ЦРНОГОРСКА АКАДЕМИЈА НАУКА И УМЈЕТНОСТИ
ГЛАСНИК ОДЈЕЉЕЊА ПРИРОДНИХ НАУКА, 15, 2003.
ЧЕРНОГОРСКАЯ АКАДЕМИЯ НАУК И ИСКУССТВ
ГЛАСНИК ОТДЕЛЕНИЯ ЕСТЕСТВЕННЫХ НАУК, 15, 2003.
THE MONTENEGRIN ACADEMY OF SCIENCES AND ARTS
GLASNIK OF THE SECTION OF NATURAL SCIENCES, 15, 2003.
UDK 595.371

Gordan S. Karaman *

NEW DATA ON SOME GAMMARIDEAN AMPHIPODS (AMPHIPODA, GAMMARIDEA) FROM PALEARCTIC

(Contribution to the Knowledge of the Amphipoda 245)

A b s t r a c t

New localities of various interesting species of freshwater and marine Gammaridean Amphipoda (Crustacea) from various parts of Palearctic region are given, and the remarks on their taxonomic characteristics and position are discussed.

Key words: taxonomy, distribution, Amphipoda, freshwater, sea, Palearctic.

*Gordan S. Karaman, Montenegrin academy of sciences and arts, 81000 Podgorica, Serbia & Montenegro; E-mail karaman@cg.yu

NOVI PODACI O NEKIM GAMARIDNIM AMFIPODIMA (AMPHIPODA, GAMMARIDEA) PALEARKTIKA

I z v o d

Prezentirani su novi podaci o različitim interesantnim slatkovodnim i morskim Gamaridnim amfipodima (Amphipoda Gammaridea) iz različitih lokaliteta Palearktika. Razmatrane su neke taksonomske odlike i sistematski položaj pojedinih vrsta.

Ključne riječi: taksonomija, rasprostranjenje, Amphipoda, slatke vode, more, Palearktik.

INTRODUCTION

During our studies of material of Gammaridean Amphipoda from various sources, we have been determinate numerous different taxa of many genera. But, often, various localities of determinate species have been never published, often because of the limited size of the manuscripts acceptable for each journal (KARAMAN & PINKSTER, 1977, 1987, etc.). The recent studies of biodiversity, distribution of single taxa in each country and zoogeographical studies, put in evidence the value and importance of all published data of each taxon.

For this reason we decided to publish numerous new data of our present and previous determinations of many Gammaridean Amphipoda from Palearctic, hoping that it can be useful for further various studies on distribution and zoogeography. The names and data are copied from the etiquettes directly, with our eventual interpretations.

TAXONOMIC PART

Family Crangonyctidae

SYNURELLA AMBULANS (F. Müller, 1846)

Gammarus ambulans F. Müller 1846: 296, figs. A-C;
Synurella ambulans Ruffo 1974: 390.
Synurella ambulans ambulans G. Karaman 1974: 86, figs. 1-4.

MATERIAL EXAMINED:- vill. Bolu, Abant Golü Lake, 1450 m. a.s.l., Turkey 19.7.1973 (leg. M. & G. Osella), 7 exp.;
- Abant Gölü Lake, 8.6.1949, 5 exp. (? leg. Kosswig);
- Bafa Gölü Lake, 11.6.1970, 1 juv. female (leg. Argano, Boitani, Cottarelli);
- Sinop (Black Sea coast region), 1997, 3 exp. (leg. Mehmet Akbulut) (was with *Niph. valachicus*).

REMARKS. This is one semi subterranean species, and all our specimens belong to the epigean populations. RUFFO (1974) mentioned it already from Abant Lake and Sinop, as well as from Beysehir Lake and Kizilcadag (Antalya). The taxonomical problem of various subspecies or forms of *Synurella ambulans* complex [forma *subterranea* S. Karaman 1929; forma *tenebrarum* (Wrzesniowski 1888), *rafalskii* Skalski 1983, etc.] is still open. It seems that some of them can be ecological forms living in different ecological conditions, but only the breeding experiments can resolve this problem.

KONOPACKA and PLAZEWIXZ-PASZKOWYCZ (2001) studied the life history of *S. ambulans* in Poland, and they concluded that life-history of *S. ambulans* belongs to iteroparous (univoltine) annual type (sensu SAINTE-MARIE, 1991), although they have not resolve the taxonomical position of various forms or taxa of genus *Synurella* existing in Poland.

