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Stygebiological researches in subterranean waters of Lesbos (Greece) and description of *Stygonitocrella petkovskii* n. sp.

(Crustacea Copepoda: Ameiridae)*

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(With 11 figures in the text)

Abstract:

Faunistical samples obtained in summer 1982 from groundwaters (wells) of Lesbos, Greece, have shown an interesting stygofauna living in fresh and brackish-water wells of that island.

Among the crustaceans remarkable stygobiontes are the cyclopid copepod *Diacyclops hypnicola*, the harpacticoid copepods *Nitocrella rhodiensis*, *Nitocrella slovenica*, *Nitocrella maggii*, *Stygonitocrella petkovskii* n. sp. and *Elaphoidella silverii*, the amphipods *Niphargus orcinus* and *Salentinella angelieri* and the microparasellid isopods *Microcharon latus prespensis* and *Microparasellus hellenicus*.

The cyclopid and harpacticoid copepods, the ostracods, the microparasellid isopods and the amphipods are the most abundant groups, representing about up to 65% of the total fauna; oligochaetes, asellid isopods and limnohalacarids are poorly represented, generally under 15% of the total fauna.

The absence of true stygobiontes among such groups as asellid isopods, hydracnelids, gastropods and amphipods of the genera *Bogidiella*, *Hadzia* and *Ingolfiella*, which are widely distributed in Greece, is a striking feature of the stygofauna of Lesbos.

As to the zoogeography, the stygofauna of Lesbos seems to be for the most part palaeartic or endemic, with only few species showing eastern or transadriatic affinities.

*) Researches on groundwater fauna of Greece and Balkan Peninsula by the „Istituto di Scienze Ambientali“, University of L'Aquila (Italy)

During extensive stygobiological researches on the underground waters of inland and insular Greece, carried out by the „Istituto di Scienze Ambientali“ of the University of L'Aquila (Italy) (Pesce et al., 1979; Pesca, 1981; Pesca & Maggi, 1983), subterranean biocoenoses of the island of Lesbos were sampled in summer 1982.

Totally, 36 localities were investigated, viz. fresh-and brackish-water wells along the eastern coast and the inner part of the island, springs and rain-cisterns, and good number of stygobiont animals were encountered, the most frequent being crustaceans (cyclopid, harpacticoid and calanoid copepods, ostracods, asellid and microparasellid isopods, amphipods), water mites, gastropods and oligochaetes.

In the present paper a detailed list of all the above localities, with their topographical, chemical-physical and faunistical data, as well as systematical, ecological and biogeographical information regarding remarkable stygobiontes are presented. Moreover, the description of *Stygonitocrella petkovskii* n. sp. from phreatic waters of Loutra, is reported.

Temperature and pH have been tested by portable electrodes YSI, mod. 54 (-5°C +45°C; +7%) and Fischer, mod. 50(0.10 pH) respectively; samples (phreatic water and bottom sediment) have been taken with a modified vertical closing net (mesh: 0.05 mm) according to the Cvetkov (1967) method; the entire samples were preserved in 4% neutralized formalin and later sorted in the Laboratory under a dissection microscope Wild M8. Successively, each animal group was transferred to a solution (10:1) of ethanol-glycerol; gastropods and water mites were kept in 60% ethanol.

The numeration of the collecting localities is according to the general one concerning the stygofauna of Greece, which may be found in Pesca a. o. (1979) and in Pesca & Maggi (1983) (Fig. 1).

In addition to the author, drs. D. Maggi and G. Silverii participated in the fieldwork.

LIST OF COLLECTING LOCALITIES

G. 265/Lb. 1 – Lesbos, Main-Road Mytilene–Kalloni, Angliki Skale; freshwater well; depth: 2.5 m; water level: 1.3 m; temperature: 15.5°C; pH: 7; bottom sediment: organogenic sandstone; 27.7.1982; coll. Pesca, Maggi and Silverii. Biological sample: Ostracods; Nematods (*Plectus* sp.); Mosquito larvae; Ephemerida larvae.

G. 266/Lb.2 – Lesbos, Main-Road Mytilene–Kalloni, Kerami; fresh-water well; depth: 2.8 m; water level: 1.5 m; temperature: 15.5°C; pH: 7; bottom sediment: organogenic sandstone; 27.7.1982; coll. Pesca, Maggi and Silverii. Biological sample: Cyclopid copepods (*Eucyclops serrulatus*, *Thermocyclops oblongatus*); Ostracods; Gastropods; Nematods (*Plectus* sp.); Ephemerida larvae.

