complete): "Ingolf", St. 36; "Discovery", St. 9640; St. 13914#1; "Challenger" (1973–1985), St. ES 27, ES 28, AT 119, AT 121, ES 147, ES 152, ES 169, SWT 12, SWT 27, OTSB 51001, OTSB 51301 (Gage et al., 1985); ES 204, AT 284, ES 285, AT 286, OTSB3/85/5 (Harvey et al., 1985); "G.O. Sars", MAR-ECO cruise, Sts. 40/367, 52/374, 54/377, 64/381, 66/383, 74/387 (Gebruk, 2008); "James Cook" ECOMAR, Sts. JC011/23, JC011/75, JC011/101, JC037/15, JC037/19, JC037/27, JC037/61 (Rogacheva et al., 2013).

DISTRIBUTION: off North-West Africa and South-West Greenland; Rockall Trough, North-East Atlantic (Harvey et al., 1988); off Moroccan coast (specimens collected by the "Talisman"); off Sudan (Red Sea) and Senegal (Deichmann, 1930); North-West Atlantic (Heding, 1942a).

DEPTH RANGE: 782–3757 m. It appears that this species occurs deeper in more northerly latitudes in the North-East Atlantic (2700–3757 m) than off North-West Africa (782–1230 m) (Billett, 1991).

Genus *Paroriza* Hérouard, 1902

TYPE SPECIES: *Paroriza prouhoi* Hérouard, 1902 by monotypy.

COMPOSITION: 4 species.

DISTRIBUTION: Pacific — 2, Atlantic — 2 species.

Paroriza pallens (Koehler, 1895)

Stichopus pallens Koehler, 1895: 50–52, textfig. 15. *Paroriza pallens* — Clark, 1922: 46 (list).

Type locality: "Caudan", St. 15.

LOCALITIES: BIOGAS (1972–1974) "Jean Charcot", St. 2 (Sibuet, 1977); "G.O. Sars", MAR-ECO cruise, St. 66/384 (Gebruk, 2008).

DISTRIBUTION: North-East Atlantic; northern Spain north to the Porcupine Seabight.

DEPTH RANGE: 1300–2900 m (Koehler, 1896; Khripounoff, Sibuet, 1980).

Paroriza prouhoi Hérouard, 1902

Paroriza prouhoi Hérouard, 1902: 24–25, pl. 7: 1–2, pl. 8: 30; Hérouard, 1923: 29–30, pl. 2: 3–4; Perrier, 1901: 323; Mortensen, 1927: 386; Deichmann, 1930: 112–113. *Mesothuria expectans* — Perrier, 1899: 245; Perrier, 1902: 317–320; Deichmann, 1930: 92, Tortonese, 1949: 11 (list); Madsen, 1953: 168 (list).

[1] Synonymy after Solís-Marín, 2003.

LOCALITIES: "Princesse Alice", St. 753 (Hérouard, 1902); "Princesse-Alice II", St. 2964 (Hérouard, 1923); "Challenger", St. 50811#1 (Solís-Marín, 2003); "Talisman", St. 136; BIOGAS (1972–1974) "Jean Charcot", St. 2 (Sibuet, 1977); "Discovery", St. 14317#1 (Wigham et al., 2003).

DISTRIBUTION: North-East Atlantic, off the Azores, the Bay of Biscay and the Porcupine Seabight; Mediterranean Sea.

DEPTH RANGE: 4080–4880 m.

Genus *Paelopatides* Théel, 1886

TYPE SPECIES: *Paelopatides confundens* Théel, 1886.

COMPOSITION: 19 species (see Solís-Marín, 2003).

DISTRIBUTION: Pacific — 6, Atlantic — 3, Indian Ocean — 8, Indonesia — 2 species.

Paelopatides atlantica Hérouard, 1902

Pelopatides atlantica Hérouard, 1902: 16, pl. 1: 15; Hérouard, 1923: 16; Mortensen, 1927: 388 (key); Deichmann, 1930: 106.

LOCALITIES: known only from the type locality, "Princesse Alice", St. 527, off the Azores.

DEPTH RANGE: 4020 m.

Paelopatides gigantea (Verrill, 1884)

Benthodytes gigantea Verrill, 1884: 216; Verrill, 1885: 538, pl. 11: 31 a–b; Grieg, 1921: 9, textfigs. 5–6. *Paelopatides gigantea* — Deichmann, 1930: 104–106 (partim); Miller, Pawson, 1990: 5. *Paelopatides agassizi* Théel, 1886a: 3. *Paelopatides grisea* — Perrier, 1902: 381; Mortensen, 1927: 388.

LOCALITIES: "Discovery" St. 9775#3; BIOGAS (1972–1974) "Jean Charcot" St. 5, 6.

DISTRIBUTION: North Atlantic Ocean (Deichmann, 1930; Pérez et al., 1984).

DEPTH RANGE: 2454–2653 m.

Paelopatides grisea Perrier, 1898

Paelopatides grisea Perrier, 1898: 1665; Perrier, 1899: 248; Perrier, 1902: 361–365; Mortensen, 1927: 388; Heding, 1940: 351; Billett et al., 1985: 407; Gage et al., 1985: 195–196; Harvey et al., 1988: 183; Miller, Pawson, 1990: 5; Gebruk, 2008: 50, 51; Rogacheva et al., 2013: 593, fig. 18a. *Paelopatides gigantea* — Deichmann, 1930: 104–106 (*partim*); Sibuet, 1977: 554; Miller, Pawson, 1990: 35.

LOCALITIES: "Talisman", St. 134; "Discovery" St. 9775#3 (Billett et al., 1985); "G.O. Sars", MAR-ECO cruise, Sts. 66/383, 68/384, 72/386 (Gebruk, 2008); "James Cook" ECOMAR, Sts. JC011/23, JC011/101, JC011/106, JC011/111, JC037/15, JC037/19, JC037/61, JC048/06 Dive 159, JC048/15 Dive 161 (Rogacheva et al., 2013).

DISTRIBUTION: North Atlantic, Caribbean.

DEPTH RANGE: 1695–4060 m.

Genus *Molpadiodemas* Heding, 1935 sensu O'Loughlin et Ahearn, 2005

TYPE SPECIES: *Molpadiodemas acaudum* Heding, 1935, junior synonym of *Pseudostichopus atlanticus* Perrier, 1898, according to O'Loughlin, 2002.

COMPOSITION: 16 species.

DISTRIBUTION: Pacific — 3, South Pacific and Antarctic — 1, Antarctic — 3, Atlantic — 4, Indonesia — 1, cosmopolitan — 4 species.

Molpadiodemas atlanticus (Perrier, 1898)

Pseudostichopus atlanticus Perrier, 1898: 165; Perrier, 1899: 246–247; Perrier, 1902: 333–337, pl. 17: 15–20; Mortensen, 1927: 386–387; Deichmann, 1930: 87–88; O'Loughlin, 2002: 315. *Molpadiodemas atlanticus* — Heding, 1940: 353–359; O'Loughlin, Ahearn, 2005: 153, fig. 3a, b, 4a–d, 6a, b. *Meseres atlanticus* — O'Loughlin, 1998: 497; Thandar, 1999: 376–379, fig. 4. *Molpadiodemas acaudum* — Heding, 1935: 78–80, Pl. 6, fig. 1, 2; Heding, 1940: 354–355, 357; Deichmann, 1940: 209, 211; Heding, 1942a: 4–5. *Meseres acaudum* — O'Loughlin, 1998: 497.

LOCALITIES: Talisman, St. 134, off the Azores (type locality); "Ingolf", St. 37, (type locality of *Molpadiodemas acaudum*, Heding, 1935), West European Basin, 4780–4795 m (O'Loughlin, Ahearn 2005).

DISTRIBUTION: North Atlantic, South-East Atlantic, Pacific.

DEPTH RANGE: 2610–4795 m.

Molpadiodemas depressus (Hérouard, 1902)

Pseudostichopus depressus Hérouard, 1902: 15–16, pl. 2: 15–18, Mortensen, 1927: 387, Deichmann, 1930: 88. *Molpadiodemas depressus* — O'Loughlin, Ahearn, 2005: 158–159, fig. 3h, 4i–l. *Pseudostichopus* (*Pseudostichopus*) *depressus* — Heding, 1940: 359 (key).

LOCALITIES: "Princesse Alice", St. 753, between Portugal and Azores; West European Basin, 4426–4435 m (O'Loughlin, Ahearn 2005). North Atlantic, 40°N, 20°W to 20°N, 75°W, 2995–4360 m (Madsen, 1953).

DISTRIBUTION: North and South Atlantic Ocean; West European Basin, Sargasso Sea, off Bahamas and West Indies.

DEPTH RANGE: 1353–5690 m.

Molpadiodemas involutus (Sluiter, 1901)

Meseres involutus Sluiter, 1901a: 11–12; Sluiter, 1901b: 49–50, pl. 8, fig. 6; Perrier, 1902: 359; O'Loughlin, 2002: 306, fig. 2e, tables 1, 3, 4. *Molpadiodemas involutus* — O'Loughlin, Ahearn, 2005: 160–161, fig. 3m–o, 4u–x. *Pseudostichopus globigerinae* Hérouard, 1923: 23–25, pl. 4: 6; Mortensen, 1927: 386, 388; Deichmann, 1930: 87, 90; Sibuet, 1977: 554; Gebruk, 2008: 50, 51. *Pseudostichopus* (*Pseudostichopus*) *globigerinae* — Heding, 1940: 353, 357; Imaoka, 1978: table 1–1; Thandar, 1992: 167. *Meseres globigerinae* — O'Loughlin, 2002: 305. *Pseudostichopus* (*Pseudostichopus*) *dilatorbis* Imaoka, 1978: 378–380, 384, fig. 1b–e, tabl. 1–1. *Pseudostichopus villo-*

sus — Hansen, 1956: 47–48 (*partim*, non *Pseudostichopus villosus* Théel, 1886).

LOCALITIES: "Chain", [USNM 1005340], West European Basin, 4426–4435 m (O'Loughlin, Ahearn, 2005); BIOGAS (1972–1974) "Jean Charcot", St. 1, 2, 4 (Sibuet, 1977); BIOICE, St. 3070, 3073, 3169 (unpublished data).

DISTRIBUTION: North and South Atlantic, including Antarctic waters (Scotia Sea), North Pacific, East China Sea, Indonesia and Tasman Sea.

DEPTH RANGE: 400–5801 m.

Molpadiodemas villosus (Théel, 1886)

Pseudostichopus villosus Théel, 1886a: 170–171, Hérouard, 1896: 164 (distribution list), Hérouard, 1902: 11–13, pl. 2: 1–3, pl. 7: 3, Hérouard, 1923: 23, Vaney, 1908: 407–408, Grieg, 1921: 4, Hérouard, 1923: 23, Mortensen, 1927: 387, 388, Deichmann, 1930: 89, Heding, 1940: 353–360, Hansen, 1956: 47–48. *Molpadiodemas villosus* — O'Loughlin, Ahearn, 2005: 164–165, tabl. 3, figs. 2a, e, 7d–f, 8q–t, 12a–d. *Pseudostichopus villosus* var. *violaceus* Théel, 1886a: 172, pl. 10: 6b. *Meseres villosus* — O'Loughlin, 1998: 497; O'Loughlin, 2002: 313, figs. 3a–b.

Type locality: "Challenger", St. 156, 62°26′S, 95°44′E, 3594 m, 26–02–1874.

LOCALITIES: "Princesse Alice II", St. 1306 (Hérouard, 1923); "Michael Sars", St. 53 (Grieg, 1921); "Discovery", St. 9638#2, 10115#1, 11908#44, 11908#68, 12930#37, 12930#46, 12930#60, 12930#64, 12930#78, 13078#29, 13078#31, 13078#37, 13200#9, 13200#27, 13200#35, 13200#60, 13200#88, 13200#99, 13368#23, 13368#51, 13369#1, 13627#10, 13627#23, 13907#1, 13925#1; "Challenger" St. 50514#1, 50515#1, 50711#1, 50812#2, 50910#1, 51414#1, 52216#8, 52403#25, 52701#42, 53201#1, 53201#24, 53201#28, 53205#3,54301#6, 54301#8, 54901#2, 54901#5, 54901#7, 54902#1, 54903#1; "Meteor" St. 52602#1 (Solís-Marín, 2003).

