New species of *Scolelepis* (Polychaeta, Spionidae) from the Norwegian coast and Barents Sea with a brief review of the genus

Andrey V. Sikorski¹ and Ljudmila V. Pavlova²

Sikorski AV and Pavlova LV. 2015. New species of *Scolelepis* (Polychaeta, Spionidae) from the Norwegian coast and Barents Sea with a brief review of the genus. Fauna norvegica 35: 9-19.

The species *Scolelepis finnarchicus* sp. nov. is described from the Norwegian and Barents Seas along the northern Norwegian coast and Kola peninsula. The occurrence of this species in the Kola Bay could be seen as a sign of climate warming in the area. Taxonomic issues existing in the genus *Scolelepis* within the area along the Norwegian coast and in the Barents Sea are briefly touched upon. Seven species belonging to *Scolelepis* have recently been recorded from the Atlantic sector of the Arctic. *Scolelepis* (*S.*) *matsugae* Sikorski, 1994 is newly synonymized with *S. (S.) laonicola* (Tzetlin, 1985). This article provides a brief review of *Scolelepis* together with an identification key for the genus from the Atlantic sector of the Arctic.

doi: 10.5324/fn.v35i0.1666. Received: 2014-04-14. Accepted: 2015-04-25. Published online: 2015-10-07. ISSN: 1502-4873 (printed), 1891-5396 (electronic).
http://zoobank.org/59B9DC76-56BC-4046-98B5-951953C34437

Keywords: Polychaeta, Spionidae, *Scolelepis*, taxonomic review, sexual dimorphism, Norwegian coast, Barents Sea

1. Akvaplan-niva AS, Fram Centre, 9296 Tromsø, Norway
2. Russian Academy of Sciences, Kola Science Centre, Murmansk Marine Biological Institute, Vladimirskaya str. 17, Murmansk 183010, Russia

Corresponding author: Andrey V. Sikorski
http://www.zoobank.org/Authors/F82EA89B-E556-4DEF-855D-C907AB045FC5
E-mail: as@akvaplan.niva.no

INTRODUCTION

Polychaetes belonging to the genus *Scolelepis* commonly inhabit sublittoral coastal sandy or mixed soft-bottom substrata. This genus does not appear to extend to the continental slope or abyssal depths (Maciolek 1987: 17).

Currently the genus *Scolelepis* contains 86 species, 74 species in the subgenus *Scolelepis* (including the new one) and 12 species in the subgenus *Parascolelepis* (Table 1). The latest articles (e.g., Delgado-Blas 2006, Blake 2006, Delgado-Blas et al. 2009, dos Santos et al. 2009, Rocha & de Paiva 2012) have recognized only about 45 species of *Scolelepis* and 12 of *Parascolelepis* worldwide, while Rocha et al. (2009) reconized a total of about 80 species. Some authors have used *Scolelepis* and *Parascolelepis* as genera rather than subgenera (Blake 2006, Williams 2007). Williams (2007) gave a total of 58-59 species for the genus *Scolelepis* sensu stricto.

The Scandinavian Arctic spionid fauna has been extensively investigated but new species are still found along the Norwegian coast. The new species described in the paper was obtained from material collected during monitoring activities in 2003–2009 along the coast of Norway and the Kola Peninsula in northwest Russia.

Brief comments are given in this paper about some recent changes to faunistic and taxonomic details that concern *Scolelepis* from the Atlantic sector of the Arctic (Sikorski 2001; Vortsepneva et al. 2008). An identification key for all the known Arctic species of *Scolelepis* is given with short taxonomic notes.
MATERIAL AND METHODS

The new species was found in 16 samples. Twenty-two specimens (three specimens were lost) were collected with Van Veen grab and by scuba diving from depths down to 150 m at different locations along the northern coast of Norway by the consulting firm Akvaplan-niva AS (Tromsø, Norway) and from the Kola Bay by the Murmansk Marine Biological Institute (Murmansk, Russia). The material was fixed in 4% formalin and then transferred to 75% ethanol. Examination of the material, including the drawings, was done using binocular microscopes (Leica M80 and MZ 12) and transmitted light microscopes (Leica DM2000 and MICMED-6). The type material was deposited in the University Museum of Bergen, University of Bergen, Norway (ZMBN) and in the Zoological Institute of Russian Academy of Sciences, St. Petersburg, Russia (ZISP). All Arctic material from Russian museums (ZISP and the Zoological Museum of the Moscow University (ZMUM) labelled as *Scolelepis* was examined. In addition two tubes from the Natural History Museum, University of Oslo (NHMO), identified and labeled by M. Sars as “*Spiro foliosa*” from Grøtø (NHMO C970) and “*Spiro foliosa*” from Oksfjord (NHMO C971) were examined. The tube labeled by D.C. Danielsen as *Nerine foliosa* from the University Museum of Bergen (ZMBN 2156, from Grøtø) and eight specimens from the Zoological Museum of Hamburg labelled *Scolelepis squamatus* (Müller, 1806) (ZMH P-16127) were examined. One specimen from ZMBN 2156 and one from ZMH P-16127 are now deposited (after obtaining required permissions from the Bergen and Hamburg museums) in the Zoological Museum of the Moscow University (ZMUM PI 1815 and 1811 respectively). Two cotypes of *Nerinides tridentatus* Southern, 1914 from the Irish Zoological Museum (Blackskod Bay 42.1910 St. W135 shore March 1910 and Blackskod Bay 448.1910 St. W160 Sept. 1910 – there was no an accession number on the label) were also examined as this name is often used in the species lists produced for the benthic fauna of the Norwegian coast. Material identified as *Nerinides tridentatus* and deposited in the Zoological Museum of the University of Uppsala (UUZM, Sweden) was also looked at and considered. For *S. bonnieri* Mesnil, 1896 taxonomic literature was examined together with numerous specimens collected by Akvaplan-niva AS from the North and Norwegian Seas since 1992 but not deposited in any proper museum collections.