G. 267/Lb. 3–Lb. 4 – Lesbos, Main-Road Mytilene–Kalloni, about 700 m far from the village of Kalloni; two fresh-water wells reac-

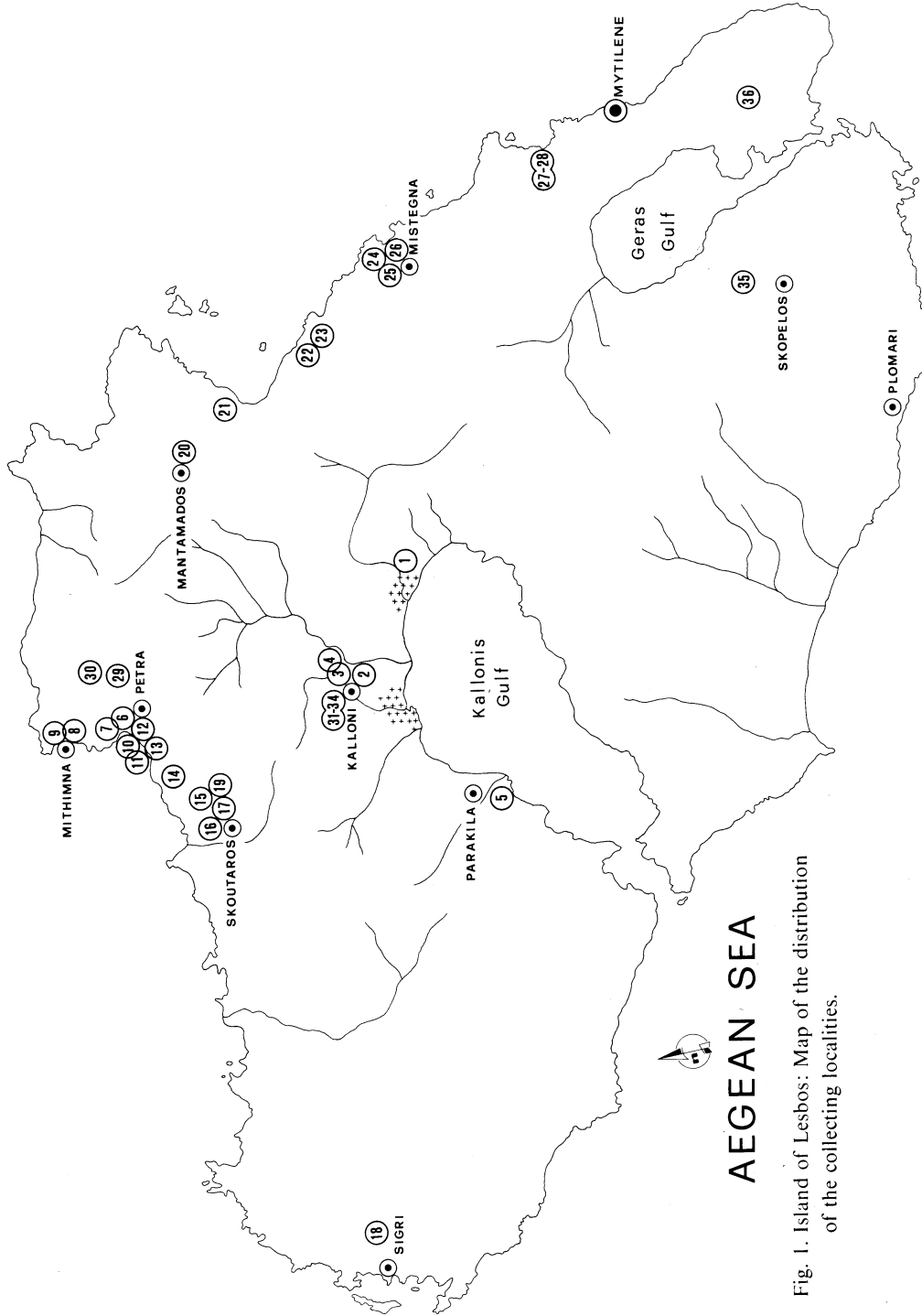


Fig. 1. Island of Lesbos: Map of the distribution of the collecting localities.

hing the same underground water-stratum; depth: 4.0 m; water level: 0.5 m; temperature: 14.9°C; pH: 7; bottom sediment: clay and organogenic sandstone; 27.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopid copepods (*Diacyclops hypnicola*; *Thermocyclops oblongatus*) Ostracods; Water mites; Mosquito and Ephemera larvae.

G.268/Lb.5 – Lesbos, Parakila; fresh-water spring near the beach; temperature: 15.9°C; pH:7.2; bottom sediment:organogenic sandstone; 27.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopid copepods (*Eucyclops serrulatus*); Ostracods; Nematods (*Plectus* sp.); Mosquito larvae.

G. 269/Lb.6 – Lesbos, Main-Road Petra–Mithimna, about 2 km far from Mithimna; fresh-water well; depth: 3.5 m; water level: 0.4 m; temperature: 15°C; pH: 6.9; bottom sediment: organogenic sandstone; 27.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopid copepods (*Eucyclops serrulatus*, *Thermocyclops oblongatus*); calanoid copepods (*Arctodiaptomus (Rhabdodiaptomus) bacillifer*); cladocerans; asellid isopods (*Asellus aquaticus*); amphipods (*Niphargus* sp.); ostracods; Ephemera larvae.

G.270/Lb.7 – Lesbos, Main-Road Petra–Mithimna, 1 km far from Mithimna; fresh-water well; depth: 4.0 m; water level: 1.2 m; temperature: 15.2°C; pH: 6.9; bottom sediment: organogenic sandstone; 27.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopid copepods (*Tropocyclops prasinus*, *Diacyclops bicuspidatus lubbocki*); calanoid copepods (*Arctodiaptomus (Rhabdodiaptomus) bacillifer*); cladocerans; asellid isopods (*Asellus aquaticus*); ostracods; Heteroptera larvae.