DISTRIBUTION: Bay of Biscay, Mediterranean Sea (Tortonese, 1949); North-West Atlantic (Solís–Marín, 2003); North-East Atlantic (Deichmann 1930, referred as *P. atlanticus*); Caribbean Sea, (Deichmann 1930, referred as *P. atlanticus*); South Atlantic, African coast (Thandar, 1999). The Pacific Ocean records need validation.

DEPTH RANGE: 896–7000 m (Deichmann, 1930; Hansen, 1956).

Molpadiodemas violaceus (Théel, 1886)

Pseudostichopus villosus var. *violaceus* Théel, 1886: 172, pl. 10, fig.6b. *Molpadiodemas violaceus* — O'Loughlin, Ahearn, 2005: 165, figs. 1e, i, 2f, 7g–i, 8u–x (list); Rogacheva et al., 2013: 592. *Pseudostichopus villosus* Théel, 1886: 170–171 (*partim* — syntypes of *Pseudostichopus villosus* from HMS "Challenger" Sts. 61, 147, 325.

LOCALITIES: "James Cook", St. JC011/75 (Rogacheva et al., 2013).

DISTRIBUTION: Antarctic and Subantarctic, North Atlantic and South Pacific.

DEPTH RANGE: 2196–6354 m, in the North Atlantic 2605–5212 m (Rogacheva et al., 2013).

Genus *Pseudostichopus* Théel, 1886 sensu O'Loughlin et Ahearn, 2005

TYPE SPECIES: *Pseudostichopus mollis* Théel, 1886 (subsequent designation by Fisher, 1907).

COMPOSITION: 11 species.

DISTRIBUTION: North-East Atlantic — 2, Pacific — 4, Indian Ocean — 1, Antarctic — 1, cosmopolitan — 3 species.

Pseudostichopus aemulatus Solís-Marín et Billet, 2004 in Solís-Marín et al., 2004

Pseudostichopus aemulatus Solís-Marín et al., 2004: 1079–1081, fig. 1A–I; O'Loughlin, Ahearn, 2005: 169–170, Fig. 11a, b, 12m; *Pseudostichopus* sp. — Billett et al., 2001: 336.

LOCALITIES: "Challenger", St. 52701#42, 54901/5, 54901/7, 54901/9, 54903/1, 54905/1; "Discovery", St. 12930#46, 12930#78, 13078#29, 13627#10.

DISTRIBUTION: North-East Atlantic, Porcupine Abyssal Plain.

DEPTH RANGE: 4350–4850 m.

Pseudostichopus peripatus (Sluiter, 1901) sensu O'Loughlin et Ahearn, 2005

Meseres peripatus Sluiter, 1901a: 10–11; Sluiter, 1901b: 48–49, pl. 5 fig. 5, pl. 8 fig.7; Perrier, 1902: 359. *Pseudostichopus peripatus* — O'Loughlin, Ahearn, 2005: 174–175, Figs. 1f, 10f–h, 11i–l, 12g, h. *Pseudostichopus occultatus* — Hérouard, 1902: 14–15, pl. 2 figs 4–14 (*partim*, illustrated; non *Pseudostichopus occultatus* Marenzeller, 1893). *Pseudostichopus occultatus* var. *plicatus* Koehler, Vaney, 1905: 9–10, pl. 3 fig. 8, pl. 9 figs 1–3; Heding, 1940: 353 (non *Pseudostichopus occultatus* Marenzeller, 1893). *Plicastichopus plicatus* — Heding, 1940: 354–356; Heding, 1942a: 6. *Pseudostichopus propinquus* Fisher, 1907: 691–693, pl. 71 fig. 3, pl. 72 fig. 2, pl. 73 fig. 3, pl. 74 fig. 1, pl. 76 fig. 3; Imaoka, 1978: 382. *Pseudostichopus* (*Trachostichopus*) *propinquus* — Heding, 1940: 357; Imaoka, 1978: table 1–1; Imaoka, 1990: 148, 152. *Meseres propinquus* — O'Loughlin, 2002: 309. *Pseudostichopus aleutianus* Ohshima, 1915: 228, pl. 8 figs 5a–c; Imaoka, 1978: 380. *Pseudostichopus* (*Trachostichopus*) *aleutianus* — Heding, 1940: 353–359; Imaoka, 1978, table 1–2. *Pseudostichopus unguiculatus* — Ohshima, 1915: 230–231, pl. 8 figs 7a–c; Imaoka, 1978: 384; Rowe, 1995: 285. *Pseudostichopus* (*Pseudostichopus*) *unguiculatus* — Heding, 1940: 353–360; Imaoka, 1978: table 1–1; Imaoka, 1990: 152; Thandar, 1992: 167. *Pseudostichopus marenzelleri* Hérouard, 1923: 25; Mortensen, 1927: 287–288; Deichmann, 1930: 90; Gebruk, 2008: 50, 51. *Pseudostichopus* (*Pseudostichopus*) *marenzelleri* — Heding, 1940: 353–359; Imaoka, 1978: table 1–1; Thandar, 1992: 167. *Pseudostichopus lapidus* Hérouard, 1923: 26–28, pl. 4 fig. 5; Mortensen, 1927: 387; Deich-

mann, 1930: 90. *Pseudostichopus* (*Pseudostichopus*) *lapidus* — Heding, 1940: 353–360. *Plicastichopus ingolfi* Heding, 1942a: 5–6, figs 4–5, pl. 1 figs 4–5. *Meseres ingolfi* — Rowe, 1995: 285. *Pseudostichopus* (*Trachostichopus*) *tuberculatus* — Imaoka, 1990: 149–152, pl. p. 149, fig. P. 15.

LOCALITIES: Princesse Alice", St. 527 (type locality of *Pseudostichopus lapidus* Hérouard, 1923), St. 650 (type locality of *Pseudostichopus marenzelleri* Hérouard, 1923), "Ingolf", St. 18, (type locality of *Plicastichopus ingolfi* Heding, 1942a); "G.O. Sars", MAR-ECO cruise, Sts. 68/384, 72/386; "James Cook" ECOMAR, Sts. JC011/23; JC011/75; JC011/101; JC011/106; JC037/15; JC037/19; JC037/27; JC037/61; JC037/67; JC037/70, JC048/24 Dive 165 (Rogacheva et al., 2013).

DISTRIBUTION: Mediterranean, North and South Atlantic Ocean, Indo-Pacific Region, North and South Pacific Ocean, Scotia Sea, Antarctic Ocean, Ross Sea, Weddell Sea.

DEPTH RANGE: 134–5453 m.

Scotothuria Hansen, 1978

TYPE SPECIES: *Scotothuria herringi* Hansen, 1978.

COMPOSITION: 1 species.

Scotothuria herringi Hansen, 1978

Scotothuria herringi Hansen, 1978: 34–37, figs. 1–9; Billett et al., 1985: 406–407, fig. 5; Miller, Pawson, 1990: 4.

LOCALITIES: "Discovery", St. 9022#1, 9801#90, 10651#1, 10651#2, 11121#22, 11121#23 (Billett et al., 1985).

REMARKS: Benthopelagic species; swims using udulating movements of ventro-lateral fringe.

DISTRIBUTION: Numerous records in the East Atlantic in pelagic trawls from 20 to 3900 m above seafloor. The only record in the benthic trawl at the *Galathea* St. 238 in the Indian Ocean off Kenia.

DEPTH RANGE: 1250–4980 m.

Genus *Synallactes* Ludwig, 1893

TYPE SPECIES: *Synallactes alexandri* Ludwig, 1893.

COMPOSITION: 22 species.

DISTRIBUTION: Pacific — 11, Atlantic — 6, Indian Ocean — 4, Antarctic — 1 species.

Synallactes crucifera Perrier, 1898

Synallactes crucifera Perrier, 1898: 1665; Perrier, 1899: 247; Perrier, 1902: 339–345, pl. 12: 5–6, pl. 17: 21–35; Mortensen, 1927: 378 (key), textfig. 224, fig. 9; Deichmann, 1930: 106 (*passim*); Deichmann, 1940: 186, pl. 31: 5–6; Gebruk, 2008: 50, 51.

LOCALITIES: "Talisman", St. 40.

DISTRIBUTION: North-East Atlantic Ocean, coast of Morocco; Caribbean Sea, off Venezuela; Mid-Atlantic Ridge, south of the Charlie-Gibbs Fracture Zone.

DEPTH RANGE: 2160–2340 m.

Synallactes longipapillata Sibuet, 1978

Synallactes longipapillata Sibuet, 1978: 311–318, pls. 1–3.

LOCALITIES: BIOGAS (1972–1974) "Jean Charcot", St. 2, DS 40. Known only from the type locality.

DISTRIBUTION: North-East Atlantic, Bay of Biscay.

DEPTH RANGE: 3345 m.

Family Mesothuriidae

Genus *Mesothuria* Ludwig, 1894

TYPE SPECIES: *Mesothuria multiples* Ludwig, 1894.

COMPOSITION: 27 species (Solis-Marin, 2003; Gebruk et al., 2012).

DISTRIBUTION: Pacific — 9; Indian Ocean — 6; Atlantic — 6: Caribbean — 3; Antarctic to North Atlantic — 1; Antarctic — 1; cosmopolitan — 1 species.

Mesothuria bifurcata Hérouard, 1901

Mesothuria bifurcata Hérouard, 1901: 40; Hérouard, 1906: 4–6, pl. 2: 3; Jangoux, Massin, 1986: 84 (list); O'Loughlin et al., 1994: 553–554; O'Loughlin, 2002: 313, 315; Gebruk et al., 2012: 283–284, fig. 5. *Mesothuria* (*Mesothuria*) *bifurcata* — Heding, 1940: 333; Heding, 1942a: 8, text fig. 7, figs. 1–6.

LOCALITIES: "Ingolf", St. 18 (Heding, 1942a); BIOICE, St. 2914, 3077, 3572, 3574 (unpublished data).

DISTRIBUTION: Antarctic species. One record in the North Atlantic.

DEPTH RANGE: 320–2337 m (Heding, 1942a; O'Loughlin, 2002).

Mesothuria cathedralis Heding, 1940

Mesothuria (*Allantis*) *cathedralis* — Heding, 1940: 338–340, textfig. 5; *Mesothuria* (*Penichrothuria*) *cathedralis*, — Heding, 1942a: 8–9, textfig. 8, figs. 1–5; non *Mesothuria* (*Allantis*) *candelabra* — Heding, 1940: 334–335, textfig. 3, figs. 1–6; *Mesothuria cathedralis*, Gage et al., 1985: 196; Gebruk, 2008: 50, 51; Gebruk, 2012: 284, 286–289, fig. 7.

LOCALITIES: "Ingolf", St. 18; "Challenger", St. ES 10; "G.O. Sars", MAR-ECO cruise, St. 72/386 (Gebruk 2008); "James Cook", Sts. JC011/17, JC011/23, JC011/75, JC011/101, JC037/15, JC037/19, JC037/27, JC037/27, JC037/70, JC048/16 Dive 162 (Rogacheva et al., 2013).

DISTRIBUTION: Atlantic; Gulf of Guinea, off Cape Bojador (Morocco), Irminger Basin off southern Greenland and Gulf of Mexico.

Mesothuria milleri Gebruk et Solís-Marín, 2012 in Gebruk et al., 2012

Mesothuria milleri Gebruk et al., 2012: 274–283, fig. 4. *Holothuria verrilli* (Théel, 1886a) — Marenzeller, 1893b: 7–9, pl. 1: 2, pl. 2: 2. *Mesothuria verrilli* (Théel, 1886) — Östergren, 1896: 345; Perrier, 1902: 307–312, pl. 16: 22–31; Hérouard, 1923: 10–13; Mortensen, 1927: 381–382, fig. 224: 4–5; Grieg, 1921: 4.

LOCALITIES: numerous throughout east Atlantic, e.g. "Talisman", Sts. 75, 129, 134, 135, 136; BIOICE, Sts. 2861, 3070, 3572.

