

Far Eastern Entomologist

Дальневосточный энтомолог

Journal published by Far East Branch
of the Russian Entomological Society
and Laboratory of Entomology,
Institute of Biology and Soil Science,
Vladivostok

Number 286: 1-11

ISSN 1026-051X

December 2014

<http://urn:lsid:zoobank.org/pub:5FDACECC-3727-4D3C-B8A3-0B51480F037A>

A NEW SPECIES OF *PELORIDIUM* (HEMIPTERA: COLEORRHYNCHA, PELORIDIIDAE) FROM CHILE

D. E. Shcherbakov

*Borissiak Paleontological Institute, Russian Academy of Sciences, Moscow,
Profsoyuznaya St. 123, Moscow 117997, Russia. E-mail: dshh@narod.ru*

Peloridium pomponorum sp. n. living on *Sphagnum* mosses is described from Chiloé, Southern Chile. This is the second species of the type genus of the relict family Peloridiidae, easily distinguishable from *P. hammoniorum* Breddin, 1897 and differing from it in the COI gene sequence.

KEY WORDS: Peloridiidae, moss bugs, *Sphagnum*, South America, COI gene.

Д. Е. Щербаков. Новый вид рода *Peloridium* (Hemiptera: Coleorrhyncha, Peloridiidae) из Чили // Дальневосточный энтомолог. 2014. N 286. С. 1-11.

С острова Чилоэ на юге Чили описан *Peloridium pomponorum* sp. n., живущий на видах *Sphagnum*. Это второй вид типового рода реликтового семейства Peloridiidae, хорошо отличающийся от *P. hammoniorum* Breddin, 1897, в том числе и по гену COI.

Палеонтологический институт им. А.А. Борисяка РАН, Профсоюзная ул. 123, Москва, 117997, Россия.

INTRODUCTION

A peculiar hemipteran collected in Tierra del Fuego in 1892 was described as *Peloridium hammoniorum* and assigned to a new family Peloridiidae by Breddin (1897), who related it to the heteropterous family Ochteridae, but stressed important homopterous characters in the head and wing structure. Another specimen collected in the same region in 1896 was described as *Nordenskjoldiella insignis* by Haglund (1899). These two specimens (fully winged male and female with shortened forewings and reduced hindwings) were shown to belong to one species (Horváth, 1899; Haglund, 1907: 179). Then peloridiids were discovered in Tasmania (China, 1924), on Lord Howe Island, in New Zealand (Bergroth, 1924), Australia (Hacker, 1932), and New Caledonia (Evans, 1982), as well as in the other parts of Patagonia. Peloridiids live on mosses and hepatics and are restricted to the southern land masses. To date, 32 peloridiid species in 17 genera are known (Burckhardt, 2009).

At first peloridiids were considered to be aberrant true bugs, but Muir (1923) and Myers & China (1929) argued that Peloridiidae are not Heteroptera, and the latter authors established for this family a new series Coleorrhyncha in Homoptera. However, Schlee (1969) listed several synapomorphies of Coleorrhyncha and Heteroptera and united these two into Heteropteroidea.

Becker-Migdisova (1958) was the first who recognized Coleorrhyncha in the fossil record. Some Mesozoic and Permian fossils originally described among true bugs, planthoppers or treehoppers were later shown to represent several extinct family-group taxa of Coleorrhyncha (Progonocimicidae, Karabasiidae, Hoploridiinae – see Popov & Shcherbakov, 1991, 1996). Coleorrhyncha originated in the Late Permian and were distributed worldwide in the Mesozoic. Their ancestry documented with fossils demonstrates that the putative synapomorphies of Coleorrhyncha+Heteroptera were acquired in parallel and these two lineages independently evolved from auchenorrhynchous ancestors (Popov & Shcherbakov, 1996).

Peloridium hammoniorum is the most widespread species of the family, its range spanning 2000 km and more than 17° of latitude (Burckhardt, 2009). It is the only peloridiid existing in two forms, rare macropterous (capable of flight, with both fore and hind wings fully developed) and common subbrachypterous (forewings somewhat shortened, narrowed apically; hind wings reduced). China (1927, 1962) noted that the species is very variable.

In December 2013–February 2014 we collected many *Peloridium* specimens at the Senda Darwin Biological Station (Carmona *et al.*, 2010) and some other sites in Chile. The specimens living on *Sphagnum* were found to be morphologically and genetically distinct from those living on Polytrichaceae, the latter representing the typical *P. hammoniorum* and the former a new species described below.

The venation nomenclature is after Popov & Shcherbakov (1991, 1996). Photographs of preserved specimens were taken using a Leica M165C stereomicroscope with a Leica DFC425 digital camera, Z-stacked using Helicon Focus 4.10 Pro and adjusted in Adobe Photoshop® CS3 10.0.

ORDER HEMIPTERA
Suborder Coleorrhyncha
Family Peloridiidae Breddin, 1897

Genus *Peloridium* Breddin, 1897

Nordenskjoldiella: Haglund, 1899.

Type species: *Peloridium hammoniorum* Breddin, 1897.

***Peloridium hammoniorum* Breddin, 1897**

Figs 1, 3, 6, 8, 10

Peloridium hammoniorum: Breddin, 1897: 12.

Nordenskjoldiella insignis: Haglund, 1899.