G.271/Lb.8.9 – Lesbos, village of Mithimna; two wells reaching the same underground water stratum; depth: 3.8 m; water level: 0.5 m; temperature: 15.5°C; pH: 7; bottom sediment: sandstone and clay; 28.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopid copepods (*Tropocyclops prasinus*, *Diacyclops bicuspidatus lubbocki*, *Thermocyclops oblongatus*); calanoid copepods (*Arctodiaptomus (Rhabdodiaptomus) bacillifer*); ostracods; cladocerans; oligochaeta (*Lumbriculus variegatus*); Nematods (*Rhabditis* sp.); orthocladinae larvae.

G.272/Lb.10.11 – Lesbos, village of Petra; two fresh-water wells reaching the same underground water level; depth; 8.5 m; water level: 4.5 m; temperature: 14.9°C; pH: 7; bottom sediment: sandstone and clay; 28.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopid copepods (*Eucyclops serrulatus*, *Diacyclops hypnicola*, *Tropocyclops prasinus*); ostracods; asellid isopods (blind and unpigmented specimens of *Asellus aquaticus*); oligochaetes (*Lumbriculus variegatus*, *Pristina foreli*); water mites; mosquito and heteroptera larvae.

G.273/Lb.12.13 – Lesbos, beach of Petra; two brackish-water wells reaching the same water level; depth: 3.8 m; water level: 0.2 m; temperature: 15.3°C; pH: 7.2; bottom sediment : organogenic sandstone; 28.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopid copepods (*Eucyclops serrulatus*, *Tropocyclops prasinus*); ostracods;

asellid isopods (*Asellus aquaticus*); Hydrozoans (*Hydra* sp.); oligochaetes (*Lumbriculus variegatus*); Nematods (*Rhabditis* sp.); mosquito larvae.

G. 274/Lb.14 – Lesbos, Main–Road Petra–Skoutaros, Anaxos; fresh-water well; depth: 9.0 m; water level: 4.5 m; temperature: 14.3°C; pH: 6.9; bottom sediment: sandstone, with some vegetable detritus; 28.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Eucyclops serrulatus*, *Tropocyclops prasinus*); calanoid copepods (*Arctodiaptomus* (*Rhabdodiaptomus*) *bacillifer*); ostracods; asellid isopods (*Asellus aquaticus*); mosquito larvae.

G. 275/Lb. 15 – Lesbos, Main–Road Petra–Skoutaros, 1 km far from the village of Skoutaros; fresh-water well; depth: 11.5 m; water level: 2.5 m; temperature: 14.5°C; pH: 7; bottom sediment: clay; 28.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Eucyclops serrulatus*, *Diacyclops hypnicola*); cladocerans; ostracods; amphipods (*Niphargus* sp.); harpacticoid copepods (*Elaphoidella elaphoides*; *Nitocrella maggii*); asellid isopods (*Asellus aquaticus*, *Proasellus coxalis*); water mites; diptera larvae.

G.276/Lb.16.17 – Lesbos, village of Skoutaros; two fresh-water wells reaching the same water level; depth: 9.5 m; water level: 2.5 m; temperature: 14.8°C; pH:7; bottom sediment; sandstone and clay; 28.7.1982; coll. Pesce, Maggi and Silverii. Biological sample; Cyclopoid copepods (*Diacyclops hypnicola*, *Eucyclops serrulatus*, *Tropocyclops prasinus*); cladocerans; ostracods; asellid isopods (blind and unpigmented specimens of *Asellus aquaticus*); nematods (*Rhabditis* sp.); ephemera larvae.

G. 277/Lb.18 – Lesbos, Main–Road Antissa–Sigri, 1 km far from the village of Sigri; spring; depth: 0.2 m; water level: 0.2 m; temperature: 18.9°C; pH: 7; bottom sediment: clay and sandstone; 28.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Macrocyclops albidus*); calanoid copepods (*Arctodiaptomus* (*Rhabdodiaptomus*) *bacillifer*); ostracods; asellid isopods (*Asellus aquaticus*); oligochaetes (*Enchytraeus bucholzi*); ephemera and mosquito larvae.

G. 278/Lb.19 – Lesbos, village of Skoutaros; rain-cistern; depth: 10.5 m; water level: 2.0 m; temperature: 15.5°C; pH: 7.3; no bottom sediment; 29.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: ostracods; nematods (*Rhabditis* sp.); mosquito larvae; asellid isopods (*Proasellus coxalis*); amphipods (*Niphargus orcinus* s.l.).

G.279/Lb.20.21 – Lesbos, village of Aspropotamos, Mantamados; two freshwater well reaching the same underground water stratum; depth: 15.5 m; water level: 4.5 m; temperature: 14.4°C; pH:6.9; bottom sediment: sandstone and clay; 29.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Diacyclops hypnicola*, *Thermocyclops oblongatus*); calanoid copepods (*Arctodiaptomus* (*Rhabdodiaptomus*) *bacillifer*); ostracods; gastropods: lycoriidae larvae.