DISTRIBUTION: This species is widely distributed in the North-Eastern North Atlantic: off northwest Africa, the Canary Islands (Perrier, 1902; Grieg, 1932) the Azores (Hérouard, 1902; 1923; Perrier, 1902), the Bay of Biscay (Koehler, 1896; Perrier, 1902) the Porcupine Seabight (Mortensen, 1927), Goban Spur, Rockall Trough (Harvey et al., 1988), off British Isles, the Azores, the Canary Islands and Morocco (Perez et al*.,* 1984).

DEPTH RANGE: 550–4255 m (Perrier, 1902). Perrier was uncertain about two records from deeper than 4000 m. Excluding these records, the lower limit is 3018 m (Hérouard, 1923). In the North–East Atlantic this species was found to be most abundant between 1430 and 1530 m (Billett, 1988).

Mesothuria intestinalis (Ascanius, 1805)

Holothuria intestinalis Ascanius, 1805: 5, pl. 45; Marenzeller, 1893a: 15; Marenzeller, 1895: 21; Ludwig, 1893: 174; Théel, 1886: 209; Théel, 1901: 1–38, pls. 1–2: 1–19, textfigs. 1–12; Bell, 1892: 48–49, pl. 5: 3; Hérouard, 1896: 163. *Mesothuria intestinalis* — Östergren, 1896: 347–351, pl. 18: 1–26; Östergren, 1902: 6–7; Perrier, 1902: 304–307, text figs. 1–2, pl. 16: 19–21; Ludwig, 1901: 139; Théel, 1902: 4–34, pl. 1–2: 1–19 and 12 text figs.; Hérouard, 1923: 10, pl. 5: 5–6; Mortensen, 1927: 381, text fig. 225, 228: 3; Koehler, 1927: 240, pl. 15: 3 (*partim*); Deichmann, 1930: 94–95, pl. 6: 9–10; Deichmann, 1954: 385–386; Tortonese, 1949: 13 (list); Tortonese, 1965: 69–70, text fig. 26; Sibuet, 1974a: 795; Harvey et al., 1988: 184; Madsen, Hansen, 1994: 76–79, figs. 46–47, map 29; Massin, 1996: 43; Gebruk et al., 2012: 291–300, figs. 1, 9c–d. *Fistularia mollis* Sars, 1835: 40. *Thyonidium scabrum* Sars, 1868: 19–20. *Holothuria verrilli* — Marenzeller, 1893b: 7–9, pl. 1: 2, pl. 2: 2. *Allantis intestinalis* var. *verrilli* — Hérouard, 1902: 18–21, pl. 1: 3–6 (*partim*); *Allantis intestinalis* — Heding, 1942a: 7, text fig. 6. Non *Allantis intestinalis* var. *verrilli* — Hérouard, 1902 (= *Mesothuria verrilli*). *Mesothuria* (*Allantis*) *intestinalis* — Heding, 1942a: 7, textfig. 6, figs. 1–7; Panning, 1952: 123–125, figs. 1–3. *Mesothuria verrilli* — Tortonese, 1952: 228; Tortonese, 1961, pl. 1, text fig. 1. *Mesothuria triradiata* Heding, 1942b: 217–218, textfig. 1, figs. 1–6.

DISTRIBUTION: widely distributed in the North-East Atlantic (Harvey et al., 1988) from off North-West Africa (Hérouard, 1923) to the coast of Norway, although nowhere in the deep sea does it appear to be particularly common. A few specimens are known from the Mediterranean (Perrier, 1902; Koehler, 1927; Sibuet, 1977) and the western Atlantic (Deichmann, 1930). The species may occur in the Gulf of Mexico (Deichmann, 1954).

DEPTH RANGE: 18–4255 m (Tortonese 1949). The shallowest records come only from cold waters off Norway.

Mesothuria maroccana Perrier, 1899

Mesothuria maroccana Perrier, 1899: 245; Perrier, 1902: 312–317, pl. 16: 32–35; Hérouard, 1923: 17; Deichmann, 1930: 97, pl. 7: 2–7; Deichmann, 1940: 191; Deichmann, 1954: 385; Grieg, 1921: 4; Hansen, 1956: 46, fig. 14a; Gebruk, 2008: 50, 51; Gebruk et al., 2012: 301–303, figs. 9a, b; Rogacheva et al., 2013: 592, fig. 17d. *Holothuria intestinalis* var. *verrilli* — Hérouard, 1896: 163. *Mesothuria murrayi* var. *grandipes* Hérouard, 1923: 15, pl. 4: 7–9. *Mesothuria* (*Mesothuria*) *maroccana* — Heding, 1940: 333, Heding, 1942a: 8.

LOCALITIES: "Talisman", Sts. 35, 39 (Perrier, 1902); "Ingolf", Sts. 18, 65 (Heding, 1942a); "Michael Sars", St. 88 (Grieg, 1921); BIOGAS (1972–1974) "Jean Charcot", Sts. 1, 2, 6 (Sibuet, 1977); "G.O. Sars", MAR-ECO cruise, Sts. 40/367, 42/368, 50/373, 64/381 (Gebruk, 2008); "Challenger", St. 50518 #1, "Discovery", St. 10106 #1 (unpublished); "James Cook" ECOMAR, Sts. JC011/17, JC011/75, JC037/15, JC037/19, JC037/27, JC048/40 Dive 173 (Rogacheva et al., 2013).

DISTRIBUTION: Caribbean Sea, Gulf of Mexico, North Atlantic.

DEPTH RANGE: 700–3120 m.

Genus *Zygothuria* Perrier, 1898

TYPE SPECIES: *Zygothuria lactea* (Théel, 1886) designated by Hérouard (1902).

COMPOSITION: 6 species (Solis-Marin, 2003; Gebruk et al., 2012).

DISTRIBUTION: Atlantic — 3, Pacific — 2, cosmopolitan — 1 species.

Zygothuria lactea (Théel, 1886)

Holothuria lactea Théel, 1886a: 6–7; Théel, 1886b: 183–184, pl. 9: 15. *Zygothuria lactea* — Gebruk et al., 2012: 310–321, figs. 13, 14. *Mesothuria lactea* (Théel) — Sluiter, 1901a: 25; Hérouard, 1902: 21–23, pl. 1: 17–19; Hérouard, 1923: 13–15, pl. 4: 1–3; Mortensen, 1927: 382–383 (*partim*), fig. 227. *Mesothuria* (*Zygothuria*) *lactea* (Théel) — Heding, 1940: 340–341, fig. 7. *Mesothuria* (*Zygothuria*) *lactea lactea* (Théel) — Heding, 1942a: 9–10, fig. 9. *Mesothuria lactea* (Théel) — Perrier, 1902: 322–327 (*partim*), pl. 17: 1–6; Deichmann, 1930: 108–111, pl. 8: 8–9; Deichmann, 1940: 190–191; Deichmann, 1954: 386.

DISTRIBUTION: Cosmopolitan species. However, some old records may not be reliable because most authors did not recognize the species *oxysclera* and these two species could have been confused. This is especially likely with the records from the Gulf of Mexico and the Caribbean (Deichmann,

1930) where *Z. oxysclera* occurs. Numerous records from the eastern North-East Atlantic, also known from the North-West Atlantic, off West Africa, South-East Atlantic, Indo-Malayan archipelago and New Zealand waters (Gebruk et al., 2012).

DEPTH RANGE: reliable bathymetric range from 694 m (Sluiter, 1901a) to 2102 m (Hérouard, 1902). *M. lactea* var. *spinosa* (Heding, 1940), recorded from 5108 m, differs significantly from *Z. lactea* both in the shape and the size of ossicles and should probably be assigned to *Z. candelabri* (Hérouard, 1923). Another deep record, from 4400 m (Sibuet, 1977), was not supported by morphological details and hence is not reliable. In the Porcupine Seabight the species was most abundant between 1430 and 1930 m (for detailed distribution, see Billett, 1988).

Zygothuria candelabri (Hérouard, 1923)

Mesothuria candelabri Hérouard, 1923: 17–19, pl. 1: 1–10; Madsen, 1953: 153. Non *Mesothuria* (*Allantis*) *candelabri* — Heding, 1940 [= *Mesothuria* (*Penichrothuria*) *cathedralis*]. *Zygothuria candelabri* — Deichmann, 1930: 111; Gebruk et al., 2012: 322–325, fig. 16.

REMARKS: This species was described from some fragments. The tables are indicated to have relatively few holes in the skin and excessively long diverging spines on top of the spire, with a few small teeth scattered along the sides of the spines. It is likely identical with *Z. lactea* var. *spinosa* and Z. *thomsoni* (Gebruk et al., 2012). Some authors have mis-spelt "*candelabri*" as "*candelabra*".

LOCALITIES: "Princesse Alice", St. 2986, Bay of Biscay; Swedish Deep-Sea Expedition, St. 387; Porcupine Seabight, Porcupine Abyssal Plain (Billett, 1991).

DISTRIBUTION: North-East Atlantic Ocean.

DEPTH RANGE: 3890–4870 m.

Order Dendrochirotida
Family Cucumariidae
Genus *Staurocucumis* Ekman, 1927

TYPE SPECIES: *Cucumaria liouvillei* Vaney, 1914.

COMPOSITION: 6 species.

DISTRIBUTION: Atlantic Ocean — 1, Antarctic — 4, cosmopolitan — 1 species.

Staurocucumis abyssorum (Théel, 1886)

Cucumaria abyssorum Théel, 1886a: 66–67, pl. 4, fig. 6, pl. 16, fig. 6; von Marenzeller, 1893b: 14; Ludwig, 1894: 122–125, pl. 9, figs. 28–29, pl. 13, figs. 1–5; Grieg, 1921: 11, text-fig. 9; Ludwig, Heding, 1935: 179; Cherbonnier, 1941: 93–96, 101, fig. 1, 3j, n, o, p. *Staurocucumis abyssorum* — Ekman, 1927: 385–387; Clark, Deichmann, 1936: 566; Hansen, 1988: 302–303, fig. 1; Rogacheva et al., 2013: 590, fig. 17a. *Abyssocucumis abyssorum* — Heding, 1942a: 33–35, figs. 34–36; Gage et al., 1985: 191. *Cucumaria abyssorum* var. *grandis* Théel, 1886a: 67–68, pl. 5 fig.1. *Cucumaria abyssorum* var. *hyalina* — Théel, 1886a: 68–69, pl. 4 fig. 7. *Cucumaria sluiteri* — Ohshima, 1915: 263, pl. 10, fig. 21a, b. *Cucumaria ingolfi* Deichmann in Mortensen, 1927: 396. *Staurocucumis ingolfi* — Clark, Deichmann, 1936: 567. *Cucumaria albatrossi* Cherbonnier, 1941: 96–101, 103, fig. 2, 3a–I, k–m.

LOCALITIES: "Hirondelle", St. 248, (von Marenzeller, 1893b); "M. Sars", St. 88 (Grieg, 1921); "Challenger", SWT 15, (Gage et al., 1985); "G.O. Sars", MAR-ECO cruise, Sts. 52/374, 54/377 (Gebruk, 2008); "James Cook" ECOMAR, Sts. JC011/17, JC011/23, JC037/15, JC37/019, JC37/027 (Rogacheva et al., 2013).

DISTRIBUTION: cosmopolitan (Atlantic, Pacific, Indian Oceans and Antarctic).

DEPTH RANGE: 869–4025 m, Ekman (1927) referred to a juvenile specimen from 385 m in the Antarctic, but Hansen (1975) believed that it might have been misidentified.

Genus *Echinocucumis* M. Sars, 1859[2]

TYPE SPECIES: *Echinocucumis typica* M. Sars, 1859 (=*Eupyrgus hispidus* Barrett, 1857) by monotypy.

COMPOSITION: 7 species.

DISTRIBUTION: Atlantic — 2, Atlantic and Pacific — 1, Pacific — 2, Indian Ocean — 1, Antarctic — 1 species.