RESULTS

*Scolelepis* Blainville, 1828

Type species: *Lumbricus squamatus* Müller, 1806

**Diagnosis:** Prostomium pointed on anterior margin, sometimes trilobed or rounded, extending posteriorly as narrow caruncle. Occipital tentacle present or absent. Caruncle posteriorly detached or attached to dorsal body wall. Peristomium well developed, with or without lateral wings. Branchiae beginning on chaetiger 2, continuing to near the posterior end of body; in anterior chaetigers, branchiae completely fused to dorsal lamellae or with distal portion free. Capillary noto- and neurochaetae of anterior chaetigers usually arranged in two tiers; notopodial capillaries of the posterior chaetigers in a single tier. Neuropodial hooded hooks present. Notopodial hooded hooks present or absent. Hooks uni-, bi-, tri- or multidentate. Pygidium with oval disc or multi-lobed appendages.

**Remarks:** The genus *Scolelepis* was divided by Maciolek (1987) into two subgenera, *Scolelepis* and *Parascolelepis*. This division was based on the structure of the hooks.

*Scolelepis* (S.) finmarchicus **sp. nov.**

(LSID: http://www.zoobank.org/7F1870B0-EB63-449B-8A52-720C5D8EF7AA)

Figures 1 (A–I), 2

*Scolelepis* sp. A – Sikorski, 2001: p.284.

**Material examined**

Type-material: 19 specimens. **Holotype.** Melkøya, Finnmark, Norway, st. 5, grab 3, 70° 41’ 03” N, 23° 33’ 03” E, 130 m, 01 August 2006 (ZMBN 95132). **Paratypes:** *Norway:* Melkøya, st. 4, grab 2, 70° 41’ 08” N, 23° 37’ 19” E, 62 m, 18 July 2006 (1 specimen, ZMBN 95133); Melkøya, st. 4, grab 1, 70° 41’ 23” N, 23° 34’ 31” E, 64 m, 01 August 2006 (1, ZMBN 95134); Melkøya, st. 5, grab 2, 70° 42’ 03” N, 23° 33’ 03” E, 130 m, 01 August 2006 (1, ZMBN 95135); Melkøya, st. 4, 70° 41’ 24” N, 23° 34’ 19” E, 52 m, 06 August 2008 (1, ZMBN 95136); Mosjøyan, st. 3, 65° 51’ 09” N, 13° 10’ 49” E, 41 m, 30 June 2009 (4, ZMBN 95137); Melkøya, st. 4, grab 2, 70° 41’ 24” N, 23° 34’ 19” E, 52 m, 23 August 2010 (1, ZMBN 95138); Melkøya, st. 6, grab 1, 70° 38’ 51” N, 23° 37’ 21” E, 60 m, 23 August 2010 (1, ZMBN 95139); Finnmark, st. 4, grab 3, 70° 55’ 31” N, 25° 36’ 47” E, 150 m, 18 September 2003 (1, ZISP 1/50610); Kola Bay, scuba sample, st.11-1, 69° 04’ 46” N, 33° 11’ 56” E, 11 m, silty sand, 8° C, salinity 34, 26 September 2006 (1, ZMBN 95140); Storviksta st. 3B, 67° 32’ N, 15° 18’ E, 19 m, 21 May 2014 (1, ZMBN 98030); Melkøya Kystovervåking, st. 4, grab 4, 70° 41’ 23” N, 23° 34’ 31” E, 64 m, 11 August 2014 (1, ZMBN 991283).

**Russia:** Kola Bay, Mishukovo, 69° 03’ N, 33° 04’ E, scuba samples, st.14-2 and 3, 8 m, 7° C, salinity 34, 5, silty sand, 18 September 2006 (2, ZMBN 95141 and 95148); Kola Bay, 69° 07’ N, 33° 23’ 35” E, scuba sample 13-3, 6 m, 6,9° C, salinity 33,5, silty sand with broken shells and pebbles, 21 October 2009 (1, ZMBN 95142; 1, ZISP 2/50611).