S. ambulans settled major part of Europe except its western and northern part, coming also in Asia Minor and adjacent region. But genus *Synurella* is distributed from central Europe till eastern part of Asia, and some species are known also from northwestern part of North America, although this genus is in N. America replaced mainly with *Crangonyx* complex of species.

SYNURELLA OSELLAI Ruffo, 1974

Synurella osellai Ruffo 1974: 391, figs. 1-5.

MATERIAL EXAMINED: -Tirebolü, Giresun, Turkey, 12.8.1959, 8 exp. (?leg. Kosswig).

REMARKS. RUFFO described (1974) this species from the same locality. The very sharp, almost excavated epimeral plates 1-3, are very characteristic for this species. Eyes developed, of irregular shape. This species is known only from Turkey, probably of Tertiary origin.

Family Gammaridae

ECHINOGAMMARUS PLATVOETI Pinkster, 1993

Echinogammarus platvoeti Pinkster 1993:123, fig. 53.

MATERIAL EXAMINED:- Crete Island, Aghios Nikolaos, source, Greece, 14.7.1974, 10 exp. (leg. Argano).

REMARKS: Locus typicus of this species is Crete Island, S. of Aghios Nicolaos, in brackish well. My material in hands was collected from the same region of Crete, and mainly agree with description and figures of PINKSTER (1993), with some remarks.

Metasomal segments smooth dorsally, bearing a few short dorso-posterior marginal setae only.

Antenna 2 in males with calceola; peduncle of antennae 1-2 with longer ventral margin. Coxae 1-4 with scarce short marginal ventro-lateral setae only.

Segment 6 of gnathopod 1 is remarkably smaller than that of gnathopod 2. Dactyl of gnathopod 1 not reaching posterior margin of segment 6. Posterior setae on pereopod 3 are straight and slightly longer than diameter of articles themselves. Epimeral plates with 1-2 subventral spines each, accompanied by numerous setae.

PINKSTER mentioned (1993) the same locality also for the species *Echinogammarus kretensis* Pinkster, 1993 [Crete Island, brackish upwelling, S. of Ag. Nikolaos, at sea level], but this species distinctly differs from *Echinogammarus platvoeti* by constant absence of calceola on flagellum of antenna 2 in males, by longer pilosity of pereopods and epimeral plates, etc.

One another brackish and freshwater species, *E. veneris* Heller 1865, is also very close to *E. platvoeti*, but differs from later mainly by subequal size of gnathopods 1-2 (segment 6).

GAMMARUS AEQUICAUDA (Martynov, 1931)

Carinogammarus aequicauda Martynov 1931: 593, figs. 28, 29;

Gammarus aequicauda Karaman, G. 1982: 299, figs. 202, 203.

MATERIAL EXAMINED: - Asia Minor, plain of Efes (salt lakes), 1.7.1973 (leg. Gentili), 6 exp.;

- Lake Bafa, Turkey, 11.6.1970, 1 exp. (leg. Argano, Boitani, Cottarelli);
- Springs near Smyrna, Turkey, VIII 1900, 5 exp. (leg. Steindacher);
- Smyrna, Turkey, May 1907, 4 exp. leg?

REMARKS. This species appears usually in the brackish waters. The examined specimens agree with the diagnosis and known characters of this taxon.

GAMMARUS AGRARIUS G. Karaman, 1973

Gammarus monspeliensis agrarius G. Karaman 1973A: 19, figs. 10-12;

Gammarus agrarius Karaman & Pinkster 1977: 65, fig. 26.

MATERIAL EXAMINED: - Adana, Pozant river, Turkey, 19.6.1970, 10 exp. (leg. Argano, Boitani, Cottarelli).

REMARKS. This species has been described from Asia Minor (Dinar Karakugu Pinarbasi, as type locality, and from other two localities (Ilgin near Kaplica, and Nigde). The specimens from Adana agree with all taxonomic characters known of this taxon, including very pointed epimeral plates and long inner ramus of uropod 3.

GAMMARUS ARDUUS G. Karaman, 1975

Gammarus arduus G. Karaman 1975a: 312, figs. 1-3; Karaman & Pinkster 1977: 26, fig. 10.