Echinocucumis hispida (Barrett, 1857)

Eupyrgus hispidus Barrett, 1857: 46, pl. 4 fig 1 a, b. *Echinocucumis hispida* — Mortensen, 1927: 404, figs. 242–*1*i, 243; Deichmann, 1930: 150, pl. 18 fig. 9; Ludwig, Heding, 1935: 167; Heding, 1942a: 29–31, figs. 31, 32; Panning, 1949: 454; Pawson, 1965: 8–10, fig. 2; Sibuet, 1977: 554; Gage et al., 1985: 194; Thandar, 1999: 370–373, fig. 2. *Echinocucumis typica* M. Sars, 1861: 102, pl. 10 figs. 11–20, pl. 11 figs. 1–17; Théel, 1886a: 118–119; Théel, 1886b: 9, fig. 3; Hérouard, 1923: 118–127, pl. VII figs. 7, 10. *Cucumaria typica* Ludwig, 1901: 149.

TYPE LOCALITY: Nordland (western Norway, Lofoten area).

LOCALITIES: "Princesse Alice II", St. 1116 (Hérouard, 1923); BIOGAS, St. 4 (Sibuet, 1977).

DISTRIBUTION: Atlantic, off east coast of New Zealand.

DEPTH RANGE: 50–3257 m.

Family Ypsilothuriidae
Genus *Ypsilothuria* E. Perrier, 1886

TYPE SPECIES: *Ypsilothuria talismani* E. Perrier, 1886.

COMPOSITION: 2 species

DISTRIBUTION: Atlantic (*Y. talismani*); Atlantic and Pacific (*Y. bitentaculata*).

---

[2] Smirnov (2012: 822) transferred this genus from family Ypsilothuriidae into family Cucumariidae.

Ypsilothuria talismani talismani E. Perrier, 1886

Ypsilothuria talismani Perrier E., 1886: 286, fig.294; Perrier R., 1902: 518, textfig. 12, Pl. XII figs. 9–10. *Ypsilothuria talismani talismani* — Heding, 1942a: 26–27, textfig. 24, textfig. 25, *5, 6*, textfig. 26, *1, 3*, textfig. 27, *3*, textfig. 28, *1, 2*, textfig. 29; Gebruk, 2008: 50, 51. *Echinocucumis typica* var. *abyssalis* — Koehler, 1896: 118, fig. 22.

LOCALITIES: "Travailleur" (1881) Dragage 1 (Perrier, 1902); "G.O. Sars", MAR-ECO cruise, Sts.: 54377, 64381, 66383 (Gebruk, 2008); BIOICE, Sts.: 2854, 2863, 3169, 3170, 3172, 3176 (unpublished data).

DISTRIBUTION: North Atlantic.

DEPTH RANGE: 480–3527 m.

Ypsilothuria bitentaculata attenuata E. Perrier, 1886

Ypsilothuria attenuata Perrier E., 1886: 285, fig. 203; Perrier R., 1902: 522, textfig. 13. *Ypsilothuria bitentaculata attenuata* — Heding, 1942a: 28, pl. 2 figs. 1–10; textfig. 25 *1–4*, *9–10*, textfig. 26 *4–7*, textfig. 27 *2, 5*, textfig. 30; Gage et al., 1985: 192; Harvey et al., 1988: 183; Alvà, 1991: 459–460; Massin, 1996: 44–46, fig. 1A–G, fig. 2A–B. *Ypsilothuria bitentaculata* — Thandar, 1999: 373–376, fig. 3, 14D–F. *Sphaerothuria bitentaculata* — Deichmann, 1930: 152, pl. 19 figs. 4–5. *Echinocucumis typica* — Clark, 1923: 418 (non *Echinocucumis typica* M. Sars, 1859 = *E. hispida* Barrett, 1857). *Ypsilothuria talismani* — Mortensen, 1932: 49; Tyler, Gage, 1983: 609–616 (non *Ypsilothuria talismani* E. Perrier, 1886)

LOCALITIES: "Challenger" (1973–1985): Sts. ES 06, ES 08, ES 10, ES 12, ES 27, ES 34, ES 52, ES 54, ES 55, ES 56, ES 57, ES 59, ES 111, ES 118, AT 119, AT 121, ES 122, ES 129, AT 130, ES 137, ES 140, ES 141, ES 143, AT 144, ES 147, SBC 150, AT 151, ES 152, AT 153, AT 154, ES 164, AT 167, ES 169, AT 171, ES 172, AT 175, ES 176, AT 177, ES 180, AT 181, ES 184, ES 185 (Gage et al., 1985; Harvey et al., 1988), AT 186 (Gage et al., 1985), ES 190 (Gage et al., 1985; Harvey et al., 1988), AT 191, AT 195, ES 197, AT 198 (Gage et al., 1985), ES 200 (Gage et al., 1985; Harvey et al., 1988), AT 201, ES 202 (Gage et al., 1985), ES 204 (Gage et al., 1985; Harvey et al., 1988), ES 218, ES 231, ES 232, AT 233, ES 244, AT 245, ES 266, AT 267, AT 271, AT 273, AT 282, ES 283, ES 285, AT 286, AT 288, ES 289 (Tyler, Gage, 1983; Gage et al., 1985; Harvey et al., 1988).

DISTRIBUTION: possibly cosmopolitan.

DEPTH RANGE: 375–3231 m.

Order Molpadiida
Family Molpadiidae
Genus *Molpadia* (Cuvier, 1817) Risso, 1826

TYPE SPECIES: *Molpadia musculus* Risso, 1826.

COMPOSITION: about 58 nominal species.

DISTRIBUTION: 3 species known from the Atlantic, others from the Indo-Pacific, Antarctic and Arctic.

REMARKS. In the list below the shallow-water species *Molpadia borealis* M. Sars, 1859, is not included, although it was mentioned from the depth ca. 2000 m by Harvey et al. (1988) ("Challenger" St. AT107A).

Molpadia musculus Risso, 1826

Molpadia musculus Risso, 1826: 293; Clark, 1908: 165 (complete list of references till 1907); Ohshima, 1915: 250; Hérouard, 1923: 123, p. 132, pl. 5 fig. 1; Deichmann, 1930: 198, pl. 23, figs. 4–7; Heding, 1931b: 279; Deichmann, 1940: 225, pl. 40 figs. 1–15; Deichmann, 1947: 342; Deichmann, 1954: 405; Djakonov at al., 1958: 376; Cherbonnier, 1965: 17, pl. 7 figs. i–q, pl. 8 figs. a–j; Pawson, 1965: 11, fig. 3 *1, 4–6*; Tortonese, 1965: 98, fig. 42; Pawson, 1977: 100, fig. 1–3, 4a–e, map 1 (complete list of references); Pawson et al., 2001: 317–318, fig. 2a–c. *Ankyroderma musculus* — Perrier, 1902: 529–533, pl. 22 figs. 16–22. *Molpadia violacea* — Studer, 1876: 464; Pawson, 1963a: 15–16, pl. 3, figs. 4–8; Pawson, 1965: 12–13. *Trochostoma violaceum* Théel, 1886a: 42, pl. 2, fig. 6; Lampert, 1889: 842; Perrier, 1905: 65. *Haplodactyla violacea* — Heding, 1931b: 280. *Eumolpadia violacea* — Heding, 1935: 42, textfig. 8 *7–10*, pl. 5 fig. 10, pl. 7 fig. 3, pl. 8 fig. 4; Ludwig, Heding, 1935: 144–145, textfig. 11. *Ankyroderma danielsseni* Théel, 1886a: 39, pl. 2 fig. 6. *Ankyroderma loricatum* Perrier, 1898: 1666; Perrier, 1902: 535, pl. 22 figs. 23–28; Hérouard, 1923: 133. *Eumolpadia asaphes* Heding, 1935: 42–44, textfig. 9, pl. 5 fig. 9, pl. 7 fig. 2.

LOCALITIES: "Princesse Alice", St. 515 (Hérouard, 1902, 1923); "Talisman", St. 97 (Perrier, 1902); "Ingolf", St. 36 (Heding, 1935); "G.O. Sars", MAR-ECO cruise, Sts. 54/377, 64/381, 66/383 (Gebruk, 2008); BIOICE, St. 3172 (unpublished data); "James Cook" ECOMAR, Sts. JC011/17, JC011/101, JC011/111, JC037/15, JC037/19, JC037/27, JC037/61 (Rogacheva et al., 2013).

DISTRIBUTION: cosmopolitan.

DEPTH RANGE: 35–5205 m (Pawson, 1977).

Molpadia blakei (Théel, 1886)

Trochostoma blakei Théel, 1886b: 16, pl. 1 fig. 8; Perrier, 1902: 525, pl. 22 fig. 3–6. *Molpadia blakei* — Clark, 1908: 33, 168; Deichmann, 1930: 196–197, pl. 22 fig. 19–23; Deichmann, 1940: 224, pl. 38 fig. 6–8; Sibuet, 1977: 554; Khripunov, Sibuet, 1980: 187; Gage et al., 1985: 205; Tyler et al., 1987: 388; Harvey et al., 1988: 191; Pawson et al., 2001: 320–322, fig. 3. *Trochostoma blakei* var. *excentrica* Hérouard, 1923: 136–137, pl. 9 figs. 3–9. *Trochostoma angulatum* Hérouard, 1923: 136, pl. 3 fig. 6, pl. 8 fig. 3. *Trochostoma grossularia* Hérouard, 1923: 137–139, pl. 9 figs. 13–16, 21–32. *Paratrochostoma spiniferum* Heding, 1935: 72–76, fig. 21, pl. 4 figs. 13–14, pl. 5 figs. 20–21.

LOCALITIES: "Princesse Alice II", St. 3006 (Hérouard, 1923 as *Trochostoma blakei* var. *excen-*

trica); "Princesse Alice, St. 757, "Princesse Alice II", St. 2994 (Hérouard, 1923 as *Trochostoma grossularia*); "Challenger" St.: ES 143, AT 144, SBC 150, AT 151, ES 152, AT 153, AT 167, AT 171, AT 175, ES 176, AT 177, AT 181, ES 184, ES 185, AT 191, AT 195, ES 197, AT 198, ES 200, AT 201, ES 202, ES 207 (Gage et al., 1985), ES 283, AT 288, 3/85/5 OTSB (Harvey et al., 1988); "Discovery" St. 9638#2, "Challenger" St. 50515, 50711, 50811 (Tyler et al., 1987); Porcupine Abyssal Plain, 2470–4795 m (Billett, 1991); BIOGAS (1972–1974) "Jean Charcot" St. 2-6 (Sibuet, 1977); BIOICE, St. 2863, 3176 (unpublished data).

DISTRIBUTION: North Atlantic (Hérouard, 1923; Heding, 1935; Sibuet, 1977; Gage et al., 1985; Harvey et al., 1988; Billett, 1991), Gulf of Mexico and off east Coast of Brazil (Pawson et al., 2001).

DEPTH RANGE: 1727–5270 m.

Genus *Cherbonniera* Sibuet, 1974

TYPE SPECIES: *Cherbonniera utriculus* Sibuet, 1974.

COMPOSITION: monotypic.

DISTRIBUTION: North Atlantic.

Cherbonniera utriculus Sibuet, 1974

Cherbonniera utriculus Sibuet, 1974b: 1443–1445, pl. 1; Sibuet, 1977: 554; Gage et al., 1985: 205; Tyler et al., 1987: 385; Harvey et al., 1988: 191; Pawson et al., 2001: 315–317, fig. 1A–D.

LOCALITIES: POLYGAS and BIOGAS 4 (1972 and 1974), DS 20, DS 21, DS 25, DS 51, DS 55, DS 56, DS 59; "Challenger": St. ES 02, ES 06, ES 08, ES 10, ES 27, ES 28, ES 34, ES 55, ES 56, ES 57, SBC 58, ES 59, ES 111, ES 118, AT 119, ES 129, ES 135, ES 137, ES 140, ES 143, ES 147, SBC 150, ES 164, ES 169, ES 172, ES 180, ES 185, SBC 188, ES 190, ES 204, SBC 205, ES 207 (Gage et al. 1985), SBC 174,ES 231, ES 283, ES 285 (Harvey et al., 1988); "Discovery" 9576#14, "Discovery" St. 50604#1, 10114#1, 10115#1 (Tyler et al., 1987); Porcupine Abyssal Plain, 2820–4140 m (Billett, 1991); BIOGAS Sts. 2, 3, 6 (Sibuet, 1977).