Non type-material: 2 specimens from Vågsøy 62° 01’ N, 05° 08’ 30” E, 13 and 18,5 m, silty broken shells with gravel (deposited in ZMUM, but recently lost); Melkøya, st. 5, grab 3, 70° 42’ 03” N, 23° 33’ 03” E, 130 m, 01 August 2006 (1 specimen lost during drawing preparation).
Table 1. List of valid species names known today for the genus *Scolelepis* (subgenera *Scolelepis* and *Parascolelepis*).

| Species | Type locality |
|---------|---------------|
| 1. *S. (S.) squamata* (Müller, 1806) | Denmark |
| 2. *S. (S.) longirostris* (Quatrefages, 1843) | English Chanel (Saint-Malo) |
| 3. *S. (P.) foliosus* (Auduoin and Milne Edwards, 1833) | France |
| 4. *S. (S.) agilis* (Verrill, 1873) | Vineyard Sound |
| 5. *S. (S.) bonniere* Mesnil, 1896 | English Chanel |
| 6. *S. (S.) perrieri* (Fauvel, 1902) | Casamance, Senegal |
| 7. *S. (S.) lefèvrei* (Gravier, 1905) | Red Sea |
| 8. *S. (S.) lamellata* (McIntosh, 1909) | Atlantic Ocean, Tangiers Bay |
| 9. *S. (S.) alaskensis* (Treadwell, 1914) | Pacific Ocean, Shumagin Islands, Alaska |
| 10. *S. (S.) acuta* (Treadwell, 1914) | Pacific Ocean, San Diego, California |
| 11. *S. (S.) cantabria* (Rioja, 1918) | Cantabrian Sea |
| 12. *S. (S.) antipoda* (Augener, 1926) | New Zealand |
| 13. *S. (S.) cirratulus hirsuta* (Treadwell, 1928) | 05°32ʹN, 86°59ʹW |
| 14. *S. (S.) minuta* (Treadwell, 1939) | Gulf of Mexico, Texas |
| 15. *S. (S.) squamata saipanensis* (Hartman, 1954) | Pacific Ocean, Saipan, Marianas Islands |
| 16. *S. (S.) arenicola* (Hartmann-Schröder, 1959) | Pacific Ocean, El Salvador |
| 17. *S. (S.) oligobranchia* Khlebovitsch, 1959 | Pacific Ocean, Kurile Islands |
| 18. *S. (S.) pigmentata* (Reish, 1959) | Pacific Ocean, southern California |
| 19. *S. (S.) knightjonesi* (Silva, 1961) | Ceylon |
| 20. *S. (S.) williamsi* (Silva, 1961) | Ceylon |
| 21. *S. (S.) maculata* Hartman, 1961 | Pacific Ocean, California |
| 22. *S. (S.) occidentalis* Hartman, 1961 | Pacific Ocean, California |
| 23. *S. (S.) chilensis* (Hartmann-Schröder, 1962) | Pacific Ocean, Chili |
| 24. *S. (S.) goodbodyi* Jones, 1962 | Jamaica |
| 25. *S. (S.) mesnili* (Bellan and Lagardère, 1971) | Ile d'Oleron, Charente, France |
| 26. *S. (S.) squamata mendanai* Gibbs, 1971 | Pacific Ocean, Solomon Islands |
| 27. *S. (S.) aitutaki* Gibbs, 1972 | Pacific Ocean, Cook Islands |
| 28. *S. (S.) unidentata* (Day, 1973) | Atlantic, North Carolina, Beaufort |
| 29. *S. (S.) gaucha* (Orensanz and Gianuca, 1974) | Brasil, Rio Grande do sul |
| 30. *S. (S.) carunculata* Blake and Kudenov, 1978 | Australia, Westernport, Victoria |
| 31. *S. (S.) lamellicinata* Blake and Kudenov, 1978 | Australia, Westernport, Victoria |
| 32. *S. (S.) occipitalis* Blake and Kudenov, 1978 | Australia, Burwood Beach, New South Wales |
| 33. *S. (S.) phyllobranchia* Blake and Kudenov, 1978 | Australia |
| 34. *S. (S.) precirriseta* Blake and Kudenov, 1978 | Australia, Brisbane, Queensland |
| 35. *S. (S.) victoriensis* Blake and Kudenov, 1978 | Australia, Westernport, Victoria |
| 36. *S. (S.) viridis* Blake and Kudenov, 1978 | Australia, Great Barrier Reef, Queensland |
| 37. *S. (S.) balihiensis* Hartmann-Schröder, 1979 | Australia, Western Australia |
| 38. *S. (S.) vexillatus* Hutchings and Ranier, 1979 | Australia, Careel Bay, New South Wales |
| 39. *S. (S.) blakei* Hartmann-Schröder, 1980 | Australia, Dampier, Western Australia |
| 40. *S. (S.) kudenovi* Hartmann-Schröder, 1981 | Australia, Western Australia |
| 41. *S. (S.) bullibranchia* Rossi, 1982 | Pacific Ocean, California |
| 42. *S. (S.) eltaninae* Blake, 1983 | Antarctic Ocean |
| 43. *S. (S.) denmarkensis* Hartmann-Schröder, 1983 | Australia, Western Australia |
| 44. *S. (S.) bifida* Hutchings and Turvey, 1984 | Australia, South Australia |
| Species | Type locality |
|---------|---------------|
| S. (S.) edmondsi Hutchings and Turvey, 1984 | Australia, South Australia |
| S. (P.) hutchingsae Dauer, 1985 | Australia, Lizard Island, Great Barrier Reef |
| S. (S.) laonicola (Tzetlin, 1985) | White Sea, Kandalaksha Bay |
| S. (S.) pettiboneae Maciolek, 1987 | Atlantic Ocean, Georgia, USA |
| S. (S.) quadridentata Maciolek, 1987 | Atlantic Ocean, Virginia, USA |
| S. (S.) westoni Maciolek, 1987 | Atlantic Ocean, North Carolina, USA |
| S. (S.) anakenae Rozbaczylo & Castilla, 1988 | Pacific Ocean, Easter Island |
| S. (S.) magnus Ozolinsh, 1990 | Pacific Ocean, Peter the Great Bay, Sea of Japan |
| S. (S.) pettiboneae Maciolek, 1987 | Pacific Ocean, southern Chile |
| S. (S.) crenulata Hartmann-Schröder, 1991 | Pacific Ocean, southern Chile |
| S. (S.) branchia Imajima, 1992 | Pacific Ocean, Japan |
| S. (S.) lingulata Imajima, 1992 | Pacific Ocean, Japan |
| S. (S.) planata Imajima, 1992 | Pacific Ocean, Japan |
| S. (S.) sagittaria Zhou, Ji & Li, 2009 | Pacific Ocean, Japan |
| S. (S.) laciniata Eibye-Jacobsen, 1997 | Pacific Ocean, Japan |
| S. (S.) melasma Hutchings, Frouin & Hily, 1998 | Pacific Ocean, Japan |
| S. (S.) daphnois Zhou, Ji & Li, 2009 | Pacific Ocean, Japan |
| S. (S.) angulata Zhou, 2014 | Pacific Ocean, Japan |
| S. (S.) korsuni Sikorski, 1994 | Pacific Ocean, Japan |
| S. (S.) tridentata (Southern, 1914) | Atlantic Ocean, Ireland, Clare Island |
| S. (P.) papillosa (Okuda, 1937) | Pacific Ocean, Korea |
| S. (P.) yamaguchii (Imajima, 1959) | Pacific Ocean, Japan |
| S. (P.) gilchristi (Day, 1961) | South Africa |
| S. (P.) boussfieldi Pettibone, 1963 | North Atlantic Ocean, Canada, Prince Edward Island, New London Bay |
| S. (P.) globosa Wu & Chen, 1964 | intertidal flat around Zhoushan archipelago, East China Sea |
| S. (P.) quinquedentata Hartmann-Schröder, 1965 | Pacific Ocean, Chile |
| S. (P.) texana Foster, 1971 | Gulf of Mexico |
| S. (P.) towra Blake and Kudenov, 1978 | Australia, Botany Bay, New South Wales |
| S. (P.) carrascoi (Carrasco, 1981) | Pacific Ocean, Chile |
| S. (P.) burkovskii Sikorski, 1994 | Barents Sea, Kolguev Isl. (69°08’N, 50°22’E; 19 m, sand) |
| S. (P.) korsuni Sikorski, 1994 | northern North Sea (59°57’42”N, 02°23’44”E; 108 m) |
Figure 1. *Scolelepis finmarchicus* n.sp. A. dorsal view of the whole worm; B. anterior part of body, side view; C. parapodium of setiger 5; D. parapodium of chaetiger 12; E. parapodium of chaetiger 15; F. neuropodial hook, side view, chaetiger 17; G. neuropodial hook, three-quarter view, chaetiger 17; H. notopodial hook, side view, chaetiger 17; I. hook full face view, chaetiger 17, scheme. Material: A-B Holotype (ZMBN 95132); C-E – type-locality (lost); F-I – Paratype (ZMBN 95132). Scale: A – 1 mm; B-E – 0.25 mm; F-H – 25µ; I – 12µ.
Description of all type material (holotype and paratypes)