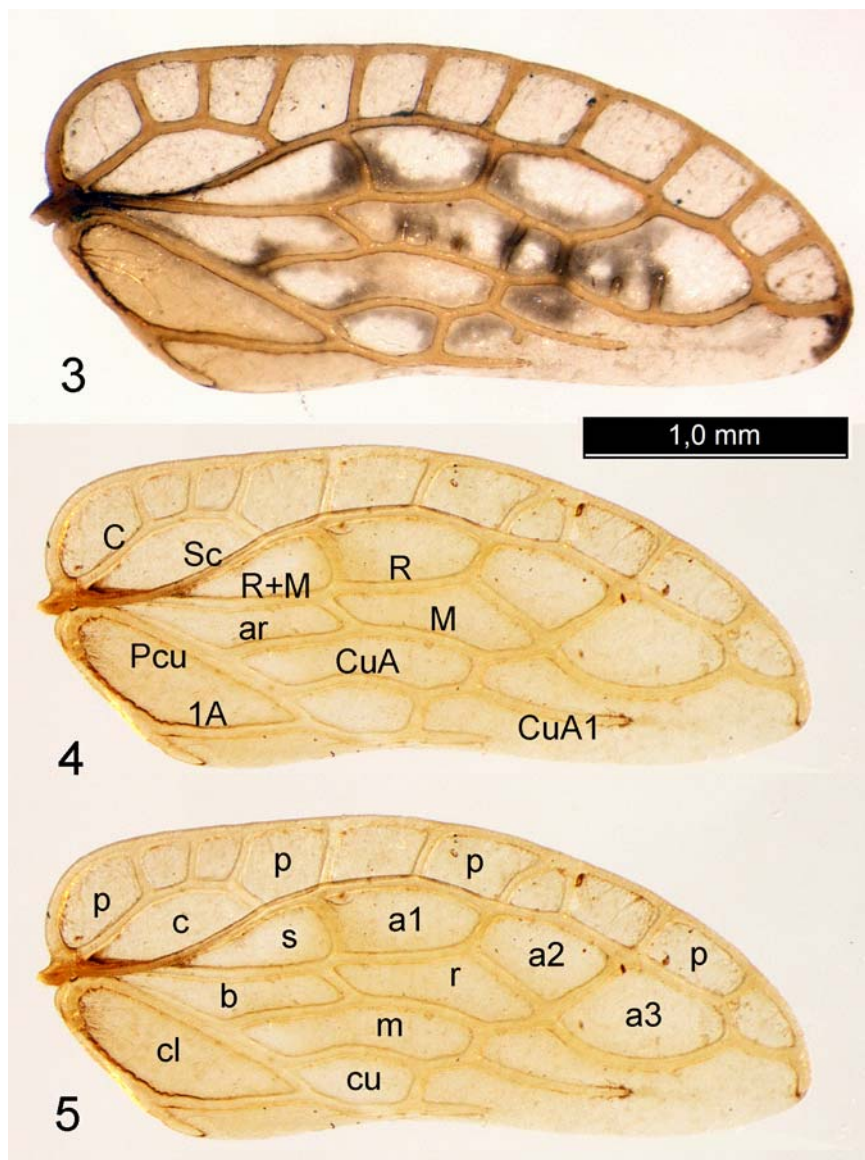
MATERIAL. Numerous specimens, Senda Darwin Biological Station (41°53'S 73°40'W), 10 km E of Ancud, Chiloé, 28.XII 2013–07.II 2014, mainly on *Polytrichadelphus magellanicus*, leg. R. Rakitov, K. Eskov, E. Rodionova, D. Shcherbakov.

DESCRIPTION. Subbrachypterous form: Body 3.9–4.3 mm long up to tips of folded tegmina. Rusty brown (teneral specimens paler; dry specimens dark brown). Body and tegmina with dark pattern: meso- and metanotum and tergites of abdomen with dark areas; cells of tegminal disc dimmed at edges, with whitish middle; some crossveins on disc dark brown; veins in precostal area brown; clavus distinctly darker than pale areas of disc; antenna with 3rd segment darker than first two; 2nd tarsomere dark at apex. Ocelli inconspicuous on dark background. Dorsum flattish: discs of tegmina in one plane, disc of pronotum little sloping forwards. Head 0.57–0.61 pronotum width. Occipital margin usually slightly convex or nearly straight medially; temples usually more rounded. Head areolae as long as distance from them to anterior tentorial pits. Lateral angle of lorum in anterior view produced tooth-like. Paranotum rounded quadrangular, with both anterior and posterior angles similarly rounded, its posterior margin usually oblique. Tegmen: Sc often angulate at junction with C; radial cell apically truncate; CuA1 (more exactly, M3+4+CuA1) usually not reaching level of apex of 2nd apical cell; claval cell posteriorly angulate, with posterior margin longer than scutellar margin; usually most of precostal cells subquadrate; veins narrower; sometimes additional, often incomplete crossveins present. Legs longer; all tibiae longer than femora; at least hind tibia widened in distal third. Male 8th sternite with posterior margin more or less sinuate, usually less than 1.6 times longer than 7th along midline; pygophore with deeper, pit-like ventrolateral depressions. Female: posterior margin of 7th sternite deeply sinuate medially; lateral angles of 9th segment more or less rounded; ovipositor more projecting beyond 9th segment. Macropterous form rare. Nymphs with faint dark pattern.

REMARKS. Photographs of the *N. insignis* holotype are available on the web (Types of Heteroptera, 2014).