G.280/Lb.22.23 – Lesbos, Main-Road Mantamados – Mistegna, Aghios Ioannon; two brackish-water wells along the beach, reaching the same underground water level: depth: 2.8 m; water level: 0.4 m; temperature: 16.3°C; pH: 7; bottom sediment: organogenic sandstone; 29.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Eucyclops serrulatus*, *Thermocyclops oblongatus*); calanoid copepods (*Arctodiaptomus (Rhabdodiaptomus) bacillifer*); ostracods; nematods (*Eudorylaimus* sp.); chironomid and heteroptera larvae.

G. 281/LB. 24.25.26 – Lesbos, Skala Neon Kidonion, Mistegna; three brackish-water wells along the beach, reaching the same underground water level; depth: 3.5 m; water level: 0.5 m; temperature: 15.9°C; pH:7.1; bottom sediment: clay and organogenic sandstone; 30.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Eucyclops serrulatus*, *Thermocyclops oblongatus*); ostracods; asellid isopods (*Asellus aquaticus*); microparasellid isopods (*Microcharon latus prespensis*); amphipods (*Salentinella angelieri*, *Niphargus* sp.); hydrozoans; gastropods; water mites; mosquito larvae.

G. 282/Lb. 27 – Lesbos, Main-Road Mistegna–Mithilene, cross-road to Moria; fresh-water well; depth: 4.5 m; water level: 1.2 m; temperature: 15.1°C; pH: 7.1; bottom sediment: clay and sandstone; 30.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Eucyclops serrulatus*, *Diacyclops hypnicola*); harpacticoid copepods (*Elaphoidella elaphoides*, *Nitocrella maggii*); ostracods; microparasellid isopods (*Microcharon latus prespensis*); gastropods; oligochaetes (*Pristina foreli*, *Lumbriculus variegatus*); heteroptera larvae.

G. 283/Lb.28 – Lesbos, Moria; fresh-water well; depth: 4.2 m; water level: 1.5 m; temperature: 14.9°C; pH: 7.1; bottom sediment: clay and vegetable detritus; 30.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Diacyclops crassicaudis cretensis*, *Thermocyclops oblongatus*); harpacticoid copepods (*Elaphoidella silverii*, *Nitocrella slovenica*, *Attheyella crassa*); ostracods; asellid isopods (*Asellus aquaticus*); microparasellid isopods (*Microcharon latus prespensis*; *Microparasellus hellenicus*); amphipods (*Niphargus* sp.); oligochaetes (*Pristina foreli*); gastropods; water mites; mosquito larvae.

G. 284/Lb.29.30 – Lesbos, Main-Road Mithimna–Vafios, 1 km far from Vafios; fresh-water well; depth: 6.5 m; water level: 1.5 m; temperature: 15.1°C; pH: 7; bottom sediment: sandstone; 31.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Diacyclops hypnicola*, *Eucyclops serrulatus*); harpacticoid copepods (*Nitocrella rhodiensis*, *Elaphoidella silverii*, *Attheyella crassa*); ostracods; microparasellid isopods (*Microcharon latus prespensis*); amphipods (*Niphargus* sp.); oligochaetes (*Pristina foreli*); water mites; rotifers; ephemera larvae.

G. 285/Lb. 31–34 Lesbos, village of Kalloni; fresh-water wells; depth: 15.5 m; water level: 3.5 m; temperature: 14.5°C; pH: 7; bottom sediment: clay and sandstone; 31.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Eucyclops serrulatus*, *Tropocyclops prasinus*); calanoid copepods (*Arctodiaptomus (Rhabdodiap-*

tomus) bacillifer); cladocerans; microparasellid isopods (*Microcharon latus prespensis*); water mites.

G. 286/Lb. 35 – Lesbos, Road Plomari–Mithilene, 2 km far from the village of Messagros; fresh-water well; depth: 21.5 m; water level: 6.5 m; temperature: 13.4°C; pH: 6.8; bottom sediment: clay and sandstone; 31.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Eucyclops serrulatus*, *Thermocyclops oblongatus*); ostracods; collembols (*Folsomia* cf. *quadrioculata*); mosquito larvae.

G. 287/Lb. 36 – Lesbos, Loutra, in the pine wood; fresh-water well; depth: 2.5 m; water level: 0.5 m; temperature: 16.9°C; pH: 6.6; bottom sediment: sandstone, with many vegetable detritus; 31.7.1982; coll. Pesce, Maggi and Silverii. Biological sample: Cyclopoid copepods (*Tropocyclops prasinus*); Harpacticoid copepods (*Stygonitocrella petkovskii* n. sp.); ostracods; water mites; collembols (*Folsomia* cf. *quadrioculata*); mosquito larvae.

TAXONOMICAL, ECOLOGICAL AND ZOOGEOGRAPHICAL REMARKS

The groundwater fauna of Lesbos is noteworthy due to the great amount of stygobiontes or eustygophiles, mostly among crustaceans, such as cyclopoid and harpacticoid copepods, ostracods, microparasellid isopods and amphipods, which can be found in inner underground aquatic network of the island. On the other hand, in coastal, slightly brackish-wells, mainly stygophiles, „thalassoid“ species or epigeal animals were collected, viz. cladocerans, calanoid copepods, asellid isopods, oligochaetes, gastropods, nematods and numerous insect larvae, penetrating only occasionally in the hypogean waters.

