УКРАЇНСЬКИЙ АНТАРКТИЧНИЙ ЖУРНАЛ
УАЖ, № 3, 135-144, (2005)

УДК 595.143.2(1-923)

AN IDENTIFICATION KEY TO ANTARCTIC FISH LEECHES (HIRUDINEA: PISCICOLIDAE)

A.Yu. Utevsky

Dept. of Zoology and Animal Ecology, Kharkiv National University, 61077 Kharkiv, Ukraine
e-mail: autevsk@uiver.kharkov.ua

Abstract. The revised list of Antarctic fish leeches (Hirudinea: Piscicolidae) is presented. It includes 21 species belonging to 13 genera. The article contains identification keys to subfamilies, genera and species, short descriptions, information on hosts and geographical distribution of leeches and images of 20 species.

Key words: Antarctica, Hirudinea, Piscicolidae, fish leeches

Визначальні таблиці антарктичних риб'ячих п'явок (Hirudinea: Piscicolidae). А.Ю. Утевський
Реферат. Представлено ревізований список антарктичних риб'ячих п'явок. Він включає 21 вид із 13 родів. Стаття містить визначальні таблиці підродин, родів і видів, короткі описи, інформацію про живителів та географічне розповсюдження, зображення 20 видів п'явок.

Определительные таблицы антарктических рыбьих пиявок (Hirudinea: Piscicolidae). А.Ю. Утевский
Реферат. Представлен пересмотренный список антарктических рыбьих пиявок. Он включает 21 вид из 13 родов. Статья содержит определительные таблицы подсемейств, родов и видов, краткие описания, информацию о хозяевах и географическом распространении, изображения 20 видов пиявок.

Introduction

Leeches of the Antarctic Seas are restricted to the family Piscicolidae, the order Rhynchobdellida. Marine fish leeches are ectoparasitic on fishes and very few species presumably parasitize on Crustaceans and Pycnogonids. The Antarctic Seas have the diverse and relatively well known fauna of leeches studied by the outstanding zoologists: C. Badham, A. Brinkmann, E.M. Burreson, R. Dollfus, V.M. Epstein, W.A. Harding, M.C. Meyer, J.P. Moore, L.R. Richardson, R.T. Sawyer, L. Szidat.

However the Antarctic leech fauna can be more diverse than considered before. This study is aimed at stimulating the interest of marine zoologists in the fish leeches.

Key to the Subfamilies of the Family PISCICOLIDAE

The keys are based on characters peculiar to Antarctic leeches and are not intended for identifying any taxa beyond the Antarctic region.

1a Externally visible pulsatile vesicles absent 2
1b One pair of externally visible pulsatile vesicles per somite ..... **Subfamily Piscicolinae**
2a Body with large tubercles; annuli distinctly divided; pulsatile vesicles subepidermal ..... **Subfamily Pontobdellinae**
2b Body with small tubercles and papillae or smooth; annuli indistinctly divided; pulsatile vesicles absent ..... **Subfamily Platybdellinae**

Key to the Antarctic Genera of the Subfamily Pontobdellinae

1a Number of annuli in complete somite less than 12, tubercles of varying size, not very large leeches 2

1b Complete somite 12-annulate with equal large conic tubercles; very large leeches ..... **Genus *Megaliobdella (M. szidati)*** (fig. 1)

2a Large or medium-sized leeches, three peak eye-like spots on anterior sucker, posterior crop caeca totally fused, accessory glands absent ..... **Genus *Pontobdella (P. tasmanica)***

2b Not large leeches, eye-like spots without peaks, posterior crop caeca nontotally fused with fenestrae, accessory glands present ..... **Genus *Moorebdellina***

Key to the Species of the Genus *Moorebdellina*

1a Complete somite 2-annulate ..... ***M. biannulata*** (fig. 2)

1b Complete somite more than 2-annulate 2

2a Complete somite 4-annulate; A_1 with 6 papillae; A_2, B_5, B_6 with 8 papillae ..... ***M. rugosa*** (fig. 3)

2b Complete somite 3-annulate 3

3a Annuli A_1 and A_3 with many small tubercles, A_2 with 4 papillae ..... ***M. uschakovi*** (fig. 4)