Figs 1–2. Live *Peloridium* spp., Senda Darwin Biological Station, Chiloé (photo R. Rakitov): 1 – *P. hammoniorum*, subbrachypterous female on *Polytrichadelphus magellanicus*, 30.XII 2013; 2 – *P. pomponorum* sp. n., subbrachypterous male and nymph on *Sphagnum magellanicum*, 2.II 2014.



Figs 3–5. Subbrachypterous tegmina of *Peloridium* spp.: 3 – *P. hammoniorum* (left tegmen, mirrored); 4–5 – *P. pomponorum* sp. n. (right tegmen from ventral side, mirrored), veins (4) and cells (5) designated: a1, a2, a3, 1st–3rd apical cells; ar, arculus; b, basal cell; c, costal cell; cl, claval cell; cu, cubital cell; m, medial cell; p, cells of precostal area; Pcu, postcubitus (1A of authors); s, subcostal cell; other vein symbols standard.

***Peloridium pomponorum* Shcherbakov, sp. n.**

Figs 2, 4, 5, 7, 9, 11

MATERIAL. Holotype male, allotype female, several paratypes (adults and nymphs), Senda Darwin Biological Station (41°53'S 73°40'W), 10 km E of Ancud, Chiloé, **Chile**, 28.XII 2013–07.II 2014, on *Sphagnum magellanicum* and *S. cf. recurvum*, leg. R. Rakitov, K. Eskov, E. Rodionova, D. Shcherbakov; holotype, allotype and several paratypes in Zoological Institute, Russian Academy of Sciences, St. Petersburg; some paratypes in Zoological Museum of Moscow State University and in National Museum of Natural History, Santiago. 3 males, 1 female, 2 nymphs, Cucao, Chiloé National Park (42°37'S 74°06'W), 13.I 2014, on *Sphagnum magellanicum* (R. Rakitov leg.).

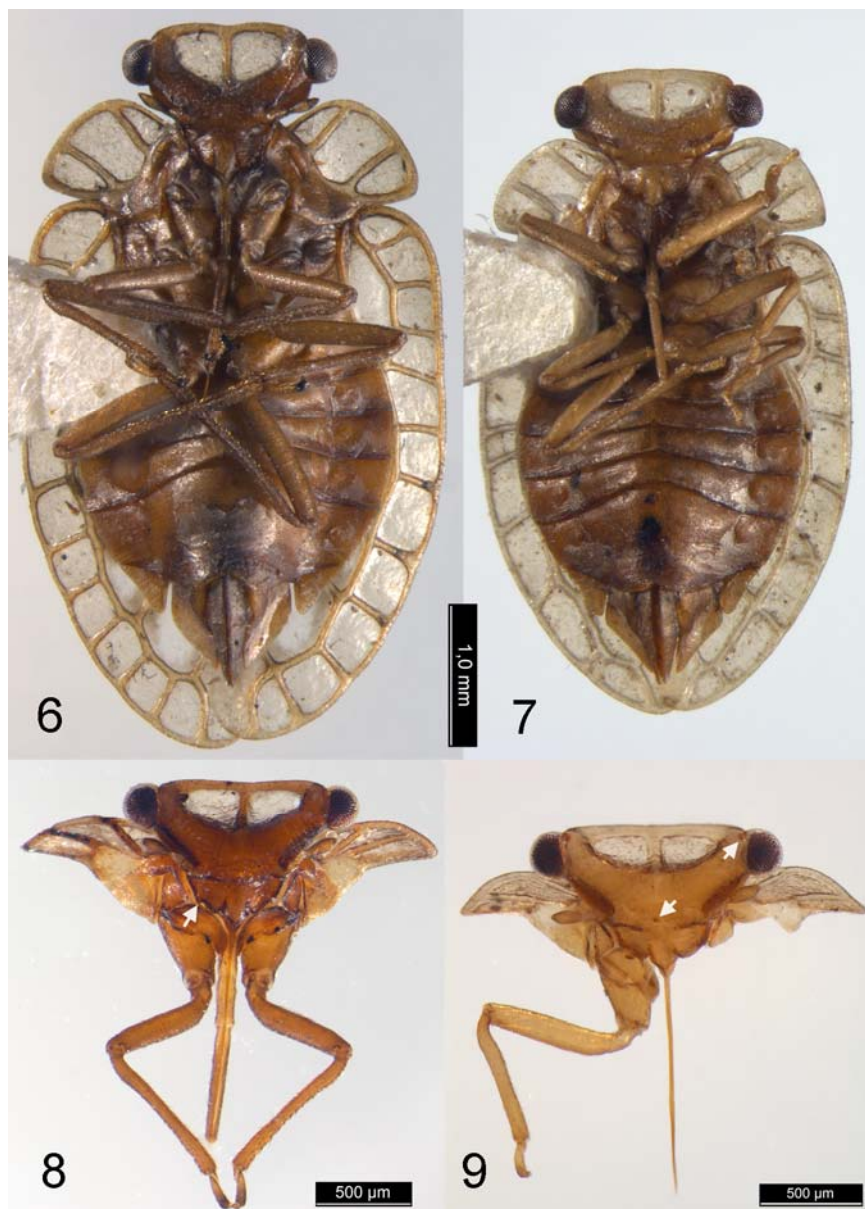
DESCRIPTION. Subbrachypterous form: Body 3.4–4.1 mm long up to tips of folded tegmina. Pale fulvous, without dark pattern (occasionally with darker metanotum and first two tergites; dry specimens brownish); tegmina with veins and clavus only little darker than uniformly pale cells. Bright red ocelli conspicuous on pale background in live and alcohol-preserved specimens. Dorsum distinctly convex: discs of tegmina very shallowly tectiform, disc of pronotum more sloping forwards. Head 0.63–0.67 pronotum width. Occipital margin usually slightly concave medially; temples usually more angulate. Head areolae shorter than distance from them to anterior tentorial pits. Lateral angle of lorum in anterior view not produced. Paranotum with anterior angle much more rounded than posterior one, its posterior margin usually perpendicular to body axis. Tegmen: Sc nearly straight at junction with C; radial cell apically pointed or nearly so; CuA1 reaching level of apex of 2nd apical cell; claval cell posteriorly rounded, with posterior margin no longer than scutellar margin; usually most of precostal cells wide; veins wider. Legs shorter; fore tibia as long as femur, middle tibia only little longer; tibiae of nearly uniform width. Male 8th sternite with posterior margin nearly straight medially, at least 1.6 times longer than 7th; pygophore with shallow ventrolateral depressions. Female: posterior margin of 7th sternite little sinuate medially; lateral angles of 9th segment distinct; ovipositor less projecting beyond 9th segment. Macropterous form unknown. Nymphs unicolorous, fulvous, mature last instar dark, first instar orange.