DISTRIBUTION: Atlantic Ocean: Bay of Biscay (Sibuet, 1974b) Rockall Trough and adjacent areas (Gage et al., 1985; Harvey et al., 1988); Porcupine Abyssal Plain (Billett, 1991), off New York, east of Cape Hatteras, and north-east of the Falkland Islands (Pawson et al., 2001).

DEPTH RANGE: 2039–5223 m.

Family Caudinidae
Genus *Hedingia* Deichmann, 1938

TYPE SPECIES: *Trochostoma albicans* Théel, 1886.

COMPOSITION: 6 species (Deichmann, 1938).

DISTRIBUTION: Atlantic — 1, Pacific — 4, cosmopolitan — 1 species.

Hedingia albicans (Théel, 1886) Deichmann, 1938

Trochostoma albicans Théel, 1886a: 44, pl.11, fig. 3; Perrier, 1902: 526–528, pl. 22, figs. 7–8; Koehler, Vaney, 1905: 89–90, pl. 13, figs. 9–10. *Hedingia albicans* — Deichmann, 1938: 112; Deichmann, 1940: 216–217; Harvey et al., 1988: 191–192; Pawson et al., 2001: 324–325, fig. 4C; Bohn, 1985: 33. *Caudina albicans* — Clark, 1908: 37, 174–175, pl. 10 fig. 12; Heding, 1931b: 283. *Haplodactyla albicans* — Heding, 1935: 65–67, fig. 18, 19 (erroneously 21), pl. 4 fig. 9, pl. 5 fig. 17, pl. 8 fig. 10. *Trochostoma albicans* var. *glabra* Théel, 1886a: 46. *Caudina arenata* var. *armata* Théel, 1886b: 17 [nec *Caudina arenata* (Gould, 1841)].

LOCALITIES: Porcupine Abyssal Plain, 1430–2790 m (Billett, 1991).

DISTRIBUTION: North Atlantic, Mediterranean, Indian Ocean, New Zealand.

DEPTH RANGE: 494–3200 m.

Family Gephyrothuriidae
Genus *Gephyrothuria* Koehler et Vaney, 1905

TYPE SPECIES: *Gephyrothuria alcocki* Koehler et Vaney, 1905.

COMPOSITION: monotypic.

DISTRIBUTION: cosmopolitan.

Gephyrothuria alcocki Koehler et Vaney, 1905

Gephyrothuria alcocki Koehler, Vaney, 1905: 78–80, pl. 5, fig. 6–8; Clark, 1908: 22, 186; Hérouard, 1923: 33; Deichmann, 1930: 202; Heding, 1935: 78; Deichmann, 1940: 209–211; Heding, 1940: 358; Hansen, 1956: 48; O'Loughlin, 1998: 495–496, fig. 1; Rogacheva et al., 2013: 613–614, figs. 16c, d. 19l. *Himasthlephora glauca* — Clark, 1908: 22, 40–41, 185 pl. 13, fig. 1–4; Heding, 1935: 78. *Gephyrothuria glauca* — Hérouard, 1923: 33; Deichmann, 1930: 202–203; Deichmann, 1940: 209–211; Heding, 1940: 358; Hansen, 1956: 48. *Gephyrothuria europeensis* — Hérouard, 1923: 30–33, pl. IX: 10a, b; Deichmann, 1940: 209–211; Heding, 1940: 358; Sibuet, 1977: 554.

REMARKS: Species *Gephyrothuria europeensis* Hérouard, 1923 was synonymized with *Gephyrothuria alcocki* Koehler et Vaney, 1905 by O'Loughlin (1998).

LOCALITIES: "Princesse-Alice II", St. 2990 (type locality of *Gephyrothuria europeensis*); "James Cook" ECOMAR, Sts. JC011/17, JC011/23, JC110/75, JC11/101, JC11/106, JC037/15, JC037/19, JC037/27, JC037/61, JC037/67, JC037/70 (Rogacheva et al., 2013).

DISTRIBUTION: cosmopolitan (Atlantic, Indian, Pacific Oceans).

DEPTH RANGE: 732–3499 m.

References

Agatep C.P. 1967a. Holothurians of the genera *Elpidia* and *Kolga* from the Canadian Basin of the Arctic Ocean // Bulletin of the Southern California Academy of Scences. Vol.66. P.135–141.

Agatep C.P. 1967b. Some elasipodid holothurians of Antarctic and Subantarctic seas // Antarctic Research Series. Vol.11. P.49–71.

Alvà V. 1991. On three species of Mediterranean echinoderms // Scientia Marina. Vol.55. No2. P.459–462.

Ascanius P. 1806. Icones Rerum Naturalium, ou figures enluminées d'histoire naturelle du Nord. Heft 5. Copenhagen. 8 p.

Augustin E. 1908. Über Japanische Seewalzen // Beiträge zur Naturgeschichte Ostasiens, Abhandlungen der Mathematisch-Physikalischen Klasse der Königlich Bayerischen Akademie der Wissenschaften, 1 (Suppl. 2). Bd.1. 44 S.

Baranova Z.I. 1964. [Echinoderms collected by expedition on icebreaker F. Litke in 1955] // Trudy Arkticheskogo i Antarkticheskogo Nauchno-Issledovatel'skogo Instituta. Vol.259. P.355–372 [in Russian].

Baranova Z.I. 1989. [A new holothurian species of the genus *Elpidia* from the Arctic Ocean // D.L. Kalio (ed.). Fossil and recent Echinoderm Researches. Tallinn. P.218–222 [in Russian, with English summary].

Barrett L. 1857. Description of four new species of Echinodermata // Annals and Magazine of Natural History. Ser.2. Vol.20. P.46–48.

Bell F.J. 1892. Catalogue of the British Echinoderms in the British Museum (Natural History). London. 202 p.

Belyaev G.M. 1970. [Ultra-abyssal holothurians of the genus *Myriotrochus* (order Apoda, fam. Myriotrochidae)] // Trudy Instituta Okeanologii AN SSSR. Vol.86. P.458–488 [in Russian].

Belyaev GM. 1971. [Deep-sea holothurians of the genus *Elpidia*] // Trudy Instituta Okeanologii AN SSSR. Vol.92. P.326–367 [in Russian, with English abstract].

Belyaev G.M. 1975. [New species of holothurians of the genus *Elpidia* from the South part of Atlantic Ocean] // Trudy Instituta Okeanologii AN SSSR. Vol.103. P.259–280 [in Russian, wiyh English abstract].

Belyaev G.M., Mironov A.N. 1981a. [New species of the genus *Acanthotrochus* (Apoda, Myriotrochidae)] // Zoologicheskii Zhurnal. Vol.60. No.4. P.520–529 [in Russian, with English abstract].

Belyaev G.M., Mironov A.N. 1981b. [Some new deep-sea species of the Myriotrochidae (Holothurioidea) from the nothern and the south-western parts of the Pacific Ocean] // Trudy Instituta Okeanologii AN SSSR. Vol.115. P.165–173 [in Russian, with English abstract].

Belyaev G.M., Mironov A.N. 1982. [The holothurians of the family Myriotrochidae: composition, distribution, and origin]// Trudy Instituta Okeanologii AN SSSR. Vol.117. P.81–120 [in Russian, with English abstract].

Belyaev G.M., Vinogradov M.E. 1969. [A New Pelagic Holothurian (Elasipoda, Psychropotidae) from the Kurile-Kamchatka Trench] // Zoologicheskii Zhurnal. Vol.48. P.709–716 [in Russian, with English abstract].

Billett D.S.M. 1988. The ecology of deep-sea holothurians. Ph.D. Thesis University of Southampton. 398 p.

Billett D.S.M. 1991. Deep Sea Holothurians // Oceanography and Marine Biology: An Annual Review. Vol.29. P.259–317.

Billett D.S.M., Bett B.J., Rice A.L., Thurston M.H., Galéron J., Sibuet M., Wolff G.A. 2001. Long-term change in the megabenthos of the Porcupine Abyssal Plain (NE Atlantic) // Progress in Oceanography. Vol.50. No1/4. P.325-348.

Billett D.S.M., Hansen B. 1982. Abyssal aggregations of *Kolga hyalina* Danielssen and Koren (Echinodermata: Holothurioidea) in the North-East Atlantic Ocean: a preliminary report // Deep-Sea Research. Vol.29. P.799–818.

Billett D.S.M., Hansen B., Huggett Q.J. 1985. Pelagic Holothurioidea (Echinodermata) of the North–East Atlantic // B.F. Keegan, B.D.S. O'Connor (eds.). Echinodermata. Proceedings of the 5th International Echinoderm Conference, Galway. Rotterdam: A.A. Balkema. P.399–411.

Bluhm H. 1999. Large-scale assessment of megafauna // Krause G. (ed.). The Expedition ARCTIS XV/1 of RV 'Polarstern'. Berichte zur Polarforschung. Vol.339. P.9–11.

Bluhm H., Gebruk A. 1999. Holothuroidea (Echinodermata) of the Peru basin — ecological and taxonomic remarks based on underwater images // Marine Ecology. Vol.20. P.167–195.

Brandt J.F. 1835. Echinodermata ordo Holothurina // Prodromus Descriptionis Animalium ab H. Mertensio in Orbis Terrarum Circumnavigatione Observatorum. Petropoli. Fasc.1. P.42–62.

Budaeva N.E., Rogacheva A.V. 2013. Colonization of the Arctic Ocean by two cosmopolitan genera of marine invertebrates // Invertebrate Zoology. Vol.10. No1. P.127–142.

Carney R.S., Carey A.G. Jr. 1976. Distribution pattern of holothurians of the North-Eastern Pacific (Oregon, U.S.A.) continental shelf slope, and abyssal plain // Thalassia Jugoslavica. Vol.12. P.67–74.

Carney R.S., Carey A.G. Jr. 1982. Distribution and diversity of holothuroids (Echinodermata) on Cascadia and Tufts Abyssal Plain // Deep-Sea Research. Vol.29. No5. P.597–607.

Cherbonnier G. 1941. Etude anatomoque et biogéographoque sur deux *Cucumaria abyssaux*: *C. abyssorum* Théel et *C. Albatrossi* n. sp. // Bulletin du Muséum National d'Histoire Naturelle. 2e sér. Vol.13. P.93–103.

Cherbonnier G. 1965. Holothurides // Expedition Océanographique Belge dans les Eaux Côtières Africaines de l'Atlantique sud (1948–1949). Résultats scientifiques. Vol.3. No.11. 23 p.

Cherbonnier G. 1970. Echinodermes récoltés par la *Thalassa* au large des côtes d'Espagne et du Golfe de Gascogne (18–25 octobre, 1968) // Bulletin du Muséum National d'Histoire Naturelle. 2e sér. Vol.45. P.1266–1277.

Clark H.L. 1908. The apodous holothurians. A monograph of the Synaptidae and Molpadiidae including a report on the representatives of these families in the collections of the United States National Museum // Smithsonian Contributions to Knowledge. Vol.35. P.1–231.

Clark H.L. 1913. Echinoderms from Lower California, with descriptions of new species // Bulletin of the American Museum of Natural History. Vol.32. P.185–236.

Clark H.L. 1920. Reports on the scientific results of the expedition to the Eastern Tropical Pacific, in charge of Alexander Agassiz, by the U. S. Fish Commission Steamer *Albatross* from October, 1904, to March, 1905, Lieut. Commander L. M. Garret, U. S. N., Commanding. XXXIII. Holothurioidea // Memoirs of the Museum of Comparative Zoology at Harvard College. Vol.39. No.4. P.121–154.

Clark H.L. 1922. The Holothurians of the Genus *Stichopus* // Bulletin of the Museum of Comparative Zoology at Harvard College. Vol.65. P.39–73.

Clark H.L. 1923a. Echinoderms from Lower California (Supplimentary Report) // Bulletin of the American Museum of Natural History. Vol.48. P.147–163.

Clark H.L. 1923b. The echinoderm fauna of South Africa // Annals of the South African Museum. Vol.13. P.221–435.

Clark H.L. 1924. The Holothurians of the Museum of Comparative Zoology. The Synaptidae // Bulletin of the Museum of Comparative Zoology at Harvard College. Vol.65. No.13. P.459–501.

Clark H.L., Deichmann E. 1936 On *Psolicucumis* Heding and its allies // Annals and Magazine of Natural History. Ser.10. Vol.17. P.564–568.