Two paratypes intact (ZMBN 98030 and 99283), 0.5 mm wide and 3.2 mm long with 26 chaetigers. Width of all specimens 0.4–1.1 mm, length less than 4 mm for fewer than 30 chaetigers. Prostomium pointed anteriorly, tip of prostomium of fixed specimens directed ventrally (Figure 1 B), posterior part swollen with two pairs of eye spots arranged in nearly straight transverse line curving slightly backwards, lateral pair crescent-shaped. No occipital papilla. Palps long, reaching chaetiger 17. Branchiae from chaetiger 2, completely fused to notopodial lamellae, forming comparatively large, broadly rounded notopodial postchaetal lobes on anterior 13 chaetigers, abruptly decreasing posteriorly. Notopodial postchaetal lobes of maximal size on chaetigers 9–10 becoming slightly notched in the lower parts on chaetigers bearing hooks (Figure 1 E). Neuropodial postchaetal lobes small and rounded along the body. Chaetiger 1 lacks notochaetae. Neuropodial hooded hooks from chaetiger 12, up to 4 per fascicle; notopodial hooded hooks from chaetiger 15, 1 per fascicle. Hooded hooks bifid in side view with paired apical teeth (Figures 1 F–I). Pygidium with a rounded bilobed cushion (Figure 1 A). With obvious dark pigmentation posteriorly on prostomium (caruncle), on and around base of palps, base of pygidial cushion with darkest pigmentation.