REMARKS. Easily distinguishable from the type species in the characters listed in the key below. China (1927) described a subbrachypterous male *Peloridium* from Valle del Lago Blanco, Chubut, Argentina and noted that it is possibly not conspecific with *P. hammoniorum*; this specimen probably belongs to *P. pomponorum* sp. n.

ETYMOLOGY. From Chilean Spanish “pompon” (*Sphagnum*, esp. *S. magellanicum*) Latinized as “pomponus”; *pomponorum* (genitive plural) = of Sphagnae.

Key to *Peloridium* species (subbrachypterous form)

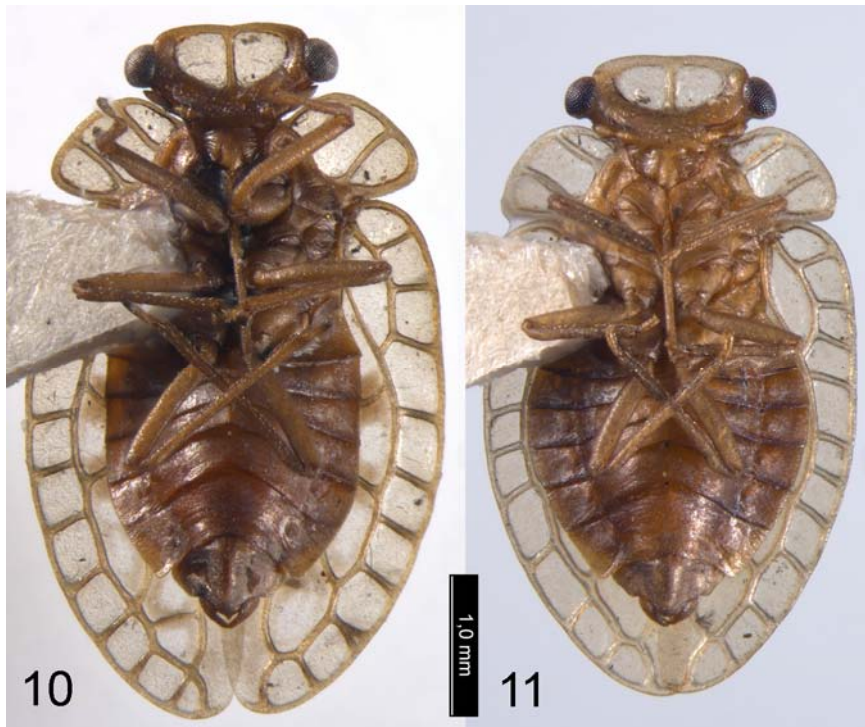
- 1(2) Larger, rusty brown (except for teneral specimens), body with dark pattern; disc of tegmen with whitish cells dimmed at edges; 2nd tarsomere dark at apex. Dorsum flattish, discs of tegmina coplanar. Ocelli barely visible on dark background. Head



Figs 6–9. Subbrachypterous females of *Pelordium* spp.: 6, 8 – *P. hammoniorum*; 7, 9 – *P. pomponorum* sp. n. (7, allotype); 6–7 – ventral view; 8–9 – head and prothorax, anterior view, alcohol-preserved DNA voucher specimens; arrows: lateral angle of lorum (8); median and lateral ocelli (9).

narrower than 0.62 pronotum width. Head areolae as long as distance from them to anterior tentorial pits. Lateral angle of lorum in anterior view produced tooth-like. Tegmen: radial cell apically truncate; claval cell with posterior margin longer than scutellar margin. Legs longer, fore tibia longer than femur; hind tibia widened in distal third. Male 8th sternite with posterior margin more or less sinuate. Female: posterior margin of 7th sternite deeply sinuate medially; lateral angles of 9th segment rounded. Macropterous form rare. Nymphs with faint dark pattern. On Polytrichaceae and *Pohlia* *P. hammoniorum* Breddin, 1897