Cuvier G.L. 1817. Le règne animal distribué d'après son organisation: pour servir de base a l'histoire naturelle des animaux et d'introduction a l'anatomie comparée. Vol.4. Les Zoophytes, les Tables, et les Planches. Paris: Deterville. 255 p.

Danielssen D.C., Koren J. 1879. Fra den norske Nordhavsexpedition. Echinodermer [3]. // Nyt Magazin for Naturvidenskaberne. Vol.25. S.83–140.

Danielssen D.C., Koren J. 1882. Holothurioidea // Norwegian North-Atlantic Expedition 1878–1878. Zoology. Vol.6. P.1–95.

Deichmann E. 1930. The holothurians of the western part of the Atlantic Ocean // Memoirs of the Museum of Comparative Zoology Harvard. Vol.71. P.41–226.

Deichmann E. 1938. New holothurians from the western coast of North America and some remarks on the genus *Caudina* // Proceedings of the New England Zoölogical Club. Vol.16. P.103–115.

Deichmann E. 1940. Report on the holothurians, collected by the Harvard-Havana expeditions 1938 and 1939, with a revision of the Molpadonia of the Atlantic Ocean // Memorias de la Sociedad Cubana de Historia Natural. Vol.14. P.183–240.

Deichmann E. 1947. Shallow water holothurians from the Cabo de Hornos and adjacent waters // Anales del Museo Argentino de Ciencias naturales Bernardino Rivadavia. Vol.42. P.325–351.

Deichmann E. 1954. The holothurians of the Gulf of Mexico // Fishery Bulletin of the Fish and Wildlife Service. Vol.55. No89. P.381–410.

Djakonov A.M. 1933. [Echinodermata of the Northen Seas] // Opredeliteli po faune SSSR. Leningrad. No.8. P.1–166 [in Russian].

Djakonov A.M., Baranova Z.I., Savel'eva T.S. 1958. [Note on the Holothurioidea of the south Sakhalin and south Kurile Islands area] // Issledovaniya dal'nevostochnykh morei SSSR. Vol.5. P.358–380 [in Russian].

Ekman S. 1927. Holothurien der deutschen Südpolar-Expedition 1901–1903 aus der Ostantarktis und von den Kerguelen // Deutsche Südpolar-Expedition. Bd.19 (Zool. 11). S.359–419.

Fisher W.K. 1907. The Holothurians of the Hawaiian Islands // Proceedings of the United States National Museum. Vol.32. P.637–744.

Gage J.D. 1985. New Synaptidae (Holothuroidea: Apoda) from the Rockall Trough // Journal of the Marine Biological Association of the United Kingdom. Vol.65. No.1. P.255–261.

Gage J.D., Billett D.S.M. 1986. The Family Myriotrochidae Théel (Echinodermata: Holothuroidea) in the deep North-East Atlantic Ocean // Zoological Journal of the Linnean Society of London. Vol.88. P.229–276.

Gage J.D., Billett D.S.M., Jensen M., Tyler P.A. 1985. Echinoderms of the Rockall Trough and adjacent areas. 2. Echinoidea and Holothurioidea // Bulletin of the British Museum of Natural History, Zoology. Vol.48. No4. 173–213.

Gebruk A.V. 1988. [New taxa of deep-sea elpidiid holothurians] // Zoologicheskii Zhurnal. Vol.67. No9. P.914–922 [in Russian, with English abstract].

Gebruk A.V. 1989. [Revision of the family Pelagothuriidae (Holothurioidea, Elasipoda) with a review of swimming holothurians. Part 1. Revision of the family Pelagothuriidae] // Zoologicheskii Zhurnal. Vol.68. No12. P.57–66 [in Russian, with English abstract].

Gebruk A.V. 1990. [Deep-sea holothurians of the family Elpidiidae]. Moscow: Nauka. 160 p. [in Russian, with English abstract].

Gebruk A.V. 1993. [New records of elasipodid holothurians in the Atlantic sector of the Antarctic and subantarctic] // Trudy Instituta Okeanologii AN SSSR. Vol.127. P.228–244 [in Russian].

Gebruk A.V. 1997. New species of the deep–sea holothurian family Elpidiidae Théel, 1879 // Zoosystema. Vol.19. No.2–3. P.211–217.

Gebruk A.V. 2008. Holothurians (Holothuroidea, Echinodermata) of the northern Mid-Atlantic Ridge collected by the G.O. Sars MAR-ECO Expedition with description of four new species // Marine Biology Research. Vol.5. No.1–2. P.48–60.

Gebruk A.V., Bluhm H., Soltwedel T., Thiel H. 2003. Redescription of the enigmatic deep-sea holothurian *Irpa abyssicola* (Elpidiidae, Elasipodida) from the Norwegian-Greenland Basin with notes on *in situ* observations // Sarsia. Vol.88. P.49–54.

Gebruk A.V., Solís-Marín F.A., Billett D.S.M., Rogacheva A.V., Tyler P.A. 2012. Review of the genus *Zygothuria* Perrier, 1898 and the Atlantic group of species of the genus *Mesothuria* Ludwig, 1894 (Synallactidae: Holothuroidea) with description of the new species *Mesothuria milleri* sp. nov. // Journal of Natural History. Vol.46. No.5–6. P.265–348.

Gebruk A.V., Tyler P.A., Billett D.S.M. 1997. New records and review of pelagic juveniles of the deep-sea elasipodid holothurians // Ophelia. Vol.46. No.2. P.153–164.

Gorbunov G.P. 1946. [Bottom life of the Novosiberian shoalwaters and the central part of the Arctic Ocean] // Trudy dreifuyushei ekspeditsii Glavsevmorputi na ledokol'nom parokhode G. Sedov 1937–1940 gg. Leningrad: Izdatel'stvo Glavsevmorputi. Vol.3. P.30–138 [in Russian, with English summary].

Gould A.A. 1841. Report on the Invertebrata of Massachusetts, Comprising the Mollusca, Crustacea, Annelida, and Radiata. Cambridge: Folsom, Wells and Thurston. 373 pp.

Grieg J.A. 1921. Echinodermata // Report on the Scientific Results of the Michael Sars North Atlantic Deep–Sea Expedition. Vol.3. P.1–47.

Grube A.E. 1840. Actinien, Echinodermen und Würmer des Adriatischen- und Mittelmeers, nach eigenen Sammlungen beschrieben. Königsberg: J.H. Bon. 92 S.

Gurjanova E.F. 1957. [To the zoogeography of Arctic Basin] // Materialy nablyudenij nauchno-issledovatelskih drejfuyuschih stancij Severnyi Polus–3 i Severnyi Polus–4 v 1954/55 gg. Leningrad: Morskoy transport. P.343–362 [in Russian].

Hansen B. 1956. Holothurioidea from depths exceeding 6000 meters // Scientific Results of the Danish Deep-sea Expedition round the world 1950–52. Galathea Report. Vol.2. P.33–54.

Hansen B. 1967. The taxonomy and zoogeography of the deep-sea holothurians, in their evolutionary aspects // Studies in Tropical Oceanography. Vol.5. P.480–501.

Hansen B. 1975. Systematics and Biology of the Deep-Sea Holothurians. Part. 1. Elasipoda // Scientific Results of the Danish Deep-Sea Expedition Round the World 1950–52. Galathea Report. Vol.13. P.1–262.

Hansen B. 1978. *Scotothuria herringi*, a new genus and species of bathypelagic holothurians (Holothurioidea, Aspidochirota, Synallactidae) // Steenstrupia. Vol.5. P.33–39.

Hansen B. 1988. The genus *Staurocucumis* Ekman and its possible affinity with *Echinocucumis* Sars (Holothuroidea, Dendrochirota) // R.D. Burke, P.V. Mladenov, P. Lambert (eds.). Echinoderm Biology: Proceedings of the Sixth International Echinoderm Conference, Victoria, 23–27 August. Rotterdam, Brookfield: A.A. Balkema. P.301–308.

Harvey R., Gage J.D., Billett D.S.M., Clark A.M., Paterson G.L.J. 1988. Echinoderms of the Rockall Trough and adjacent areas. 3. Additional records // Bulletin of the British Museum of Natural History, Zoology. Vol.54. No.4. P.153–198.

Heding S.G. 1928. Synaptidae // Papers from Dr. Th. Mortensen's Pacific Expedition 1914–16. XLVI. Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening. Bd.85. P.105–323.

Heding S.G. 1931a. Über die Synaptiden des Zoologischen Museums zu Hamburg // Zoologische Jahrbücher. Abteilung für Systematik, Ökologie und Geographie der Tiere. Bd.61. S.637–696.

Heding S.G. 1931b. On the classification of the Molpadids // Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening. Bd.92. P.275–284.

Heding S.G. 1935. Holothurioidea. Part I. Apoda, Molpadioidea, Gephyrothurioidea // Danish Ingolf-Expedition. Vol.4. P.1–84.

Heding S.G. 1940. Die Holothurien der deutschen Tiefsee-Expedition. II Aspidochirote und Elasipode Formen // Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem Dampfer Valdivia 1898–1899. Bd.24. S.17–375.

Heding S.G. 1942a. Holothurioidea. II // Danish Ingolf-Expedition. Bd.4. P.1–39.

Heding S.G. 1942b. Über *Cucumella triplex* und zwei neue Holothurien der Deutschen Tiefsee–Expedition // Zoologischer Anzeiger. Bd.137. S.217–220.

Hérouard E. 1896. Note préliminaire sur les Holothuries provenant des dragages du yacht Princesse-Alice // Bulletin de la Société Zoologique de France. T.21. P.163–168.

Hérouard E. 1898. Note préliminaire sur les Holothuries provenant des dragages du Yacht Princesse-Alice // Bulletin Société Zoologique, France. T.23. P.88–89.

Hérouard E. 1899. Troisieme note préliminaire sur les Holothuries provenant des dragages du yacht Princesse-Alice. Révision de la sous-familie des Elpidiinae et description de nouvelles èspeces // Bulletin de la Société Zoologique de France. T.24. P.170–175.

Hérouard E. 1901. Note préliminaire sur les Holothuries reportées par l'expédition Antarctique Belge // Archives de Zoologie Experimentale et Générale. T.3. P.39–48.

Hérouard E. 1902. Holothuries provenant des campagnes de la Princesse Alice (1892–1897) // Résultats des Campagnes Scientifiques Accomplies sur son yacht par Albert Ier Prince Souverain de Monaco. T.21. P.1–61.

Hérouard E. 1906. Holothuries // Résultats du Voyage du S. Y. Belgica en 1897–1899, Zoologie. P.1–16.

Hérouard E. 1912. Holothuries nouvelles des campagnes du yacht Princesse-Alice // Bulletin de l'Institut Océanographique Monaco. T.239. P.1–9.

Hérouard E. 1923. Holothuries provenant des campagnes des yachts Princesse-Alice et Hirondelle II (1898–1915) // Résultats des Campagnes Scientifiques Accomplies sur son yacht par Albert Ier Prince Souverain de Monaco. T.66. P.1–163.

Imaoka T. 1978. Three new species of the genus *Pseudostichopus* from the Japanese waters (Holothurioidea: Gephyrothuriidae) // Publications of the Seto Marine Biological Laboratory. Vol.24. P.377–385.

Imaoka T. 1990. Holothuroidea // C. Oguro, T. Okutani, H. Horikawa (eds.). Echinoderms from continental shelf and slope around Japan. Tokyo: Tosho. Vol.1. P.131–154.

Jangoux M., Massin C. 1986. Catalogue commenté des types d'Echinodermes actuels conservés dans les collections nationals Belges // Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Biologie. T.56. P.83–97.

Khripounoff A., Sibuet M. 1980. La nutrition d'échinodermes abyssaux. I. Alimentation des holothuries // Marine Biology. Vol.60. P.17–26.

Koehler R. 1895. Dragages profonds exécutés a bord du Caudan dans le Golfe de Gascogne. Rapport préliminaire sur les échinoderms // Revue Biologique du Nord de la France. T.7. P.439–498.

Koehler R. 1896. Résultats scientifiques de la campagne du Caudan dans le Golfe de Gascogne. Echinodermes // Annales de l'Universite de Lyon. T.26. P.33–127.