The distribution of veritable phreatic or interstitial species within the biocoenoses of Lesbos seem to be controlled, besides by their geographical location, also by the presence of food supplies, organic matter, characteristics of the substratum, grains size, porosity, light, and chlorinity. In this regard, in the inland fresh-water biocoenoses, species with very low population densities were pointed out; in the coastal ones, on the contrary, dense populations of stygophiles or stygoxenes were obtained.

Copepods, ostracods, isopods and amphipods are the most abundant groups, representing, as a whole, about up to 65% of the total fauna that was collected; water mites, oligochaetes and nematods are poorly represented, generally under 15% of the total fauna. The absence of true stygobiontes among asellid isopods, hydrachnellids, gastropods and of some genera of amphipods, such as *Bogidiella*, *Ingolfiella*, *Hadzia* s.l., which show a wide distribution in Greece, is a striking feature of the groundwater fauna of Lesbos.

From a systematical point of view, the following stygobiontes were pointed out from cyclopoid and harpacticoid copepods: *Diacyclops hypnicola* (Gurney), *Nitocrella rhodiensis* Pesce, *Nitocrella slovenica* Petkovski, *Nitocrella maggii* Pesce, *Stygonitocrella petkovski* n. sp. (he-

rein described) and *Elaphoidella silverii* Pesce; other species of the nominate groups, such as *Eucyclops serrulatus* (Fischer), *Macrocyclops albidus* (Jurine), *Diacyclops bicuspidatus lubbocki* (Schmank.), *Diacyclops crassicaudis cretensis* (Kiefer), *Thermocyclops oblongatus* (Kiefer), *Attheyella crassa* (Sars), *Elaphoidella elaphoides* (Chappuis), *Canthocamptus staphylinus* (Jurine), as well as the calanoid *Arctodiaptomus* (*R.*) *bacillifer* (Koelbel), are to be considered stygoxen or stygo-phil elements, occurring in the superficial layers of the underground sediments, and of recent immigration in the relative biocoenoses (Fig. 9).

***Stygonitocrella petkovskii* n. sp.**

(figs. 2–8)

Material. 1 ♀ (holotype), fresh-water well (G. 287/Lb.36) at Loutra, Lesbos, Greece (water level at 2.5 m; water depth: 0.5 m; water temperature: 16.9°C; pH:6.6; bottom sediment composed of small vegetable and limestone detritus); July 31, 1982; coll. Pesce, Maggi and Silverii. In the same locality the new species lives in association with the cyclopoid copepod *Tropocyclops prasinus*, ostracods, water mites, collembols and mosquito larvae.

Holotype at the „Istituto di Scienze Ambientali“, University of L'Aquila, Italy (author's collections).

Etymology. Specific name in honor of Dr. T. K. Petkovski in recognition of his valuable contribution to the knowledge of the genus *Nitocrella* s.l.

Description. General shape as usual in the genus; body elongated and slender, unpigmented and eyeless; body length, excluding antennulae and furcal setae, 0.45 mm. Thoracic somites without particular characteristics; abdominal somites, both dorsally and ventrally covered by numerous rows of hair-like spinules, the distal one with 11 spines at the basis of each furcal ramus.

Genital segment short and not fused, *receptaculum seminis* as in fig. 3. Antennula 8-segmented. Antenna, exopod triangular, 1-segmented and armed with 3 setae.

Mouthparts without particular characteristics as compared to those of the other species in the genus.

Legs 2 to 4 respectively with endopod 2-, 2- and 1-segmented. Leg 1: endopod 3-segmented, article 1 with one inner seta, article 2 naked, article 3 with one small subdistal seta and two long, plumose distal setae; exopod shorter than the endopod and 3-segmented, inner margin of articles 1–2 naked, distal article armed with 2, apical and 2 outer subdistal spines. Connecting plate of legs 2 and 3 with rounded lobes and hair-like elements. Setal formula of legs 2 to 4 as follows:

	exp.			enp.		
P ₂	0	1	022	–	0	010
P ₃	0	0	022	–	0	020
P ₄	0	1	022	–	–	010

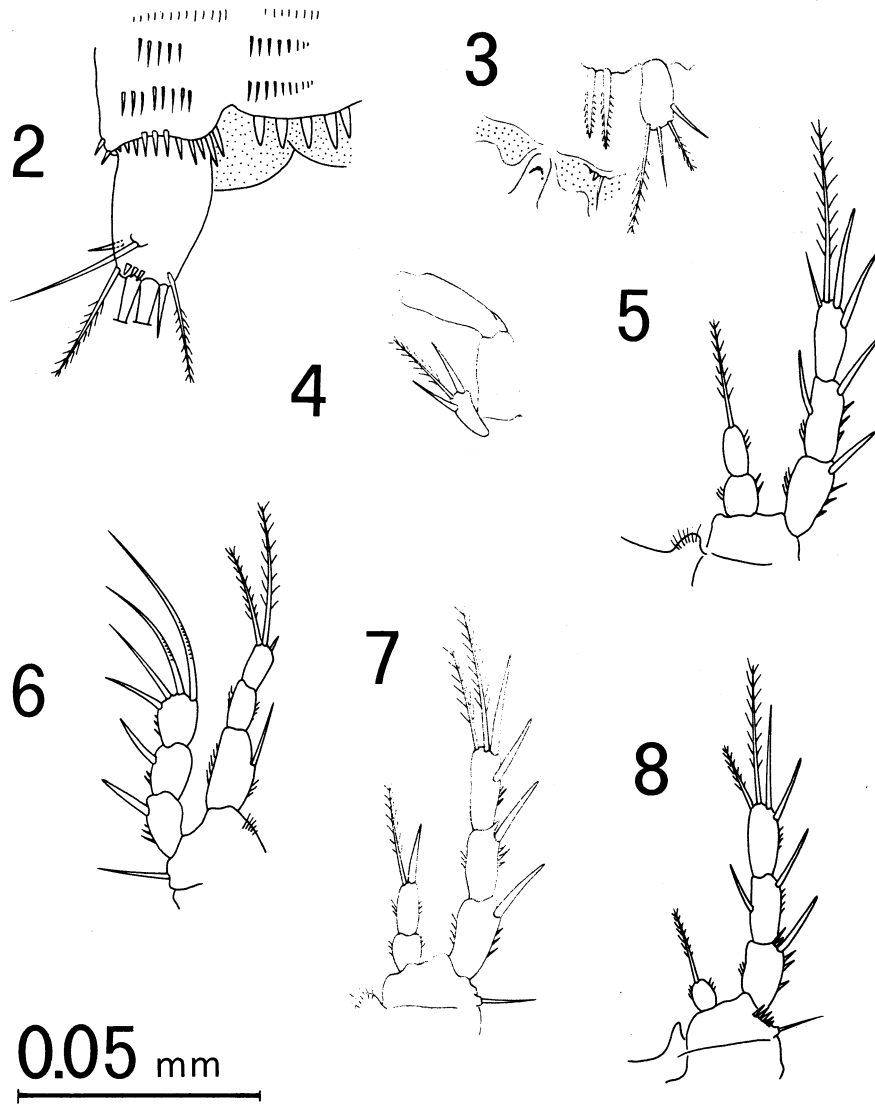


Fig. 2-8. *Stygonitocrella petkovskii* n. sp.: 2. Furcal ramus and anal operculum, dorsal view; 3. P₅ and genital field; 4. Antenna; 5. P₂; 6. P₁; 7. P₃; 8. P₄.

Leg 5: basiendopod with 2 barbed spines, exopod ovoidal, about 2 times longer than large, bearing four plumose setae, the inner the longest. Leg 6 consisting of a chitinous lamella with two rudimentary spines and one slender seta.

Furcal rami subconical, about 1.6 times longer than wide; outer margin with a small seta; dorsal surface with a long seta about as long as each furcal ramus, on the outer margin, and a shorter seta subdistally, along the inner margin; apically there are 4 setae, the outer more than twice longer than the inner one; the mediodistal ones are the longest and of different length. Anal operculum with 5 stout spines along the distal margin.

Affinities. The genus *Stygonitocrella* was established by Petkovskii (1976) to accommodate *Nitocrella* s.l. species with reduced segmentation of the endopod of legs 2 to 4, viz. endopod of legs 2-3, 1- or 2-segmented, endopod of leg 4, 1-segmented.

St. petkovskii n. sp. fits well the above description, being close to *St. colchica* (Borutsky et Mikhailova) from cave waters of West Georgia (U.R.S.S.) due to the segmentation and armature of the endopod of legs 2 to 4, and to the armature of both the basiendopod and exopod of leg 5.

From the above species, as well as from the others of the same genus, the new species differs in several characteristics, viz. the absence of inner seta on the 2nd segment of the exopod of leg 3, the short endopod of leg 4, the morphology of the exopod of leg 5, the construction and armature of furcal rami and the armature of the anal operculum.

As regards the amphipods, this group seems to be scarcely represented in the groundwaters of Lesbos, the only identified species being *Niphargus orcinus* s.l. and *Salentinella angelieri* Ruffo et Delamare Deboutteville; the former show a wide distribution in underground (cave and phreatic) biotopes of the Balkan Peninsula and east Italy, the latter is a typical perimediterranean stygobiont („thalassoid“) element, which mostly lives in coastal, brackish subterranean waters (fig. 10).

On the other hand, four species were pointed out among the isopods, viz. the asellids *Proasellus coxalis* (Dollfus) and *Asellus aquaticus* (L.), and the microparasellids *Microcharon latus prespensis* Karaman and *Microparasellus hellenicus* Argano et Pesce.

P. coxalis is a widespread, stygophil species, frequently occurring in groundwaters of Greece, as well as of the Mediterranean basin.