3b Annulus A_1 with 6 papillae, A_2 and A_3 with 8 papillae ..... ***M. meyeri*** (fig. 5)

Key to the Antarctic Genera of the Subfamily Platybdellinae

1a Body sharply divided into trachelosome and urosome, wide and flattened 2

1b Body not sharply divided into trachelosome and urosome, not wide and not flattened 3

2a Eye, eye-like spots, ocelli absent; tegument opaque; posterior crop caeca absent ..... **Genus *Epsteinia (E. alba)*** (fig.6)

2b 2 eye-like spots on anterior sucker; tegument translucent with pigment cells; posterior crop caeca nontotally fused with 4 fenestrae ..... **Genus *Austrobdella (A. translucens)*** (fig.7)

3a Body with marginal flanges ..... **Genus *Pleurobdella***

3b Body without marginal flanges 4

4a 10-12 pairs of tubercles on urosome; anterior sucker with eye-like spots; posterior sucker small, facing directly posteriorly ..... **Genus *Glyptonotobdella (G. antarctica)*** (fig.8)

4b Tubercles absent; anterior sucker without eye-like spots; posterior sucker medium-sized or large, facing ventraly ..... **Genus *Cryobdella***

Key to the Species of the Genus *Pleurobdella*

1a Anterior sucker small, body with small tubercles ..... ***P. varituberculata*** (fig.9)

1b Anterior sucker large, body with small papillae ..... ***P. australis*** (fig.10)

Key to the Species of the Genus *Cryobdella*

1a Posterior sucker in complicated form, large, possesses two parts which just one to ones ..... ***C. ljadovi*** (fig.11)

1b Posterior sucker round form, medium-sized or small 2

2a Ratio of posterior sucker width to maximum body width >2 ..... ***C. pallida*** (fig.12)

2b Ratio of posterior sucker width to maximum body width ≈1 3

3a Posterior sucker centrally attached ..... ***C. levigata*** (fig.13)

3b Posterior sucker eccentrically attached ..... ***C. antarctica*** (fig.14)

Key to the Antarctic Genera of the Subfamily Piscicolinae

1a Body wide and flattened 2

1b Body long, cylindrical or subcylindrical 3

2a Pulsatile vesicles well developed; trachelosome and urosome are of the same length; surface of

anterior sucker smooth, 1 pair of eyes, posterior sucker without ocelli
..... **Genus *Trachelobdellina (T. glabra)*** (fig.15)

2b Pulsatile vesicles small; trachelosome no longer then urosome; anterior sucker with papillae and 2 groups of ocelli; posterior sucker with ocelli; 2 groups of ocelli on first annulus of trachelosome .....

3a Posterior crop caeca absent ..... **Genus *Trulliobdella***

3b Posterior crop caeca present..... **Genus *Galatheabdella (G. bruuni)*** (fig.16)

4a Anterior and posterior suckers small; facing directly posteriorly; prepuce present
..... **Genus *Trachelobdella (T. bathyrajae)*** (fig.17)

4b Anterior and posterior suckers large, facing ventrally; prepuce absent
..... **Genus *Nototheniobdella (N. sawyeri)*** (fig.18)

Key to the Species of the Genus *Trulliobdella*

1a Body yellowish gray, posterior sucker with 7 ocelli ..... *T. capitis* (fig.19)

1b Body without pigment, semitransparent; posterior sucker with 15 ocelli
..... *T. bacilliformis* (fig.20)

SHORT DESCRIPTIONS OF SPECIES

Subfamily Pontobdellinae Llewellyn, 1966

***Pontobdella tasmanica* Hickman, 1947.** Syn. *Stibarobdella tasmanica* (Hickman, 1947) Llewellyn, 1966. Large leeches. Up to 80 mm in length and 10 mm in width. Body and suckers unpigmented, only clitellum with brownish tinge. Host data: *Trigonorhina fasciata* (Rajiformes, Rhinobatidae) and unidentified skate. Distribution: Hobart, King Island, Kingston (Tasmania) - Pacific Ocean: Subantarctic region of Atlantic Ocean, near Antarctic Peninsula - Atlantic sector, Ross Sea - Pacific sector of the Antarctic region.