Color

Obvious dark pigmentation on posterior prostomium (caruncle), on base of palps, around base of palps; darkest pigmentation around base of pygidial cushion. Diffuse dark pigmentation present on dorsal side of anterior 5–10 chaetigers in many specimens. Specimens from the Kola Bay have the most intense pigmentation.

Differential diagnosis and remarks

The material belonging to S. (S.) finmarchicus sp. nov. resembles the type-specimens of Nerinides tridentatus (as they were labeled by Southern in 1914) as the branchiae are completely fused to notopodial postchaetal lobes along the body. Type-specimens of N. tridentatus are however bigger (more than 60 chaetigers), without hooks in notopodia, with a high prostomial occipital crest and with a prostomium which anteriorly does not become gradually acute but instead has a very small and narrow peak on the anterior margin. We do not know of any other species with such a complex of characters: completely fused (without a notch) branchia and notopodial postchaetal lobes, a prostomium narrowing to acute anteriorly, the absence of an occipital tentacle and the presence of notopodial hooded hooks. S. finmarchicus sp. nov. exhibits the traits inherent to subgenus Scolelepis, e.g. shape of hooded hooks, the presence of slightly notched neuropodial lamella, notopodial hooks, and the absence of a papillated sheath at the base of palps.
Etymology
The species is named after a county in the extreme northeastern part of Norway: Finnmark (the county was formerly known as Finmarkens amt), the region of its type locality.

Biology and ecology
No eggs or sperm were detected in the specimens examined. Found from 3 to 150 m depth on mixed bottoms.

Distribution
Along the Norwegian coast from Vågsøy (62°01′N 05°08′30″E) north to Finnmark and east to the Kola Bay in the Barents Sea (Figure 2).

DISCUSSION

Seven species of Scolelepis have been recorded from the Atlantic sector of the Arctic: S. (S.) squamatus (O.F. Müller, 1806); S. (S.) foliosus (Audouin & Milne Edwards, 1833); S. (S.) bonnierii (Mesnil, 1896); S. (S.) laonica (Tzetlin, 1985); S. (P.) korsuni Sikorski, 1994; S. (P.) burkovskii Sikorski, 1994 and S. (S.) matsugae Sikorski, 1994. The species S. (P.) tridentatus (Southern, 1914) does not occur in the area examined (see “Differential diagnosis and remarks”). Former records of this name along the Scandinavian coast were usually associated with specimens belonging to the species S. (P.) korsuni – for example Nerinides tridentatus (UUZM 2667: Uppsala Exp.-33, Skagerak, St.4, Eh.2) identified by A. Eliason (1962: 263).

Currently there are 86 valid species-names in the genus Scolelepis (Table 1). Maciolek (1987) provided an important revision of Scolelepis and divided it into two subgenera, Scolelepis and Parascolelepis. This division is based mainly on the morphology of the hooded hooks (Maciolek 1987: 16–17) and has been used by subsequent authors (e.g., Delgado-Blas 2006; Zhou et al. 2009; Rocha & de Paiva 2012). Some authors have used the two as genera rather than subgenera (Blake 2006, Williams 2007).

The species Asetocalamyzas laonicola was described by Tzetlin (1985) from the White Sea based on a small parasitic worm obtained from a specimen of Laonice cirrata. The original description was based on a single specimen (Holotype – ZMUM PL 307), which exists today as a series of histological sections. In 2008 Tzetlin and Vortsepneva established that it was actually a dwarf male, which usually parasitizes females of the same species. This statement was supported by genetic analysis (Vortsepneva et al. 2008). Before the genetic analysis, females of this species were identified by Vortsepneva as S. (S.) matsugae (Vortsepneva et al. 2008) based on examination of the type-specimens of S. matsugae deposited in Zoological museum of Moscow University (ZMUM PI818-820). Based on personal discussions, Tzetlin and Vortsepneva both agree with our opinion that S. (S.) matsugae should be treated as a junior synonym of S. (S.) laonicola, although they did not state that conclusion in their paper (Vortsepneva et al. 2008). This case of morphologically different males and females in S. (S.) laonicola demonstrates an extreme type of sexual dimorphism (Vortsepneva et al. 2008). 23 years after type-description a paratype for A. laonicola (ZMUM PL 976 – female with two males) was erroneously (pers. comm. Elena Vortsepneva) erected in Vortsepneva et al. (2008). Therefore, the type series consists only of the holotype, which represents just the dwarf parasitic male existing as a series of sections. No type specimen exists for the female. In this case attention should be paid to the erection of a neotype for this species.