Koehler R. 1927. Les Échinodermes des Mers d'Europe. Paris: Doin. T.2. 339 p.

Koehler R., Vaney C. 1905. An account of the deep-sea Holothurioidea collected by the Royal Indian Marine Survey Ship Investigator // Echinoderma of the Indian Museum. Vol.3. Calcutta: Indian Museum. 123 p.

Koltun V.M. 1964. [To investigations of benthic fauna of the Greenland Sea and Central Arctic Basin] // Trudy Ar-

kitcheskogo i Antarkitchekogo Nauchno-Issledovatel'skogo Instituta. Vol.259. P.13–78 [in Russian].
Lampert K. 1889. Die während der Expedition S.M.S. Gazelle, 1874–1876, von Prof. Dr. Th. Studer gesammelten Holothurien // Zoologische Jahrbücher. Abteilung für Systematik, Ökologie und Geographie der Tiere. Bd.4. S.806–839.
Liao Y. 1997. Fauna Sinica. Class Holothuroidea. Beijing: Science Press. 334 p.
Ludwig H.L. 1893. Reports on the dredging operations carried on by the U.S. Fish Commission Steamer *Albatross* during 1891. IV. Vorläufiger Bericht über die auf den Tiefsee-Fahrten des *Albatross* (Frühling 1891) im östlichen Stillen Ocean erbeuteten Holothurien // Bulletin of the Museum of Comparative Zoology at Harvard College. Vol.24. P.105–114.
Ludwig H.L. 1894. Reports on an exploration off the west Coast of Mexico, Central and South America, and off Galapagos Islands, in Charge of Alexander Agassiz. by the U.S. Fish Commission Steamer *Albatross* during 1891, Lieut. Commander Z. L. Tanner, U. S. N. Comanding. 12. The Holothurioidea // Memoirs of the Museum of Comparative Zoology at Harvard College. Vol.17. P.1–183.
Ludwig H. 1898. Holothurien // Ergebnisse Hamburger Magahaensische Sammelreise Bd.3. S.1–98.
Ludwig H.L. 1901. Arktische und subarktische Holothurien // Fr. Römer, Fr. Schaudinn (Hrsg.). Fauna Arctica. Bd.1. Nr.1. P.135–178.
Ludwig H.L., Heding S.G. 1935. Die Holothurien der deutschen Tiefsee-Expedition. I. Fusslose und Dendrochirote Formen // Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition mit dem Dampfer Valdivia 1898–1899. Bd.24. S.121–214.
Madsen F.J. 1947. The echinoderms collected by the Skagerak Expedition in the eastern Atlantic 1946. 1. Asteroidea: Ophiuroidea: Echinoidea: Holothuroidea // Göteborgs Kungliga Vetenskaps-och Vitterhets Samhälles Handlingar. Serie B. Bd.5. No.7. H.5(7). S.1–16.
Madsen F.J. 1953. Holothurioidea // Report of the Swedish Deep-Sea expedition 1947–1948. Vol.2. P.149–173.
Madsen F.J., Hansen B. 1994. Echinodermata. Holothurioidea // Marine Invertebrates of Scandinavia. Oslo: Scandinavian University Press. No.9. 141 p.
Maluf L.Y. 1988. Composition and distribution of the Central Eastern Pacific Echinoderms // Natural History Museum of Los Angeles County. Technical Reports. Vol.2. 242 p.
Marenzeller E. von. 1892. Note preliminaire sur les Holothuries provenant des campagnes du yacht l'Hirondelle // Bulletin Société Zoologique France. T.17. P.64–66.
Marenzeller E. von. 1893a. Zoologische Ergebnisse. I. Berichte der Commission für die Erforschung des östlichen Mittelmeeres. I. Echinodermen, gesammelt 1890, 1891 und 1892. // Denkschriften der Kaiserlichen Akademie der Wissenschaften. Mathematisch-Naturwissenschaftliche Klasse. Bd.60. S.1–24.
Marenzeller E. von. 1893b. Contribution a l'étude des holothuries de l'Atlantique du Nord (Golfe de Gascogne, Isles Açores) // Résultats des Campagnes Scientifiques accomplies sur son yacht par Albert I, Prince Souverain de Monaco. T.6. P.1–22.
Marenzeller E. von. 1895. Zoologische Ergebnisse. V. Berichte der Commission für Tiefsee-Forschungen. XVI Echinodermen, gesammelt 1893, 1894 // Denkschriften der Kaiserlichen Akademie der Wissenschaften. Mathematisch-Naturwissenschaftliche Klasse. Bd.62. S.121–148.
Massin C. 1984. Structures digestives d'holothuries Elasipoda (Echinodermata): *Benthogone rosea* Koehler, 1896 et *Oneirophanta mutabilis* Theìel, 1879 // Archives de biologie. Vol.95. No.2. P.153-185
Massin C. 1996. Holothurians collected on the Mediterranean continental slope during the DEPRO96 cruise // Mésogée. Vol.55. P.43–48.
McIntosh W.C. 1866. Observations on the Marine Zoology of North Uist, Outer Hebrides // Proceedings Royal Society, Edinburgh. Vol.5. P.600–614.
Michailovskij M. 1903. Zoologische Ergebnisse der Russischen Expeditionen nach Spitzbergen. Echinodermen. (Holothurioidea, Echinoidea, Asteroidea, Ophiuroidea und Crinoidea) // Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St.-Pétersbourg. Vol.7 (1902). P.460–546.
Miller J.E., Pawson D.L. 1990. Swimming sea cucumbers (Echinodermata: Holothuroidea): A survey, with analysis of swimming behaviour in four bathyal species / / Smithsonian Contributions to the Marine Sciences. Vol.35. P.1–18.
Mitsukuri K. 1912. Studies on Actinopodous Holothurioidea // Journal of the College of Science, Imperial University of Tokyo. Vol.29. P.1–284.
Mortensen T. 1927. Handbook of the echinoderms of the British Isles. London: Oxford University Press. 471 pp.
Mortensen T. 1932. The Godthaab Expedition 1928. Echinoderms // Meddelelser om Grønland. Vol.79. P.1–62.
Ohshima H. 1915. Report on the holothurians collected by the United States fisheries steamer Albatross in the Northwestern Pacific during the Summer of 1906 // Proceedings of the United States National Museum. Vol.48. P.213–291.
Ohshima H. 1916–1919. Northwestern Pacific holothurians collected by the Albatross // Zoological Magazine Tokyo. Vol.28–31. [Japanese version of Oshima's 1915 work].
Ohta S. 1983. Photographic census of large-sized benthic organisms in the bathyal zone of Suruga Bay, Central Japan // Bulletin of the Ocean Research Institute, University of Tokyo. Vol.15. P.1–244.
O'Loughlin P.M. 1998. A review of the family Gephyrothuriidae // R. Mooi, M. Telford (eds.). Echinoderms: San Francisco. Proceedings of the Ninth International Echinoderm Conference San Francisco, California, USA, 5–9 August 1996. Rotterdam: Balkema. P.493–498.
O'Loughlin P.M. 2002. Report on selected species of BANZARE and ANARE Holothuroidea, with reviews of the genera *Meseres* Ludwig and *Heterocucumis* Panning (Echinodermata) // Memoirs of Museum Victoria. Vol.59. P.297–325.
O'Loughlin P.M., Ahearn C. 2005. A rewiew of pygal-furrowed Synallactidae (Echinodermata: Holothuroidea), with new species from Antarctic, Atlantic and Pacific oceans // Memoirs of Museum Victoria. Vol.62. P.147–179.

O'Loughlin P.M., Bardsley T.M., O'Hara T.D. 1994. A preliminary analysis of diversity and distribution of Holothurioidea from Prydz Bay and the MacRobertson Shelf, eastern Antarctica // B. David, A.Guille, J.P. Feral, M. Roux (eds.). Echinoderms through time. Proceedings of the Eighth International Echinoderm Conference, Dijon, France, 6–10 September, 1993. Rotterdam: Balkema. P.549–555.

Östergren H. 1896. Zur Kenntnis der Subfamilie Synallactinae unter den Aspidochiroten // Festskrift W. Lilljeborg Tillegnad pah ans Attionde Fodelsedag af Svenska Zoologer. Uppsala: J.M. Hulth. Zoologiska Studier. S.347–361.

Östergren H. 1898. Das System der Synaptiden // Öfversigt af Kongliga Svenska Vetenskapsakademiens Förhandlingar. Bd.55. H.2. S.111–120.

Östergren H. 1902. The Holothurioidea of Northern Norway // Bergens Museum Årbok. No.9. P.1–34.

Östergren H. 1905. Zur Kenntnis der skandinavischen und arktischen Synaptiden // Archives de Zoologie expérimental et générale. (Series 4) 3. Notes et revues. T.17. P.133–164.

Östergren H. 1938. Studien über Seewalzen // Göteborgs Kungliga Vetenskaps- och Vitterhets-Samhälles Handlingar. Ser.B. Bd.5. No.4. S.1–151.

Panning A. 1949. Versuch einer Neuordnung der Familie Cucumariidae (Holothurioidea, Dendrochirota) // Zoologische Jahrbücher. Abteilung für Systematik, Ökologie und Geographie der Tiere. Bd.78. S.404–470.

Panning A. 1952. Bemerkungen über Holothurien aus dem Natur-Museum Senckenberg // Senckenbergiana. Bd.33. S.123–133.

Pawson D.L. 1963a. The Holothurian Fauna of Cook Strait, New Zealand // Zoology Publications from Victoria University of Wellington. Vol.36. P.1–38.

Pawson D.L. 1963b. Studies on echinoderms of the Southern Pacific Ocean. PhD Thesis. Victory University of Wellington. 656 p.

Pawson D.L. 1965. The Bathyal Holothurians of the New Zealand Region // Zoology Publications from Victoria University of Wellington. Vol.39. P.1–33.

Pawson D.L. 1971. *Syniotrochus phoxus* new genus, new species, a myriotrochid holothurian new to the United States East Coast // Proceedings of the Biological Society of Washington. Vol.8. No.28. P.231–234.

Pawson D.L. 1977. Molpadiid sea cucumbers (Echinodermata: Holothuroidea) of the southern Atlantic, Pacific, and Indian Oceans // Antarctic Research Series. Vol.26. P.97–123.

Pawson D.L. 1982. Deep-sea echinoderms in the Tongue of the Ocean, Bahama Islands: a survey, using the research submersible *Alvin* // Papers from the Echinoderm Conference. 8. Australian Museum Memoir. Vol.16. P.129–145.

Pawson D.L., Vance D.J., Ahearn C. 2001. Western Atlantic sea cucumbers of the order Molpadiida (Echinodermata: Holothuroidea) // Bulletin of the Biological Society of Washington. Vol.10. P.311–327.

Pawson D.L., Gage J.D., Belyaev G.M., Mironov A.N., Smirnov A.V. 2003. The deep-sea synaptid *Protankyra brychia* (Echinodermata:Holothuroidea) and its near-surface-dwelling planktotrophic larva, *Auricularia nudibranchiata* // Sarsia. Vol.88. P.159–174.

Pérez-Ruzafa A., Bacallado J.J., Marcos C. 1984. Relaciones biogeográficas entre la fauna de holoturias (Holothuroidea: Echinodermata) de las Islas Canarias y la de otras áreas del Atlántico norte y la del Mediterráneo // Actas IV Symposio Ibérico de Estudos do Benthos Marinho. Lisboa. 1984. Vol.1. P.36–45.

Perrier E. 1886. Les explorations sous-marines. Paris. 352 p.

Perrier R. 1896. Sur les Elasipodes recueillis par le Travailleur et le Talisman // Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences. T.123. P.900–903.

Perrier R. 1898. Sur les Holothuries recueillies par le Travailleur et le Talisman // Comptes Rendus Hebdomadaire des Séances de l'Académie des Sciences, Paris. T.126. P.1664–1666.

Perrier R. 1899. Diagnose des espèces nouvelles d'Holothuries draguées par le Travailleur et le Talisman // Bulletin du Muséum National d'Histoire Naturelle Paris. T.5. P.299–302.

Perrier R. 1900. Diagnose des espèces nouvelles d'Holothuries draguées par le Travailleur et le Talisman // Bulletin du Muséum National d'Histoire Naturelle Paris. T.6. P.116–119.