2(1) Smaller, pale fulvous, without dark pattern (occasionally with darker metanotum and first two tergites); 2nd tarsomere pale. Dorsum more convex, discs of tegmina shallowly tectiform. Red ocelli conspicuous on pale background in fresh specimens. Head wider than 0.62 pronotum width. Head areolae shorter than distance from them to anterior tentorial pits. Lateral angle of lorum in anterior view not produced. Tegmen: radial cell apically pointed or nearly so; claval cell with posterior margin no longer than scutellar margin. Legs shorter, fore tibia as long as femur; tibiae of nearly uniform width. Male 8th sternite with posterior margin nearly straight medially. Female: posterior margin of 7th sternite little sinuate medially; lateral angles of 9th segment distinct. Macropterous form unknown. Nymphs unicolorous. On *Sphagnum* spp. *P. pomponorum* sp. n.



Figs 10–11. Subbrachypterous males of *Peloridium* spp., ventral view: 10 – *P. hammoniorum*; 11 – *P. pomponorum* sp. n., holotype.

DISCUSSION

COI gene. DNA was extracted and partial COI sequences were obtained from *P. hammoniorum* and *P. pomponorum* sp. n., one ethanol-preserved female of each species (for details of the procedure see Lukashevich & Shcherbakov 2014). The difference of the COI sequences of these two specimens collected in the same geographical point (2.71% nucleotide distance, unpublished data) is consistent with assumption that they represent two closely related species.

Host plants. At least some peloridiid species are mono- or oligophagous (restricted to a single or few bryophyte species; Hartung, 2012). *Peloridium hammoniorum* was collected in Fuegia on *Pohlia cruda* (Hedw.) Lindb. (Mielichhoferiaceae) (China, 1962) and *Polytrichum strictum* Menz. ex Brid. (Estévez & Remes Lenicov, 1990), and in northern Chiloé on *Polytrichadelphus magellanicus* (Hedw.) Mitt. (Polytrichaceae; present paper); the record of *P. strictum* as the host plant in Chiloé National Park (Burckhardt, 2009) needs verification, because the latter moss species was not reported from this region (He, 1998; Larrain, 2007). *P. pomponorum* sp. n. is known at present only from *Sphagnum* spp. (*S. magellanicum* Brid. and *S. cf. recurvum* P. Beauv., Sphagnaceae).

Environment. The climate of *locus typicus*, Senda Darwin Biological Station is wet-temperate with a strong oceanic influence, with mean annual rainfall 2110 mm, mean annual temperature 9.6°C, monthly average of maximum and minimum temperature 6.1–19.1°C in summer and 4.0–11.0°C in winter (Carmona et al., 2010). The temperature inside the layer of *Sphagnum magellanicum* is always positive: with occasional drops up to –4.2°C in the air 15 cm above the surface, it remains minimum +2.8°C 5 cm below the surface of moss carpet (Wladimir Silva, pers. comm.). The *Sphagnum* cushions with *P. pomponorum* sp. n. were found both in open areas of “matorral” and among the secondary forest, and the species seems to be quite common at the Senda Darwin Biological Station.

A self-sustaining population of the Australian peloridiid *Hemiodoecus leai* China, 1924 recorded in New Zealand probably originated due to accidental introduction with moss used to transport fish ova from Tasmania (Wakelin & Larivière, 2014). Thousands of tons of dry *Sphagnum magellanicum* were exported from Chile yearly for use as substrate for horticulture and orchids (Diaz et al., 2012). Peloridiidae seem able to survive relatively dry periods (Evans, 1982), and some individuals of *P. pomponorum* may be shipped alive with Chilean *Sphagnum* moss around the world, but it seems unlikely that this stenotopic insect adapted to everwet, frost-free conditions will establish viable populations overseas.

ACKNOWLEDGEMENTS

I am deeply indebted to Mario Elgueta (National Museum of Natural History, Santiago), the staff of the Senda Darwin Biological Station, Chiloé, and the CONAF staff of the Alerce Andino, Huerquehue, La Campana, Nahuelbuta and Puyehue national parks for facilitating our field work in Chile. I heartily thank Wladimir Silva (Universidad de Chile, Santiago) for friendly assistance and the

temperature data, Roman Rakitov who collected so many peloridiids and made excellent photos of them, Kirill Eskov (both Borissiak Paleontological Institute RAS, Moscow) who first recognized *Peloridium* from *Sphagnum* as a separate species, Alexander Emeljanov (Zoological Institute RAS, St. Petersburg) for linguistic advice, Michael Ignatov (Tsitsin Main Botanical Garden RAS, Moscow) for identifying the mosses, Nikolai Mugue (Russian Federal Research Institute for Fisheries and Oceanography, Moscow) for sequencing the COI gene and helping me interpret the molecular data, and Viktor Hartung (Museum für Naturkunde, Berlin) for valuable comments.

The study was supported by the Russian Foundation for Basic Research, project No. 13-04-01839.