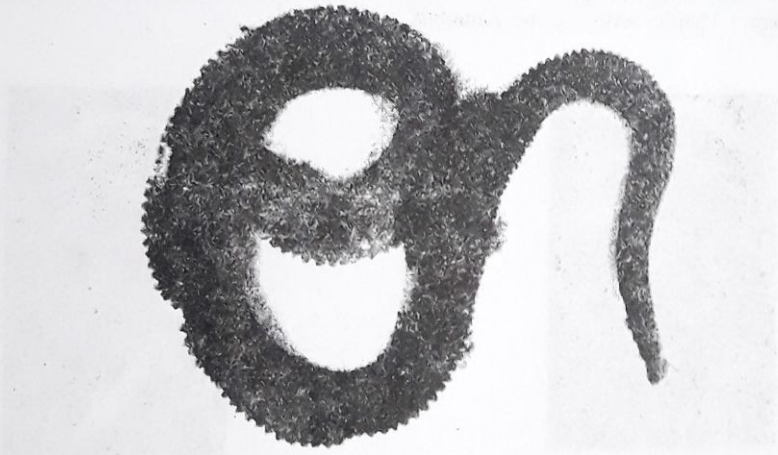

Fig. 1. *Megaliobdella szidati*
(reproduced and modified from © 1990 American Geophysical Union. Reproduced by permission of American Geophysical Union and E.M. Burreson, Virginia Institute of Marine Science. M.C. Meyer and E.M. Burreson, Some leeches (Hirudinea: Piscicolidae) of the Southern oceans. Biology of the Antarctic Seas XXI, Antarctic Research Series, V. 52, p 229)

***Megaliobdella szidati* Meyer at Burreson, 1990.** Very large leeches: up to 340 mm in length and 13 mm in width. Body of preserved specimen is light brown. Host data: all specimens were collected free-living. Distribution: 77°42.0'S, 167°22.0'W, Ross Sea - Pacific sector of the Antarctic region.

Fig. 2. ***Moorebdellina biannulata***

***Moorebdellina biannulata* (Moore, 1957).** Syn.*Pontobdella biannulata* Moore, 1957. Small or not large leeches. Up to 20 mm in length and 3.5 mm in width. Anterior sucker with two brownish transverse bars separated by unpigmented area. Second bar uniting a pair of eye-like spots. Radial light brownish stripes on posterior sucker. Segmental bands of same color alternated with unpigmented areas on dorsum. Host data: all specimens were collected free-living. Distribution: Princess Martha Coast, Riiser-Larsen Sea - Atlantic sector of the Antarctic region; between 50°-70°E - Indian sector of the Antarctic region; Oates Coast and Cape Adare - Pacific sector of the Antarctic region.

Fig. 3. ***Moorebdellina rugosa***

***Moorebdellina rugosa* (Moore, 1938).** Syn. *Pontobdella rugosa* Moore, 1938. Small or not large leeches. Up to 20 mm in length and 3.5 mm in width. Anterior sucker with two brownish transverse bars separated by unpigmented area. Second bar uniting a pair of eye-like spots. Radial light brownish stripes on posterior sucker. Segmental bands of same color alternated with unpigmented areas on dorsum. Host data: one specimen collected from Pycnogonida. Distribution: Antarctic shelf between 50°-110°E - Indian sector of the Antarctic region, Enderby Land - Atlantic sector of the Antarctic region.

Fig. 4. ***Moorebdellina uschakovi***

***Moorebdellina uschakovi* Epstein, 1974.** Not large leeches. Up to 25 mm in length and 3.0 mm in width. Dorsal surface light brownish with tints of violet, ventral surface light. Annuli A_1 and A_3 pigmented, A_2 without pigment. Host data: all specimens were collected free-living. Distribution: Crozet Is.- Indian sector of the Antarctic region; S. Georgia I. - Atlantic sector of the Antarctic region.

Fig. 5. ***Moorebdellina meyeri***

***Moorebdellina meyeri* A.Utevsky, 1997.** Not large leeches. Up to 23.5 mm in length and 1.5 mm in width. Anterior sucker with two pigmented area around eye-like spots. Body with light pigment bands. Host data: all specimens were collected free-living. Distribution: S. Orkney Is.- Atlantic sector of the Antarctic region.