Asellus aquaticus was obtained from numerous localities (wells) of the island of Lesbos, sometimes close together with *P. coxalis*. All the material of this species, we examined, was normally pigmented and with developed eyes, except some noteworthy specimens from brackish-wells along the beach of Skala Neon Kidion (Mistegna) which show varying levels of phenetic adaptation to groundwater, viz. the quite depigmented body and the absence or the degenerate eyes as well as they don't differ from the relative epigeal populations in the other essential morphological features. According to Argano & Pesce (1980) and to Pesce (1985), such a situation, which is reported also from populations of the

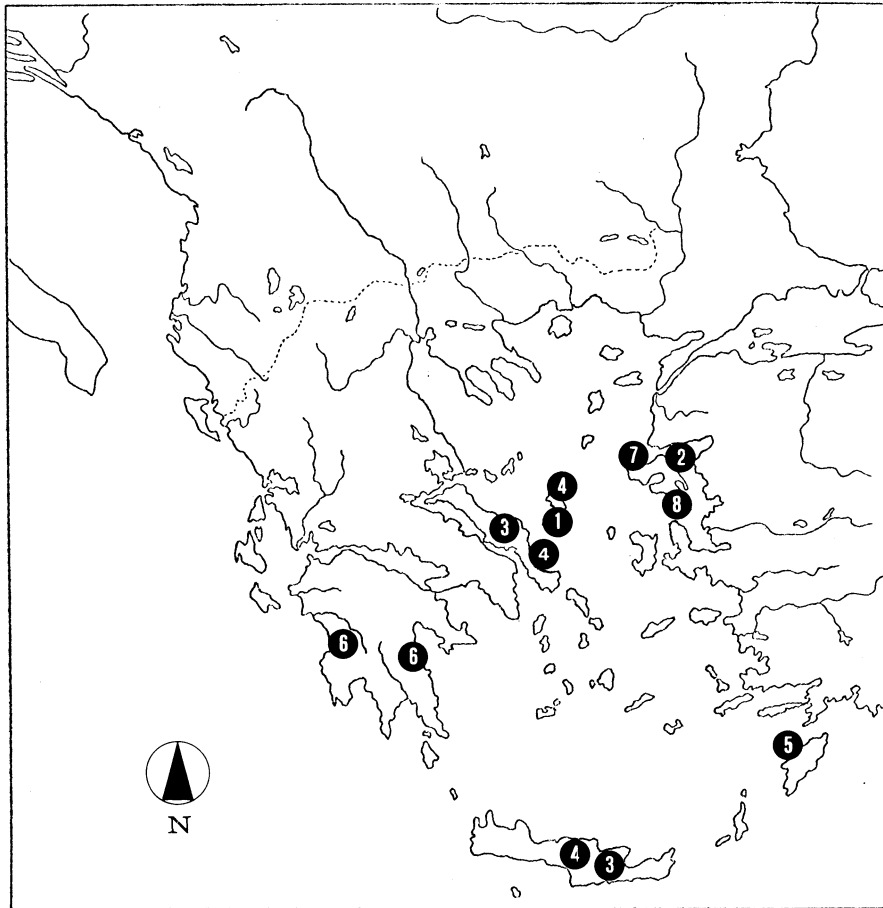


Fig. 9. Distribution of the genus *Nitocrella* s.l. in Greece: 1. *Parapseudoleptomesochra hellenica* Pesce; 2. *Stygonitocrella petkovskii* n. sp.; 3. *Nitocrella stammeri* Chappuis; 4. *Nitocrella skyrensis* Pesce; 5. *Nitocrella rhodiensis* Pesce; 6. *Nitocrella achaiae* Pesce; 7. *Nitocrella maggii* Pesce; 8. *Nitocrella slovenica* Petkovski.

same species coming from groundwater of Turkey (Argano & Pesce, 1978), Poland (Skalski, 1981), Bulgaria (Lattinger-Penko, 1979) and Greece (Argano & Pesce, 1980), could be correlated with the unstableness of the surface aquatic network of the island areas, that very likely were the cause of the colonization of the groundwater biotopes.

The microparasellid isopods are widespread in the groundwater of Greece where, as a whole, six species and subspecies are known, viz. *Microcharon latus latus* Karaman, *Microcharon latus prespensis* Karaman, *Microcharon stygius hellenae* Chappuis & Delamare Debutteville, *Microcharon othrys* Argano & Pesce, *Microparasellus puteanus* Karaman and *Microparasellus hellenicus* Argano & Pesce.

In subterranean waters of Lesbos the species *Microcharon latus prespensis* and *Microparasellus hellenicus* live close together in the same ecological associations, as well as they show an overlapping geonemy. Both the above records are of some biogeographical interest since they represent, as well, the more eastern localities for these species (Fig. 11).

Most of the species of oligochaetes belong to such families as Naididae, Lumbriculidae, Enchytraeidae and Tubificidae, that are generally distributed in the superficial layers of the sampled sediments, as well as they could be considered stygophil or stygoxen elements and of little ecological and biogeographical interest.

Other groups that occur in the phreatic waters of Lesbos, viz. cladocerans, gastropods, water mites and insect larvae, are stygophiles or stygoxenes, living both in surface and underground waters.

At the end, from a biogeographical point of view, the stygofauna of Lesbos seems to be, for the most part, palaeartic or endemic, a few species showing eastern or transadriatic affinities.



Fig. 10. Geonemy of *Salentinella angelieri* Ruffo & Delamare Deboutteville.