REFERENCES

- Becker-Migdisova, E.E. 1958. New fossil Hemiptera, pt. 1. P. 57–67. In: *Materials for Fundamentals of Paleontology*, 2. Paleontological Institute USSR Academy of Sciences, Moscow. [In Russian].
- Bergroth, E. 1924. A new genus of Peloridiidae from New Zealand. *Entomologist's monthly Magazine*, 60: 178–181.
- Bredden, G. 1897. Hemipteren. 36 pp. In: Michaelsen, W. (ed.). *Ergebnisse der Hamburger Magalhaensischen Sammelreise 1892/93, II, Arthropoden*. Hamburg: Friederichsen.
- Burckhardt, D. 2009. Taxonomy and phylogeny of the Gondwanan moss bugs or Peloridiidae (Hemiptera, Coleorrhyncha). *Deutsche Entomologische Zeitschrift*, 56: 173–235.
- Carmona, M.R., Aravena, J.C., Bustamante-Sanchez, M.A., Celis-Diez, J.L., Charrier, A., Diaz, I.A., Diaz-Forestier, J., Diaz, M.F., Gaxiola, A., Gutierrez, A.G., Hernandez-Pellicer, C., Ippi, S., Jana-Prado, R., Jara-Arancio, P., Jiménez, J.E., Manuschevich, D., Necochea, P., Nunez-Avila, M., Papic, C., Perez, C., Perez, F., Reid, S., Rojas, L., Salgado, B., Smith-Ramirez, C., Troncoso, A., Vasquez, R.A., Willson, M.F., Rozzi, R. & Armesto, J.J. 2010. Senda Darwin Biological Station: Long-term ecological research at the interface between science and society. *Revista Chilena de Historia Natural*, 83: 113–142.
- China, W.E. 1924. A new genus of Peloridiidae from Tasmania. *Entomologist's monthly Magazine*, 60: 199–203.
- China, W.E. 1927. A sub-brachypterous male of *Peloridium hammoniorum* Bredden (Heteroptera, Peloridiidae). *Annals and Magazine of Natural History*, (9) 19: 622–625.
- China, W.E. 1962. South American Peloridiidae (Hemiptera-Homoptera: Coleorrhyncha). *Transactions of the Royal entomological Society London*, 114: 131–161.
- Diaz, M.F., Tapia, C., Jiménez, P. & Bacigalupe, L. 2012. *Sphagnum magellanicum* growth and productivity in Chilean anthropogenic peatlands. *Revista Chilena de Historia Natural*, 85: 513–518.
- Estévez, A.L. & Remes Lenicov, A.M.M. de 1990. Pelorididae (Homptera) sudamericanos. I. Sobre la bionomía de *Peloridium hammoniorum* Bredden 1897 en Tierra del Fuego, Argentina. *Animalia, Catania*, 17: 111–122.
- Evans, J.W. 1982. A review of present knowledge of the family Peloridiidae and new genera and new species from New Zealand and New Caledonia (Hemiptera: Insecta). *Records of the Australian Museum*, 34: 381–406.

- Hacker, H. 1932. A new species of Peloridiidae from Queensland. *Queensland agricultural Journal*, 38: 262–263.
- Haglund, C.J.E. 1899. *Die Hemipteren der Schwedischen Expedition nach den Magellansländern 1895–97*. [Separatum printed April 1899 – see Nachtrag in Haglund, 1907].
- Haglund, C.J.E. 1907. Die Hemipteren der Schwedischen Expedition nach den Magellansländern 1895–97 [with Nachtrag]. *Wissenschaftliche Ergebnisse der Schwedischen Expedition nach den Magellansländern 1895–1897 unter Leitung von Dr Otto Nordenskjöld*. Stockholm, Norstedt, 2(9): 173–180.
- Hartung, V. 2012. Host plant relationships of Peloridiidae (Hemiptera: Coleorrhyncha) in New Zealand. *Sixth European Hemiptera Congress, 25–29 June 2012, Blagoevgrad, Bulgaria, Programme and Abstracts book*.
- He, S. 1998. A checklist of the mosses of Chile. *Journal of the Hattori Botanical Laboratory*, 85: 103–189.
- Horváth, G. 1899. Note sur le genre *Nordenskoeldella* HAGL. *Revue d'Entomologie*, 18: 100.
- Larrain, J. 2007. Musgos (Bryophyta) de la estación biológica Senda Darwin, Ancud, Isla de Chiloé, Chile. Claves para su identificación y lista de especies. *Chloris Chilensis*, 10(1), <http://www.chlorischile.cl/musgoschiloe/musgosfinal.htm>
- Lukashevich, E.D. & Shcherbakov, D.E. 2014. First description of Tanyderidae (Diptera) larvae from South America. *Russian Entomological Journal*, 23: 121–138.
- Muir, F. 1923. On the characters separating Heteroptera from Homoptera. *Entomologist's monthly Magazine*, 59: 254.
- Myers, J.G. & China, W.E. 1929. The systematic position of the Peloridiidae as elucidated by a further study of the external anatomy of *Hemiodoecus leai* China. *Annals and Magazine of natural History*, 3: 282–294.
- Popov, Y.A. & Shcherbakov, D.E. 1991. Mesozoic Peloridioidea and their ancestors (Insecta: Hemiptera, Coleorrhyncha). *Geologica et Palaeontologica*, 25: 215–235.
- Popov, Y.A. & Shcherbakov, D.E. 1996. Origin and evolution of the Coleorrhyncha as shown by the fossil record. P. 9–30. In: Schaefer, C.W. (Ed.). *Studies on Hemipteran Phylogeny*. Proceedings: Thomas Say publications in Entomology. Lanham, Entomological Society of America.
- Schlee, D. 1969. Morphologie und Symbiose; ihre Beweiskraft für die Verwandtschaftsbeziehungen der Coleorrhyncha. *Stuttgarter Beiträge zur Naturkunde*, 210: 1–27.
- Types of Heteroptera – Swedish Museum of Natural History: *Nordenskiöldiella insignis* Haglund, 1899. Available from: http://www2.nrm.se/en/het_nrm/i/nordenskioldiella_insignis.html. (Accessed 15.10.2014)
- Wakelin, M.D. & Larivière, M-C. 2014. First New Zealand record of the Australian species *Hemiodoecus leai* China, 1924 (Hemiptera: Peloridiidae); a hitchhiker on moss. *Zootaxa*, 3884: 95–100.