Subfamily Platybdellinae Epstein, 1970

Fig. 6. *Epsteinia alba*

Epsteinia alba **(Epstein, 1970)**. Syn. *Trulliobdella alba* Epstein, 1970. Not large leeches. Up to 30 mm in length and 8 mm in width. Body light coloured but dorsum more dark than venter. Not numerous large brown pigment cells visible in skin. Host data: on caudal fin of *Trematomus borchgrevinki* (Perciformes; Nototheniidae). Distribution: Enderby Land - Atlantic sector of the Antarctic region.

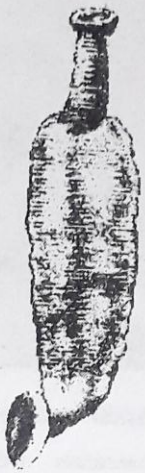

Fig. 7. *Austrobdella translucens*
(reproduced and modified from Badham 1916)

***Austrobdella translucens* Badham, 1916.** Small leeches. Up to 13 mm in length and 3.25 mm in width. Skin semitransparent with brownish-red, yellow and purple individual pigment cells. Host data: *Sillago ciliata* - Pacific Ocean, *Notothenia* sp. and *Chaenocephalus* sp. in the Antarctic region. Distribution: Southern Coast of Australia; Kerguelen Is. - Indian sector of the Antarctic region.

Fig. 8. *Glyptonotobdella antarctica*
(reproduced and modified from Sawyer and White 1969, by permission of R.T. Sawyer, BIOPHARM (UK) Ltd)

***Glyptonotobdella antarctica* Sawyer et White, 1969**. Syn. Notobdella streptocheles Yang, 1987. Not large leeches. Up to 26 mm in length and 1.0 mm or more in width. Anterior sucker with shoe-like pigment bar which unites eye-like spots, posterior sucker with some pigment radial stripes. Trachelosome with 5 red-brown pigment bands, urosome with 14 bands of same color, which include annulus A_2. Colouration varying from translucent ochre to light brownish-red. Host data: *Glyptonotus antarcticus* (Isopoda), *Chionodraco sp.*, *Chaenocephalus aceratus*. Distribution: S.Orkney Is., S.Sandwich Is., Scottia Sea, Princess Martha Coast - Atlantic sector of the Antarctic region; McMurdo Sd., Ross Sea - Pacific sector of the Antarctic region; Marion I. - Indian sector of the Antarctic region.

Fig. 9. *Pleurobdella varituberculata*

Pleurobdella varituberculata **(Moore, 1938).** Syn.*Oxytonostoma varituberculata* Moore, 1938. Not large leeches. Up to 27 mm in length and 2.4 mm in width. Margin of anterior sucker brownish. Posterior sucker with brownish stripe on dorsum which narrowing to margin. Body with bands of same colors, dorsum more coloured than venter. There are 3 bands on trachelosome and 15 on urosome. On urosome, annuli B_1-B_3 bearing segmental bands. Host data: only one specimen collected from Pycnogonida. Distribution: S. Orkney Is., Enderby Land - Atlantic sector of the Antarctic region; Wilkes Land - Indian sector.

Fig. 10. *Pleurobdella australis*

Pleurobdella australis **(Epstein, 1970).** Syn. *Pterobdellina australis* Epstein, 1970. Not large leeches. Up to 27 mm in length and 2.4 mm in width. Margin of anterior sucker brownish. Radial brownish stripes on posterior sucker. Body pigmented by brownish pattern against gray background, which may form some black bands on trachelosome. Host data: only one specimen collected from Pycnogonida. Distribution: Atlantic Ocean near Argentina; S. Orkney Is. - Atlantic sector of the Antarctic region.

Fig. 11. *Cryobdella ljadovi*

Cryobdella ljadovi **Epstein at A.Utevsky, 1994.** Small leeches. Up to 13.4 mm in length and 2.2 mm in width. Host data: *Muraenolepis marmoratus* and *Muraenolepis microps* (on gill rakers). Distribution: Kerguelen coastal waters - Indian sector of the Antarctic region; S. Orkney Is. - Atlantic sector of the Antarctic region.