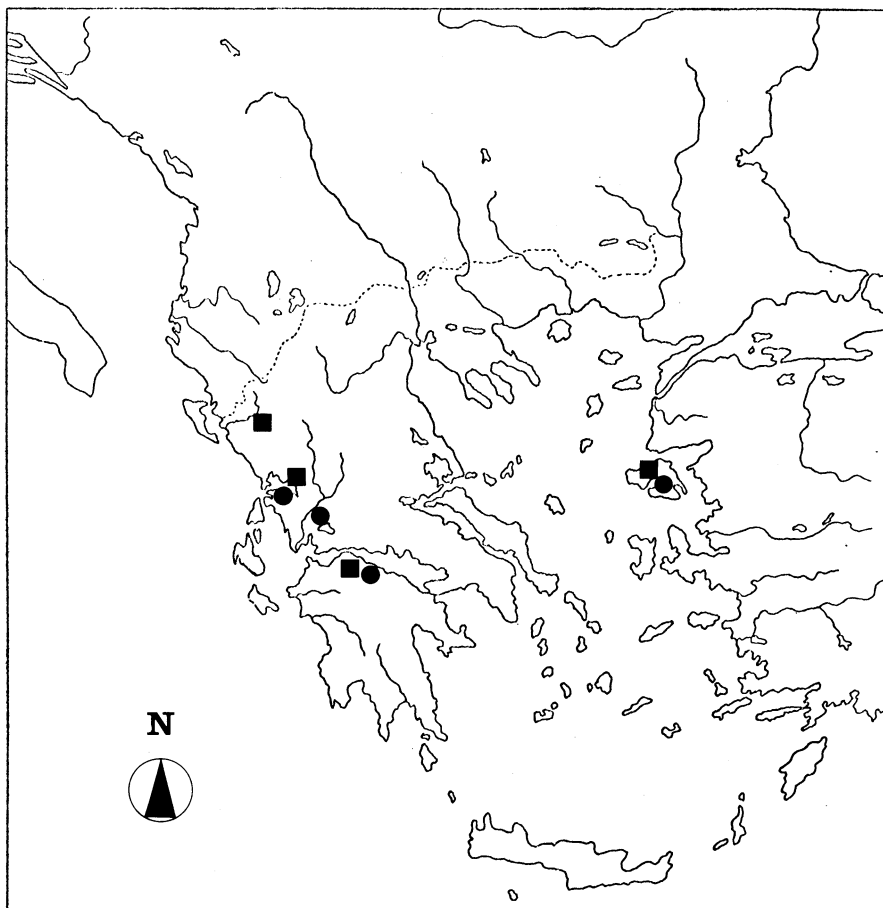


Fig. 11. Distribution of *Microparasellus hellenicus* Argano & Pesce (squares) and *Microcharon latus prespensis* Karaman (circles) in Greece.

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РЕЗИМЕ

**СТИГОБИОЛОШКИ ПРОУЧУВАЊА НА ПОДЗЕМНИТЕ ВОДИ ОД ОСТРОВОТ
ЛЕСБОС (ГРЦИЈА) И ОПИС НА *Stygonitocrella petkovskii* n. sp.
(Crustacea Copepoda: Ameiridae)**

Ѓузене Л. Пеше

За време на фаунистичките истражувања во летото 1982 година во подземните води (бунари) на островот Лесбос, Грција, најдена е интересна стигофауна која ги населува пресните и бракичните води на бунарите од овој остров (фиг. 1).

Меѓу крустаците најзначајни стигобионти се *Diacyclops hypnicola* од циклопидните копеподи, потоа *Nitocrella rhodiensis*, *Nitocrella slovenica*, *Nitocrella maggii*, *Stygonitocrella petkovskii* n. sp. и *Elaphoidella silverii* од харпактикоидните копеподи, *Niphargus orcinus* и *Salentinella angelieri* од амфиподите и *Microcharon latus prespensis* и *Microparasellus hellenicus* од изоподите микропаразити.

Stygonitocrella petkovskii n. sp. (фиг. 2–8) се покажува како најблизок сродник на *St. colchica* (Borutzky et Mikhailova) од пештерните води на Западна Грузија (СССР) заради сличната сегментација и орнаментика на р. 2 – р. 4 и орнаментиката на базиендоподитот и егзоподитот р. 5. Од грузискиот вид како и од сите други видови на родот новиот вид се одликува по тоа што нема внатрешна четинка на средното членче од егзоподитот р. 3, што има краток ендоподит на р. 4, понатака има друга форма на р. 5, на фуркалните ветки и аналното капаче.

Циклопоидните и харпактикоидните копеподи, остракодите, изоподите микропаразелиди и амфиподите се доста често застапени групи организми и претставуваат околу 65% од целокупната фауна; олигохетите, изоподите азелиди и лимнохалакарите се бедно претставени и сочинуваат заедно земени само 15% од целокупната фауна.

Отсуството на вистинските стигобионти сред некои групи како што се изоподите азелиди, хидрахелите, гастроподите и амфиподите од родовите *Bogidiella*, *Hadzia* и *Ingolfiella*, кои се широко распространети во континенталниот дел на Грција, се една очита појава сред стигофауната на Лесбос.

Од зоогеографска гледна точка стигофауната на Лесбос се покажува во најголем дел како палеарктичка или ендемична, со мал број на видови од источно или трансадриатичко потекло.

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