**FAR EASTERN ENTOMOLOGIST
2014**

CONTENTS

	N of issue	Pages	Date of issue
Storozhenko S.Yu., Aristov D.S. Review of the Palaeozoic families Megakhosaridae and Blattogryllidae (Insecta: Grylloblattida)	271	1-28	Jan.
Makarkin V.N. A new fossil green lacewing (Neuroptera: Chrysopidae) from the Eocene Tadushi Formation, Eastern Sikhote-Alin	272	1-7	Feb.
Gorochov A.V. Taxonomy of the katydids (Orthoptera: Tettigoniidae) from East Asia and adjacent islands. Communication 8	273	1-14	Mar.
Krivosheina M.G. New data on the distribution of the shore-fly <i>Dryxo woodi</i> Cresson, 1936 (Diptera, Ephydriidae)	273	15-17	Mar.
Sundukov Yu.N., Makarov K.V. Review of the family Rhysodidae (Coleoptera: Adephaga) of Kuril Islands, Russia	273	18-20	Mar.
Mirab-balou M., Nourollahi Kh., Jamali J. A new species of the genus <i>Anaphothrips</i> (Thysanoptera: Thripidae) from Ilam Province, Iran	273	21-24	Mar.
Triapitsyn S.V. Review of the Palaearctic species of <i>Cleruchus</i> Enock (Hymenoptera: Mymaridae)	274	1-59	Mar.
Farahani S., Talebi A.A., van Achterberg C., Rakhshani E. A review of species of the genus <i>Ascogaster</i> Wesmael (Hymenoptera: Braconidae, Cheloninae) from Iran	275	1-12	Apr.
Yang Yu-Xia, Su Jun-Yan, Yang Xing-Ke. New distribution records of ten species of <i>Fissocantharis</i> Pic (Coleoptera: Cantharidae) from China, Thailand and Vietnam.	275	13-16	Apr.
Di Juan-Xia, Bian Xun, Shi Fu-Ming. Four newly recorded species of Gryllacridinae (Orthoptera: Gryllacrididae) from China	275	17-20	Apr.
Hsiao Yun, Yang Ping-Shih. Description of the female of <i>Stenothemus taiwanus</i> Okushima et M. Satô, 1997 (Coleoptera: Cantharidae)	275	21-24	Apr.
Liu Hao-Yu, Shi Fu-Ming. A key to the Chinese species of <i>Polionemobius</i> Gorochov (Orthoptera: Gryllidae), with description of a new species	276	1-6	May
Khaghaninia S., Gharajedaghi Y. Notes on family Opomyzidae (Diptera: Brachycera) of Iran	276	7-12	May

	N of issue	Pages	Date of issue
Loktionov V.M. Spider wasps of Yakutia (Hymenoptera, Pompilidae)	276	13-16	May
Aristov D.S. Classification of the order Cnemidolestida (Insecta: Perlidea) with descriptions of new taxa	277	1-46	May
Storozhenko S.Yu. To synonymy of the genus <i>Xistrella</i> Bolívar, 1909 (Orthoptera: Tetrigidae, Metrodorinae)	277	47-48	May
Vassilenko D.V. The first damselfly (Insecta: Odonata, Hemiphleidiidae) recorded from the Turonian of Israel	278	1-7	June
Makarkin V.N. A new fossil genus of Osmylidae (Neuroptera) from the Early Cretaceous of Baissa, Transbaikalia	278	8-12	June
Baghirov R.T-o. New data on the spider wasps (Hymenoptera, Pompilidae) from the Western Siberia	279	1-10	June
Ozerov A.L., Krivosheina M.G. The first record of the family Carnidae (Diptera) in Thailand, with the description of a new species	279	11-12	June
Astafurova Yu.V., Proshchalykin M.Yu., Shlyakhtenok A.S. Contribution to the knowledge of bee fauna of the genus <i>Sphecodes</i> Latreille (Hymenoptera: Halictidae) of the Republic of Belarus.	280	1-8	July
Negrobov O.P., Kumazawa T., Tago T., Maslova O.O. The species of the genus <i>Thinophilus</i> Loew, 1864 (Diptera: Dolichopodidae) of Japan, with description of one new species	281	1-6	Aug.
Bharti M. New record of <i>Stomorhina siamensis</i> Kurahashi et Tumrasvin, 1992 from India, with revised key to Indian species of the genus <i>Stomorhina</i> (Diptera: Calliphoridae)	281	7-11	Aug.
Dawwrueng P., Dooddum Ch. A new species of the genus <i>Zhengitettix</i> (Orthoptera: Tetrigidae, Scelimeninae) from Thailand	282	1-6	Sep.
Krivosheina N.P., Krivosheina M.G. To biology of soldier-flies of the genus <i>Beris</i> Latreille, 1802 (Diptera, Stratiomyidae) with the description of larva of <i>Beris crassitaris</i> Nagatomi et Tanaka, 1972	282	7-12	Sep.
Gorochov A.V. Taxonomy of the katydids (Orthoptera: Tettigoniidae) from East Asia and adjacent islands. Communication 9	283	1-12	Oct.
Hironaka Y., Abé H. Nesting patterns of the Japanese foliage spider <i>Cheiracanthium japonicum</i> (Araneae: Miturgidae)	284	1-12	Nov.
Gorbunov O.G. A new species of the genus <i>Melittia</i> Hübner, 1819 (Lepidoptera, Sesiidae) from the island of Lombok, Indonesia	284	13-18	Nov.