Fig. 12. *Cryobdella pallida*

Cryobdella pallida **A.Utevsky, 1997.** Small leeches. Up to 9 mm in length and 0.7 mm in width. Host data: *Notothenia squamifrons* (on gills). Distribution: Crozet I.- Indian sector of the Antarctic region.

Fig. 13. *Cryobdella levigata*

Fig. 14. *Cryobdella antarctica*

Cryobdella levigata **Harding, 1922.** Syn. *Platybdella levigala* (Harding, 1922). Not large leeches. Up to 29 mm in length and 3.5 mm in width. After alcohol fixation brownish-grey or fully unpigmented. Host data: *Trematomus hansoni*, *T. bernacchii*. Distribution: Ross Sea (Victoria Land) - Pacific sector of the Antarctic region; Davis Sea, Mawson Sea, Kerguelen Is. - Indian sector of the Antarctic region.

Cryobdella antarctica **Epstein, 1970.** Syn. *Glyptonotobdella epshteini* Sawyer, 1986. . Not large leeches. Up to 22 mm in length and 1 mm in width. Segmental brownish bands alternated with unpigmented areas. Host data: one specimen collected from *Trematomus bernacchii*. Distribution: Davis Sea - Indian sector of the Antarctic region; Scottia Sea - Atlantic secto of the Antarctic region.

Subfamily Piscicolinae Johnston, 1865

Fig. 15. *Trachelobdellina glabra*

Trachelobdellina glabra **Moore, 1957.** Not large leeches. Up to 30 mm in length and 7 mm in width. Segmental bands present. Host data: one specimen collected from *Glyptonotus antarcticus* (Isopoda). Distribution: Mawson Coast - Indian sector of the Antarctic region, S. Shetland Is.- Atlantic sector of the Antarctic region.

Fig. 16. *Galatheabdella bruuni*
(reproduced and modified from Richardson and Meyer 1973)

Galatheabdella bruuni **Richardson et Meyer, 1973.** Large leeches. Up to 90 mm in length, 5 mm in width. No dark pigment and pattern, pinkish individual large cells visible trough the body wall, other body wall accepting this area dusky white. Host data: *Coryphaenoides* sp., *Bassozetus* sp. in Tasman Sea; in Antarctic no host data. Distribution: Bransfield Str. - Atlantic sector of the Antarctic region; Tasman Sea - Pacific Ocean.

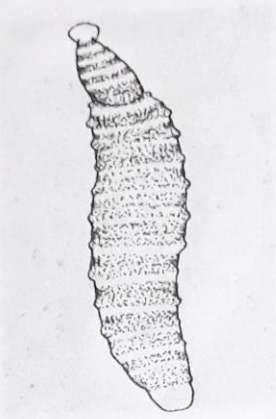

Fig. 17. ***Trachelobdella bathyrajae***

Trachelobdella bathyrajae **Meyer et Burreson, 1990.** Small leeches. Up to 13 mm in length and 2 mm in width. 5 yellowish bands on trachelosome and 13 band of same color on urosome, annuli B_4 and B_5 unpigmented. Host data: collected from *Bathyraja maccaini*. Distribution: S. Shetland Is. - Atlantic sector of the Antarctic region.

Fig. 18. ***Nototheniobdella sawyeri***

Nototheniobdella sawyeri **A.Utevsky,** 1993. Medium-sized leeches. Up to 60 mm in length and 5 mm in width. Segmental bands present Host data: *Neopagetopsis ionah* (on body, mouth and gill cavity), *Cryodraco antarcticus, Chaenodraco wilsoni, Chionodraco kathleenae, C. hamatus, Parachaenichthys georgianus, Harpagiferidae* (?).Distribution: Palmer Coast, S. Shetland Is., Filchner Ice Shelf (Weddell Sea) - Atlantic sector of the Antarctic region; Clarie Coast - Indian sector of the Antarctic region; Scott Coast, Franklin I. (Ross Sea) - Pacific sector of the Antarctic region.