The species S. (S.) finmarchicus sp. nov. is described from the Norwegian and Barents Seas (Norwegian coast north of latitude 62°N and Kola peninsula). It should be noted that despite the fauna of the Barents Sea being one of the best studied in the Arctic (Rzhavsky et al. 2011) and there being regular detailed research of the benthos from the Kola Bay area for over a century the new species described in this paper has never been previously recorded. Moreover, one of the authors of this paper (A. Sikorski) worked on the Barents Sea coast of the Kola Peninsula from 1984 until 1989 with a special interest in the sipondid fauna of the coastal biotopes. The genus Scolelepis was one of the main objectives of his investigations at that time, but this newly described species was never recorded. The new species was found in several samples from the Kola Bay and it is likely that this species is a recent invasive one and may be indicative of warming in the southern part of the Barents Sea. Similar logic was used by Rzhavsky et al. (2011: 166) to support the statement about “recent invaders”. The occurrence of the species Aonides paucibranchiata could also be a good example of this statement: it had never been recorded along the coast of the Kola Peninsula before 2007, but is now common in this area (Anisimova et al. 2009; Rzhavsky et al. 2011; Lyubina et al. 2012b – the material collected in 2007; Deart & Britayev 2014). In 1987–1988 A. Sikorski was involved as identifier of Polychaeta in a seasonal and very detailed survey of Jarnyshnaja Inlet which was carried out by the Laboratory of Marine Research of the Leningrad Zoological Institute of USSR Academy of Science (Golikov et al. 1989) and A. paucibranchiata was not recorded there. Today, however, it is common in the area (Rzhavsky et al. 2011; Lyubina et al. 2012b; Deart & Britayev 2014).

The case of S. (P.) korsuni Sikorski, 1994 is another good example illustrating the warming of water in the Barents Sea. At the time this species was described in 1992, the author had the only specimen obtained from the Barents Sea. It was collected during a benthic survey in the Barents Sea from the station (R/V ‘Tunets’: station 105.20, 73°01’N, 22°00’E, 440–450 m, silt, 04.07.1978) on the south-western border of the sea. The entire content of a Sigsbee Trawl was collected. The volume of washed and formalin-fixed sediment was approximately 100 liters. In the following years this sample was offered by Igor Jirkov to students as an exercise at a workshop for sorting at the Department of Hydrobiology, Moscow State University.
one specimen of this species was found in the huge volume of sediment that was processed. The species was described only when the author had the opportunity in 1992 to work with benthic material from the North Sea. Today this species is common in the Barents Sea, occurring almost everywhere: in Ambrose et al. (2009) this species was obtained from the Barents Sea from 26 of the 47 stations sampled (P.E. Renaud, pers. comm.). This species is mentioned as a common one from the Barents Sea by Frolova et al. (2011), Matishov et al. (2011 and 2012), and Lyubina et al. (2012a).

Traits given in the key for *S. (S.) bonnieri* work only for large individuals of more than 0.7 mm wide as smaller specimens of *S. (S.) bonnieri* do not have a pronounced occipital tentacle and also unidentate hooks are usually detected only in large specimens. *Scolelepis* sp. B mentioned in Sikorski (2001: 285) most likely belongs to *S. (S.) bonnieri*. In the case of *S. foliosus*, (together with *S. (S.) squamatus* and *S. (S.) bonnieri*), the states of different characters (including the shape of hooks, shape of body and several other morphological and numeric characters) should be carefully investigated and described for specimens which are less than 0.7 mm wide, as we can now confidently operate only with characters from large individuals. *Scolelepis (S.) foliosus* and *S. (S.) laonicola* are morphologically very close mainly due to the shape of prostomium, the branchiae that are completely fused to notopodial postsetal lobes anteriorly, and the existence of a basal sheath on the palps (Fauvel 1927: 34; Vortsepneva et al. 2008).

With regard to *S. burkovskii*, palps were missing in type specimens but because of the absence of hooded hooks in the notopodia and the absence of notched neuropodia this species may be affiliated with the subgenus *Parascolelepis*.

**ACKNOWLEDGEMENTS**

The authors thank Akvaplan-niva and the Murmansk Marine Biological Institution (MMBI) for providing the opportunity to use material collected for the purpose of ecological monitoring in this work; especially Chris Emblow (Akvaplan-niva) for linguistic assistance, R. Palerud (Akvaplan-niva AS) for assistance in preparing the maps and divers Yu. A. Zuev and S.V. Goldin for the sampling in the Kola Bay. The authors express their sincere thanks to Dr. Brendan O’ Connor (AQUAFACT International Services Ltd., Galway, Ireland) for the help in obtaining of the type-specimens of *Nerinides tridentatus* from the Irish Zoological Museum for examination and to Professor Tor A. Bakke and Ann-Helén Rønning (Natural History Museum, University of Oslo) for providing the opportunity to work with the material identified by M. Sars. To all the people who responded to requests to send material, we express our sincere gratitude.

**REFERENCES**

Ambrose JWG, Renaud PE, Cochrane S, Denisenko S, Skarbøhamar J. 2009. Polychaete diversity patterns on two Arctic shelves: impacts of ice and primary production? Zoosymposia 2: 457-485. Anisimova NA, Manushin IE, Lyubin PA. 2009. Benthos. Coast of the East Murman: environmental research areas of the Shtokman project. Murmansk, Publisher PINRO: 85-132 (in Russian). Audouin JV, Milne Edwards H. 1833. Classification des Annélides et description de celles qui habitent les côtes de la France. Annales des sciences naturelles, Paris, sér. 1(29): 388-412. Augener H. 1926. Papers from Dr. Th. Mortensen’s Pacific...
Delgado-Blas VH, Diaz OFD, Liñero-Arana I. 2009. New record of Scolelepis (Polychaeta: Spionidae) from the Grand Caribbean Region, with the description of a new species. Bulletin of Marine Science 85(2): 240-251.