	N of issue	Pages	Date of issue
Liu Hao-Yu, Shi Fu-Ming. Two new species of the genus <i>Pteronemobius</i> Jacobson (Orthoptera: Gryllidae) from China	284	19-23	Nov.
Triapitsyn S.V. Revision of the genus <i>Camptoptera</i> Foerster (Hymenoptera: Mymaridae) in the Palearctic region, with taxonomic notes on some extralimital species	285	1-85	Dec.
Trjapitzin V.A. <i>Cheiloneurus submuticus</i> (thomson, 1876) (Hymenoptera: encyrtidae) in the russian far east, the species closely related to <i>Ch. alaskae</i> Trjapitzin et Triapitsyn, 2008 from alaska (USA).	285	86-88	Dec.
Shcherbakov D.E. A new species of <i>Peloridium</i> (Hemiptera: Coleorrhyncha, Peloridiidae) from Chile	286	1-11	Dec.

INSTRUCTIONS FOR AUTHORS

Far Eastern Entomologist is journal publishing original papers on entomology, including taxonomy, systematic, morphology, phylogeny, as well biology, ecology and biogeography. Reviews, comprehensive or revisionary studies of the insects thought other East Asia are especially welcome and will be given first priority for publication. Faunistic papers based on materials from the Russian Far East may be submitted also. Submission of a manuscript to Far Eastern Entomologist implies that the report is original, unpublished and is not being considered for publication elsewhere. Papers in languages other than English are not accepted.

Articles should be concise and the number of tables and figures limited to what is strictly necessary. Manuscripts should not exceed 16 pages (including figures and tables); additional printed pages are at the expense of the author(s).

Manuscripts should be prepared in accordance with the style and format of recent issues. (Current issues of Far Eastern Entomologist should be checked for style and format). An abstract should be followed by Key Words (2-7) and include no more than 100 words totally. Cite the author and year of publication of genera and species on first mention. The names of genera and species should be *Italic*. New description must confirm with the current edition of the Code of Zoological Nomenclature (1999). If a new taxon is described, the institution or museum where the type material is deposited must be indicated. The description of new taxa on types deposited in personal collection will not be accepted.

Special symbols (e.g. male or female sign) should be avoided. You can code them as m# and f#, which can be replaced during page setting.

References in the text, as follows: "Bey-Bienko (1932) states..." or "Bey-Bienko (1932: 25) states..." when the author wishes to refer to a specific page, or "(Bey-Bienko, 1932)" as the author of a statement. Joint authors must be connected by "&" in both the text and the references. When there is more than two authors use "et al.," (Bey-Bienko *et al.*, 1932) in the text. If journal names are not spelled out completely they should follow a consistent and accepted format.

Size of figures (including plates) as published should be less than 115 x 165mm. Illustration should be numbered in a single series throughout in Arabic numerals. Legends of illustrations should be listed after the list of references. Tables, if any, should be given at the end of the manuscript.

The following transliterations of Russian alphabet should be used:

А - a	Е - e	К - k	П - p	Ф - f	Щ - shch
Б - b	Ж - zh	Л - l	Р - r	Х - kh	Ы - y
В - v	З - z	М - m	С - s	Ц - ts	Э - e
Г - g	И - i	Н - n	Т - t	Ч - ch	Ю - yu
Д - d	Й - i	О - o	У - u	Ш - sh	Я - ya

Manuscripts submitted are subject to review and editing by two anonymous reviewers.

Each author will be given a free e-reprint (PDF). Printed copies of each paper in the form of the regular reprint can also be produced for purchase by authors at cost to authors, with a discount based on the number of copies ordered. All papers are in open access (see our web-site: <http://www.biosoil.ru/fee>).

Inquiries regarding content, subscription, manuscripts and copies should be sent to editor: S.Yu. Storozhenko, Institute of Biology and Soil Science, Vladivostok, 690022, Russia.

We recommend the electric submission of a complete manuscript to Editor-in-Chief (storozhenko@ibss.dvo.ru) or to our office (entomol@ibss.dvo.ru).

© **Far Eastern entomologist (Far East. entomol.)** Journal published since October 1994.

Editor-in-Chief: S.Yu. Storozhenko

Editorial Board: A.S. Lelej, N.V. Kurzenko, M.G. Ponomarenko, E.A. Beljaev, V.A. Mutin,
E.A. Makarchenko, T.M. Tiunova, P.G. Nemkov, M.Yu. Proshchalykin, S.A. Shabalin

Address: Institute of Biology and Soil Science, Far East Branch of Russian Academy of
Sciences, 690022, Vladivostok-22, Russia.

E-mail: entomol@ibss.dvo.ru

web-site: <http://www.biosoil.ru/fee>