Fig. 19. ***Trulliobdella capitis***

Trulliobdella capitis **Brinkmann, 1948.** Medium-sized leeches. Up to 60 mm in length and 12 mm in width. Body and suckers yellowish gray, ocelli may be depigmented after fixation. Host data: *Notothenia rossi, N. coriiceps; Parachaenichthys georgianus; Neopagetopsis ionah, Pseudochaenichthys georgianus. Chaenichthys rhinoceratus, Chaenocephalus bouvetensis, Cryodraco antarcticus, Champsocephalus gunnari, Chionodraco kathleenae, C. hamatus, C. rastrospinosus, Chaenodraco wilsoni.* Distribution: Bouvet I., S. Shetland Is., S. Orkney Is., Weddell Sea - Atlantic sector of the Antarctic region; Wilkes Land - Indian sector of the Antarctic region; Argentine Is., Ross Sea - Pacific sector of the Antarctic region.

Fig. 20. ***Trulliobdella bacilliformis***

Trulliobdella bacilliformis (Brinkmann, 1948). Syn.: Notobdella nototheniae Benham, 1909; Cryobdellina bacilliformis Brinkmann, 1948; Antarctobdella tcherniai Dollfus, 1964; Antarctobdella crozetensis Sawyer, 1972; Ophthalmobdella bellisioi Szidat, 1965. Medium-sized leeches. Up to 45 mm in length and 9 mm in width. Body without pigments. Host data: *Notothenia coriiceps, N. neglecta, Nototheniops larseni; Parachaenichthys georgianus; Pseudochaenichthys georgianus, Chaenichthys rhinoceratus, Chaenocephalus aceratus, C. bouvetensis, Champsocephalus gunnari, C. rastrospinosus.* Distribution: Bouvet I., S. Shetland Is., S. Orkney Is., S. Georgia I.- Atlantic sector of the Antarctic region. Prince Edward Is., Marion I., Crozet Is., Kerguelen Is.- Indian sector of the Antarctic region.

References

Badham, C. On an Ichthyobdellid parasitic on the Australian Sand whiting (*Sillago ciliata*) // Quart. Journ. Micr. Sci. - 1916. - Vol. **62** (245). - P.1-41.

Benham W.B. Preliminary report on two Hirudinea from the Subantarctic Islands of New Zeland. In: C.Chilton (Ed.), The Subantarctic Islands of New Zeland I. Philosophical Institute of Canterbury, Wellington. - 1909. - P. 372-376.

Brinkmann, A. Some new and remarkable leeches from the Antarctic seas // Sci. Results Norw. Antarct. Exped. 1927-1928. - 1948. - Vol. 29. - P. 1-12.

Dollfus, R. Sangsue tentaculifere de la peau d'un teleosteen du genre *Chaenichthys* J.Richardson, 1844 // Bulletin du Museum D'Histoire Naturelle 2-e Serie.-1964/1965.- Vol. **36** (6). - P. 831-843. (in French)

Epshtein, V.M. Bipolar distribution of marine fish leeches (Hirudinea, Piscicolidae). In: Volyanitsky VA (ed) First All-Union Symposium Diseases and Parasites of Marine Animals. Sevastopol, Kiev. - 1970a. - P. 143-146. (in Russian)

Epshtein, V.M. Fish Leeches (Hirudinea, Piscicolidae) in the Antarctic seas from the collection of the Zoological Institute of the Academy of Sciences of the USSR. In: Volyanitsky VA (ed) First All-Union Symposium Diseases and Parasites of Marine Animals. Sevastopol, Kiev. - 1970b. - P. 146-149. (in Russian)

Epshtein, V.M. Systematic status of the antarctic leech *Pontobdella rugosa* Moore (Piscicolidae) // Zool. Zhurn. - 1972. - Vol. **LI** (8). - P. 1142-1146. (in Russian)

Epshtein, V.M. New data on tropical origin elements in Antarctic Piscicolid Leech fauna. In: Six All-Union Symposium Diseases and Parasites of Marine Animals. Moscow. - 1974. - P. 301-305 (in Russian)

Epshtein, V.M., Okun', S.V. On the structure, systematic status and distribution of the antarctic leech *Pontobdella biannulata* Moore, 1957 // Informatsionnyi bjulleten' Sovetskoi Antarcticheskoi Ekspedicii.- 1991.- Vol. **116**.- P. 99-103. (in Russian)

Epshtein, V.M., Utevsky, A.Yu. A new marine leech *Cryobdella ljadovi* sp.n. from antarctic seas // Zoosystematica Rossica. -1994. - Vol. **3**(1). - P. 86-88.