Blake JA. 1983. Polychaetes of the family Spionidae from South America, Antarctica and adjacent seas and islands. Biology of the Antarctic Seas XIV Antarctic Research Series 39(3): 205-288.

Blake JA, Kudenov JD. 1978. The Spionidae (Polychaeta) from southeastern Australia and adjacent areas with a revision of the genera. Memoirs of the National Museum of Victoria 39: 171-280.

Blake JA. 2006. Spionida. In: Rouse G. & Pleijel F. (eds). Reproductive biology and phylogeny of Annelida. Vol. 4. Reproductive biology and phylogeny. Science Publisher, Enfield, NH: 565-638.

Branch ML. 1998. Four new species of Polychaeta from subantarctic Marion Island. Annals of the South African Museum 105(4): 249-265.

Cantone G, Di Pietro N. 2001. Benthic littoral Polychaeta Sedentaria of Terra Nova Bay (Ross Sea, Antarctica). Antarctic Science 13(1): 3-8. http://dx.doi.org/10.1017/S0954102001000025

Carrasco FD. 1981. Una nueva especie de Scolelepis (Polychaeta, Spionidae) proveniente de Chile. Boletín de la Sociedad de Biología de Concepción 51: 161-165.

Chlebovitsch VV. 1959. [Species of Polychaeta worms from the Kurile Islands, which are new or recorded for the first time in the USSR fauna]. Zoologicheskii zhurnal 38(1): 167-181 (in Russian).

Branch ML. 1998. Four new species of Polychaeta from subantarctic Marion Island. Annals of the South African Museum 105(4): 249-265.

Dauer DM. 1985. A new species of Scolelepis (Polychaeta: Spionidae) from Lizard Island, Australia. Proceedings of the Biological Society of Washington 98(3): 678-681.

Day JH. 1961. The Polychaete Fauna of South Africa. Part 6. Sedentary species dredged off Cape coasts with a few new records from the shore. Journal of the Linnean Society of London 44(299): 463-560. Published online. http://dx.doi.org/10.1111/j.1096-3642.1961.tb01623.x

Day JH. 1973. New polychaeta from Beaufort, with a key to all species recorded from North Carolina. NOAA Technical Reports, Ser. National Marine Fisheries Service, Circulars 375: 1-140.

Deart YV, Britayev TA. 2014. “New” benthic community with dominance of POLYCHAETA, OWENIIDAE at Murman coast: structure and causes of appearance. Doklady Academii Nauk 454(2): 1–5.

Delgado-Blas VH. 2006. Partial revision of Scolelepis (Polychaeta: Spionidae) from the Grand Caribbean Region, with the description of two new species and a key to species recorded to species in the area. Contributions to Zoology 75(1/2): 75-97.

Delgado-Blas VH, Diaz OFD, Liñero-Arana I. 2009. New record and new species of Scolelepis (Polychaeta: Spionidae) from the Venezuelan, Caribbean. Journal of Marine Biological Association of the United Kingdom 88: 1-5. http://dx.doi.org/10.1590/S1984-46702012000400011

Eibye-Jacobsen D. 1997. A new species of Scolelepis (Polychaeta: Spionidae), highly abundant on the sand beaches of western Phuket Island, Thailand. Bulletin of Marine Science 60(2): 240-251.

Eibye-Jacobsen D, Soares AG. 2000. New records of Scolelepis (Polychaeta: Spionidae) from the sandy beaches of Madagascar, with the description of a new species. Bulletin of Marine Science 67(1): 571-586.

Fauvel P. 1902. Annélides Polychètes de la Casamance rapportées par M. Auguste Hartmann-Schöder. Bulletin de la Société Linnéenne de Normandie, Série 5(9): 59-105.

Fauvel P. 1927. Polychètes sédentaires. Addenda aux errantes, Arachniádelides, Myzostomaires. Faune de France Volume 16. Paul Lechevalier. Paris. 494 p.

Foster NM. 1971. Spionidae (Polychaeta) of the Gulf of Mexico and the Caribbean Sea. Studies on the Fauna of Curaçao and Other Caribbean Islands 37: 1-138.

Frolova EA, Lubina OS, Zimina OY, Dikaeva DR, Frolov AA, Akhmetchina OY, Garbul EA, Nekhaev IO. 2011. Benthic communities off the coast of the Arctic archipelagoes. Terrestrial and Marine Ecosystems. Paulsen Publishing House. Moscow – Saint-Petersburg: 181-210 (in Russian).

Gibbs PE. 1971. The polychaete fauna of the Solomon Islands. Bulletin of the British Museum (Natural History), Zoology 21(5): 101-211.

Golikov AN, Skarlato OA, Golikov AA, Ereskovsky AV, Menshutkina TV, Naumov AD, Novikov OK, Petryashov VV, Pogrebov VV, Sirenko BI, Frolova EA. 1989. The history of formation and some features of the distribution of ecosystems in the Barents Sea Bay Yarnshnya. Problems Cenozoic paleo-ecology and paleo-geography of Arctic Ocean, Abstracts of the Third USSR Conference, Murmansk, Apatity: 13-14 (in Russian).