Perrier R. 1902. Holothuries // Expéditions scientifiques du Travailleur et du Talisman pendant les années 1880, 1881, 1882, 1883. T.5. P.273–554.

Perrier R. 1905. Holothuries antarctiques du Muséum d'Histoire naturelle de Paris // Annales des Sciences naturelles. Zoologie. 8 sér.1. P.1–146.

Piepenburg D., Chernova N., von Dorrien C., Gutt J., Neyelov A., Rachor E., Saldanha L., Schmid M. 1996. Megabenthic communities in the waters around Svalbard // Polar Biology. Vol.16. P.431–446.

Risso A. 1826. Histoire naturelle des principales productions de l'Europe méridionale et particulièrement de celle des environs de Nice et des Alpes Maritimes. Paris: F.–G. Levrault. Vol.5. No.8. P.289–291.

Rogacheva A. 2007. Revision of the Arctic group of species of the family Elpidiidae (Elasipodida, Holothuroidea) // Marine Biology Research. Vol.3. No.6. P.367–396.

Rogacheva A. 2012. Taxonomy and distribution of the genus *Kolga* (Elpidiidae: Holothuroidea: Echinodermata) // Journal of the Marine Biological Association of the United Kingdom. Vol.92. P.1183–1193.

Rogacheva A., Cross I.A., Billett D.S.M. 2009. Psychropotid holothurians (Echinodermata: Holothuroidea: Elasipodida) collected at abyssal depths from around the Crozet Plateau in the Southern Indian Ocean // Zootaxa. Vol.2096. P.460–478.

Rogacheva A., Gebruk A., Alt C.H.S. 2013. Holothuroidea of the Charlie Gibbs Fracture Zone area, northern Mid-Atlantic Ridge // Marine Biology Research. Vol.9. No5–6. P.587–623.

Rowe F.W.E., Gates J. 1995. Synallactidae // A. Wells (ed.). Zoological Catalogue of Australia. Melbourne: CSIRO Australia. P.328–331.

Rowe F.W.E., Pawson D.L. 1967. A new genus in the holothurian Family Synaptidae, with a new species from Tasmania // Papers and Proceedings of the Royal Society of Tasmania. Vol.101. P.31–35.

Sars G.O. 1861. Oversigt af Norges Echinodermes. Christiania 166 S.

Sars G.O. 1872. Nye Echinodermer fra den norske kyst // Videnskabelige Selskabets Forhandlinger. Jg.1871. S.1–31.

Sars M. 1859. Om tre nye Holothurider af hvilke den ena danner Typus for en nys Slaegt // Videnskabs Selskabet Forhandlinger, Christiania. Jg.1859. S.170–179.

Sars M. 1868. Om Afbildninger af nogle af hans son I forrige Aar ved Lofoten fundne Echinodermer og Coelenterater // Forhandlinger VidenskabsSelskabet Christiania. Jg.1867. S.19–23.

Sars M. 1877. Nye Echinodermer // Fauna Littoralis Norwegiae. Bd.3. S.49–75.

Sars M. 1935. Beskrivelser og lagttagelser over nogle maerkelige eller nye i Havet vedden Bergen Kyst levende Dyr af Polypernes, Acalephernes, Radiaternes, Annelidernes og Molluskerne. Bergen.

Sibuet M. 1974a. Échinodermes de la mer d'Alboran // Bulletin du Muséum National d'Histoire Naturelle. Paris. T.3. P.25–34.

Sibuet M. 1974b. *Cherbonniera utriculus* gen. nov., sp. nov., petite Holothurie (Molpadonia, Molpadiidae) des vases abyssales du nord-est atlantique // Compte Rendu Hebdomadaire des Séances de l'Académie des Sciences. Paris. Sér.D. Sciences Naturelles. T.279. P.1443–1445.

Sibuet M. 1977. Repartition et diversité des echinoderms (Holothurides–Astérides) en zone profonde dans le Golfe de Gascogne // Deep-Sea Research. Vol.24. P.549–563.

Sibuet M. 1978. *Synallactes longipapillata* nov. sp., nouvelle espèce d'Holothurie d'un genre rarement représenté dans l'océan Atlantique // Bulletin du Muséum National d'Histoire Naturelle Paris. Ser.3. T.354. (515 Zoologie). P.311–318.

Sluiter C.P. 1901a. Neue Holothurien aus der Tiefsee des Indischen Archipels gesammelt durch die Siboga-Expedition // Tijdschrift der Nederlandsche Dierkundige Vereeniging. Bd.7. S.1–28.

Sluiter C.P. 1901b. Die Holothurien der Siboga-Expedition // Siboga-Expeditie. Bd.28(44). S.1–142.

Smirnov A.V. 1997. New apodid holothurians (Holothurioidea, Apodida) from the New Caledonian continental slope collected during BIOGEOCAL expedition 1987 // Zoosystema. Vol.19. No1. P.15–26.

Smirnov A.V. 1999. Some remarks on the subgenus *Oligotrochus* M. Sars, 1866 sensu Heding, 1935 (genus *Myriotrochus*, Myriotrochidae, Holothurioidea) with descriptions of two new species // Zoosystema. Vol.21. No1. P.13–27.

Smirnov A.V. 2012. System of the class Holothuroidea // Paleontological Journal. Vol.46. No.8. P.793–832.

Smirnov A.V., Smirnov I.S. 2006. [New echinoderm findings in the Laptev Sea (1993–1998 year expeditions)] // Sirenko B.I., Vasilenko S.V. (eds.). Morkie bespozvonochnye Arktiki, Antarktiki i Subantarktiki. Issledovaniya fauny morei. Vol.56(64). St. Petersburg: Zoological Institute RAS. P.93–147 [in Russian, wirh English abstract].

Solís-Marín F. 2003. Molecular Phylogeny, Systematics and Biology of the Holothurian Family Synallactidae. PhD Thesis. Southampton: University of Southampton. 356 pp.

Solís-Marín F.A., Billett D.S.M., Preston J., Rogers A.D. 2004. Mitochondrial DNA sequence evidence supporting the recognition of a new North Atlantic *Pseudostichopus* species (Echinodermata: Holothuroidea) // Journal of the Marine Biological Association of the United Kingdom. Vol.84. P.1077–1084.

Studer T. 1876. Ueber Echinodermen aus dem antarktischen Meere und zwei neue Seeigel von den Papua-Inseln gesammelt auf der Reise S. M. S. Gazelle um die Erde // Monatsberichte der königlishen preussischen Akademie der Wissenschaften zu Berlin. Jg.1876. S.452–63.

Thandar A.S. 1992. The South African Museum's Meiring Naude Cruises. Part. 18. Holothuroidea // Annals of the South African Museum. Vol.101. P.159–180.

Thandar A.S. 1999. Deep-Sea holothuroids taken by the R. V. Africana II in 1959, from off the West Coast of the Cape Peninsula, South Africa // Annals of the South African Museum. Vol.105. P.363–409.

Théel H. 1876. Note sur *l'Elpidia*, genre nouveau du groupe des Holothuries // Bihang till Kongliga Svenska Vetenskaps-Akademiens Handlingar. Bd.4. H.4. P.1–7.

Théel H. 1877. Notes sur quelques Holothuries des mers de la Nouvelle Zemble // Nova acta Regiae Societatis Scientiarum Upsaliensis. Vol.17. No.3. P.1–18.

Théel H. 1879. Preliminary report on the Holothuridae of the Exploring voyage of H.M.S. Challenger, I // Bihang till Kungliga Svenska Vetenskaps Akademien Handlingar. Bd.5. H.19. P.1–20.

Théel H. 1882a. Report on the Holothurioidea. Part I // Report of the Scientific Results of the Voyage of H.M.S. Challenger during the years 1873–1876. Zoology. Vol.4(14). P.1–176.

Théel H. 1882b. Report on the Holothurioidea // Tizard T.H., Murrey J. (eds.). Exploration of the Faroe Channel, during the summer of 1880, in H.M.'s hired ship Knight Errant. Proceedings of the Royal Society of Edinburgh. P.694–697.

Théel H. 1886a. Report on the Holothurioidea dredged by the HMS Challenger during the years 1873–1876. Part II // Report on the Scientific Results of the Voyage of H.M.S. Challenger 1873–1876. Zoology. Vol.14(39). P.1–290.

Théel H. 1886b. Report on Holothurioidea of the Blake expeditions 1877–1880 // Bulletin of the Museum of Comparative Zoology at Harvard College. Vol.13. P.1–21.

Théel H. 1901. On a singular case of hermaphrodism in holothurids // Bihang til Kongliga Svenska Vetenskaps-akademiens Handlingar. Bd.27. P.1–38.

Tortonese E. 1949. La distribution bathymétrique des echinoderms et particulièrement des espéces méditerranénnes // Bulletin de l'Institut Océanographique. T.956. P.1–16.

Tortonese E. 1952. Gli Echinodermi del Mar Ligure e delle zone vicine // Accademia Ligure di Scienze e Lettere. T.8. P.163–242.

Tortonese E. 1961. Echinodermi di Taranto (Mar Jonio) // Thalassia Jonica. Vol.4. P.190–194.

Tortonese E. 1965. Echinodermata // Fauna d'Italia. Vol.6. Bologna: Edizioni Calderini. P.37–64.

Tyler P.A., Billett D.S.M., Gage J.D. 1987. The ecology and reproductive biology of *Cherbonniera utriculus* and *Molpadia blakei* from the N. E. Atlantic // Journal of the Marine Biological Association of the United Kingdom. Vol.67. P.385–397.

Tyler P.A., Gage J.D. 1983. The reproductive biology of *Ypsilothuria talismani* (Holothuroidea: Dendrochorota) from the N.E. Atlantic // Journal of the Marine Biological Association of the United Kingdom. Vol.63. P.609–616.

Tyler P.A., Gage J.D., Billett D.S.M. 1985. Life-history biology of *Peniagone azorica* and *P. diaphana* (Echinodermata: Holothurioidea) from the North-East Atlantic Ocean // Marine Biology. Vol.89. P.71–81.

Vaney C. 1908. Les Holothuries de l'Expédition Antarctique National Ecossaise // Transactions of the Royal Society of Edinburgh. Vol.46. P.405–441.

Vaney C. 1914. Holothuries. Deuxième Expédition Antarctique Française 1908–1910, commandée par le Dr. J. Charcot, Sciences Naturelles: Documents Scientifiques. Paris: Masson et Cie. 54 p.

Verrill A. 1884. Notice of the Remarkable Marine Fauna occupying the Outer Banks off the Southern Coast of New England // American Journal of Science. Vol.3. P.213–220.

Verrill A.E. 1885. Results of the explorations made by the Steamer Albatross off the North–Eastern coast of the United States in 1883 // United States Commission of Fish and Fisheries. Report of the Commissioner for 1883. P.503–601.

Vinogradova N.G., Turpaeva E.P., Moskalev L.I., Galkin S.V., Bagirov N.E. 1996. [Species composition of the bottom fauna in the area of study, leading and common forms and communities modifications] // Vinogradov M.E., Sagalevitch A.M., Khetagurov S.V. (eds.). Okeanologicheskie issledovaniya na meste gibeli atomnoi podvodnoi lodki Komsomolets. Moscow: Nauka. P.202–207 [in Russian].

Walker M., Tyler P.A., Billett D.S.M. 1987. Organic and calorific content of the body tissues of deep-sea elasipodid holothurians in the northeast Atlantic Ocean // Marine Biology. Vol.96. No.2. P.277–282.

Wigham B.D., Hudson I.R., Billett D.S.M., Wolff G.A. 2003. Is long-term change in the abyssal Northeast Atlantic driven by qualitative changes in export flux? Evidence from selective feeding in deep-sea holothurians // Progress in Oceanography. Vol.59. No.4. P.409–441.

Witbaard R., Duineveld G.C.A., Kok A., Weele J.V.D., Berghuis E.M. 2001. The response of *Oneirophanta mutabilis* (Holothuroidea) to the seasonal deposition of phytopigments at the Porcupine Abyssal Plain in the Northeast Atlantic // Progress in Oceanography. Vol.50. No.1. P.423–441.

Responsible editors
A.V. Gebruk, H. Thiel, M. Thurston