Harding, W.A. Hirudinea // Nat. Hist. Rep. Br. Antarct. Terra Nova Exped. 1910. - 1922. - Vol. Zool. **X** (2). - P. 257-261.

Hickman, V.V. *Pontobdella tasmanica* nom.nov. (Hirudinea) // Pap. Proc. R. Soc. Tasmania. - 1947. - P. 27.

Llewellyn, L.C. Pontobdellinae (Hirudinea: Piscicolidae) in the British Museum (Natural History) with a revue of the subfamily// Bull. of the British Museum (Natural History). Zoology. - 1966. - Vol. **14**(7). - P. 341-439.

Meyer, M.C., Burreson, E.M. Redescription of the piscicolid leech *Trulliobdella capitis* Brinkmann // Proc. Helminthol. Soc. Wash. - 1983. - Vol.**50** (1). - P.138-142.

Meyer M.C., Burreson E.M. Some leeches (Hirudinea: Piscicolidae) of the Southern oceans // Biology of the Antarctic seas XXI. Antarctic research series. - 1990.- Vol. 52.- P. 219-236.

Moore, J.P. Leeches (Hirudinea). Australasian antarctic expedition 1911-1914 // Sci. Rep.(C). - 1938.- Vol.**10** (3).- P.5-16.

Moore, J.P. Hirudinea. B.A.N.Z. Antarctic Research expedition. Rep. Ser. B (Zoology and Botany). - 1957. - Vol.**6** (6). - P. 102-105.

Richardson, L.R., Meyer, M.C. Deep-sea fish leeches (Rhynchobdellae: Piscicolidae) // Galathea report: Scientific Results of The Danich Deep-Sea Expedition Round the World 1950-52.- 1973. - P.113-126.

Sawyer, R.T., White, M.G. A new genus and species of marine leech, *Glyptonotobdella antarctica*, from the antarctic isopod. // Brit. Antarct. Surv. Bull. - 1969. - Vol. **22**. - P. 1-14.

Sawyer, R.T. A new species of "tentacled" marine fish leech parasitic on Notothenia from subantarctic Marion and Crozet Islands // Hydrobiologia.- 1972. - Vol. **40** (3). - P. 345-354.

Sawyer, R.T. Notes on two marine leeches (Annelida, Hirudinea) from Subantarctic Marion Islands including a new record // Hydrobiologia. - 1976. - Vol. **48**(3). - P. 267-268.

Szidat, L. Los parasitos de *Notothenia neglecta* Nybelin // Estudios sobre la fauna de parasitos de peces Antarcticos. Republica Argentina, Secretaria de Marina, Servicio de hidrografia naval. - 1965. - Vol. **910**. - P.1-84. (in Spanish)

Utevsky, A.Yu. A new marine leech *Nototheniobdella sawyeri* gen.n., sp.n. (Hirudinea, Piscicolidae) from Antarctic seas // Zoosystematica Rossica. - 1993. - Vol. **2** (2). - P. 237-240.

Utevsky, A.Yu. A New Genus of Antarctic Piscicolid Leeches (Hirudinea, Rhynchobdellida) // Vestnik Zoologii. - 1994. - Vol. 4-5. - P. 73-76. (in Russian)

Utevsky, A.Yu. A New Antarctic Leech Genus (Hirudinea, Piscicolidae) // Vestnik Zoologii. - 1995. - Vol. 5-6.- P. 3-12. (in Russian)

Utevsky, A.Yu. A New Species of Piscicolid Leeches (Hirudinea, Piscicolidae) From Antarctic Seas // Vestnik Zoologii. - 1997.- Vol. 31(1-2). - P. 17-24 (in Russian)

Yang, T. Two marine leeches from antarctic fish of the genus *Notothenia* // Acta Zool. Sinica.- 1980. - Vol. **33** (4). - P. 373-377.