Gravier C. 1905. Sur les Annélides Polychètes de la Mer Rouge (Cirratulien, Spionidiens, Ariciers). Bulletin du Muséum d’Histoire Naturelle, Paris, Série 1(11): 42-46.

Hartman O. 1954. New species of polychaetous worms from the Marianas and Gilbert Islands. Journal of the Washington Academy of Sciences 44(7): 228-232.

Hartman O. 1961. Polychaetous annelids from California. Allan Hancock Pacific Expeditions 25: 1-226.

Hartmann-Schröder G. 1959. Zur Ökologie der Polychaeten des Mangrove-Estero-Gebietes von El Salvador. Beiträge zur neotropischen Fauna 1(2): 69-183.

Hartmann-Schröder G. 1962. Die polychaeten des Eulitorals. In: Zur Kenntnis des Eulitorals der Chilenischen Pazifikküste und der Argentinischen Küste, südpatagoniens unter besonderer Berücksichtigung der Polychaeten und Ostracoden (G. Hartmann-Schöder & Hartmann G. eds.). Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut 60: 57-167.

Hartmann-Schröder G. 1979. Die Polychaeten der tropischen Nordwestküste Australiens (zwischen Derby im Norden und Port Hedland im Süden), Teil 2. In: Hartmann-Schröder G. & Hartmann G. Zur Kenntnis des Eulitorals der australischen Küsten unter besonderer Berücksichtigung der Polychaeten und Ostracoden. Mitteilungen aus dem Hamburgischen zoologischen Museum und Institut 76: 77-218.

Hartmann-Schröder G. 1980. Die Polychaeten der tropischen Nordwestküste Australiens (zwischen Port Samson im Norden und Exmouth im Süden) In: Hartmann-Schröder G. & Hartmann G. Zur Kenntnis des Eulitorals der australischen Küsten unter besonderer Berücksichtigung der Polychaeten und Ostracoden. Mitteilungen aus dem Hamburgischen zoologis-
coast. Marine Biodiversity Records 2: 1-5. http://dx.doi.org/10.1017/S1755267208000183

Sikorski AV. 1994. New arctic species of Scolelepis (Polychaeta: Spionidae). In: Dauvin J-C, Laubier L and Reish DJ (eds), Actes de la 4ème Conférence internationale des Polyèthès. Mémoires du Muséum National d’Histoire Naturelle 162: 279-286.

Sikorski AV. 2001. Spionidae of the Arctic Ocean. In: Jirkov IA. Polychaeta of the Arctic. Janus-K. Moskva: 273-332 (in Russian).

Silva PHDH. 1961. Contributions to the Knowledge of the Polychaete fauna of Ceylon. Part I. Five new species, two new varieties and several new records principally from the southern coast. Spolia Zeylanica 29(2): 164-194.

Southern R. 1914. Archiannelida and Polychaeta. Proc. Royal Ir. Acad. Dublin 31(47): 1-160.

Treadwell AL. 1914. Polychaetous annelids of the Pacific coast in the collection of the Zoological Museum of the University of California. University of California publications in zoology 13: 175-234.

Treadwell AL. 1939. New polychaetous annelids from New England, Texas, and Puerto Rico. American Museum Novitates 1023: 1-7.

Treadwell AL. 1928. Polychaetous annelids from the Arcturus oceanographic expedition. Zoologica, New York 8: 449-485.

Tzetlin AB. 1985. Asetocalamyzas laonicola gen. et sp. n., a new ectoparasitic polychaete from the White Sea. Zoologicheski zhurnal 64(2): 296-298 (in Russian).

Verrill AE. 1873. Report upon the invertebrate animals of Vineyard Sound and the adjacent waters, with an account of the physical characters of the region. Report of the United States Commission for Fisheries 1871-72: 295-778.

Vortsepneva E, Tzetlin A, Purschke G, Mugue N, Hass-Cordes E, Zhadan A. 2008. The parasitic polychaete known as Asetocalamyzas laonicola (Calamyzidae) is in fact the dwarf male of the spionid Scolelepis laonicola (comb. nov.). Invertebrate Biology 127(4): 403–416. http://dx.doi.org/10.1111/j.1744-7410.2008.00137.x

Williams JD. 2007. New records and description of four new species of spionids (Annelida: Polychaeta: Spionidae) from the Philippines: the genera Dispio, Malacoceros, Polydora, and Scolelepis, with notes on palp ciliation patterns of the genus Scolelepis. Zootaxa 1459: 1–35.

Wu BL, Chen M. 1964. A new species of polychaete worm of the Family Spionidae from Chushan Archipelago, East China Sea. Acta Zootaxonomica Sinica 1(1): 195-198.

Zhou J, Ji W, Li X. 2009. A new species of Scolelepis (Polychaeta: Spionidae) from sandy beaches in China, with a review of Chinese Scolelepis species. Zootaxa 2236: 37–49.

Zhou J. 2014. A new species of Scolelepis (Polychaeta: Spionidae) from Chinese seas. Raffles Bulletin of Zoology 62: 490–495.

Editorial responsibility: Torkild Bakken.

This article is open-access and distributed under the terms of the Creative Commons Attribution 4.0 International license. This permits all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited. (http://creativecommons.org/licenses/by/4.0/).