MATERIAL EXAMINED:- Kücük-Cekmece (W. of Istanbul, Turkey), 24.4.1938, 14 exp. (leg. Kosswig) (= *Rivulogammarus puliciformis* S. Karaman, in lit.).

REMARKS: The specimens of this species from Kucuk-Cekmece agree with specimens from type locality (Malkara, Tekirdag, N. of Marmara Sea, Turkey). Posterior setae on pereopod 3 in males are long, straight or weakly recurved. Inner face of segment 2 in pereopod 7 in males with single facial setae. Epimeral plates moderately pointed and produced.

GAMMARUS BALCANICUS Schäferna, 1922

Gammarus balcanicus Schäferna 1922: 3, text-figs. 1-2, pl. fig. 7; Karaman, G. 1977: 47, figs. 1-7; Karaman & Pinkster 1987: 211, figs. 1-3.

MATERIAL EXAMINED: TURKEY:- Kurugöl near Mucur (Kirsehir prov.), 1000 m. a.s.l., 12.7.1973, many exp. (was mixed with G. abscisus) (leg. M. & G. Osella);

- Cankiri village, Ilgaz reg., 1000 m. a.s.l., 12.7.1973, many exp. (leg. G. Osella);
- Cankiri village, Ilgaz reg., 1200 m. a.s.l., 13.7.1973, many exp. (leg. G. Osella);
- Ankara, Kirikkale Coruhorü Denesi, 23.6.1970, 12 exp. (leg. Argano, Boitani, Cottarelli);
- Erzurum village, Palandoken, 2400 m. a.s.l., 8.8.1970, 19 exp. (leg. V. Sbordoni);
- Erzurum village, Kopdagi Gecidi, 2300 m. a.s.l., 11.7.1971, 10 exp. (leg. A. Vigna-Taglianti);
- Kastamonu village, Balli Dag (Daday) 1600-1900 m. a.s.l., 31.5.1969, 5 exp. (leg. Brignoli);
- Kastamonu, vicinity, 1000 m. a.s.l., 5.7.1972, 12 exp. (leg. G. Osella);
- Kastamonu, Balli Dag, 1320 m. a.s.l., 31.5.1969, 1 female (leg. P. Brignoli);
- Uraganaz-gecidi, Balli Dag (Kastamonu) 1350 m. a.s.l., 31.5.1969, 6 exp. (leg. G. Osella);
- Van, 18.9.1970, 14 exp. (leg.? Kokatas);
- Macka, Trabzon, 700 m. a.s.l., 13.7.1971, 10 exp. (leg. G. Osella);
- Mugba Seki, river Kocacay, 13.6.1970, 10 exp. (leg. Argano, Boitani, Cottarelli);
- Isikli Lake (Givril), 29.5.1970, 3 exp. (leg.?);
- Sivas-Yazyurdu, 1820 m. a.s.l., spring, 5.6.1971, many exp. (leg. Argano, Boitani, Cottarelli);
- Iznik, torrent towards the sea, 3 km from Istanbul Kapu, 6.6.1959, 3 exp. (leg. W.T.);
- Torrent 2 km from Iznik (Istanbul Kapu), 12.12.1958, 3 exp. (leg.?);
- Geltikcibeli, 1250 m. a.s.l., village Burdur, 7.7.1973, 12 exp. (leg. M. & G. Osella);
- Eastern side of Erdschias Dagh, 3.6.1902, 10 exp. (leg.?) (= paratypes of *Gamm. balc. Orientalis* S. Kar.);
- Ulu Kislar, June 1938, 3 exp. (leg.?);
- Kurna Koy on the side of cave entrance over Burdur (date?) (leg.?);
- Ordu village, Gürgentipe Gecidi, 8.6.1969, 10 exp. mixed with *G. komareki* (leg. Cottarelli);
- village Corum Mecitorü, 5.6.1969, 14 exp. mixed with *G. komareki* (leg. Cottarelli);

- village Sinop, Draganas Gecidi, 1.6.1969, 20 exp. mixed with *G. komareki* (leg. Cottarelli);
- Derbend, 2100 m. a.s.l., E. part of Erdschias Dagh, date?, 23 exp. (leg.?) (was determinate by Stanko Karaman sub *Rivulogammarus orientalis*);
- Eskisehir, Bozüjük, 15 exp. mixed with *Gammarus pulex pulex* and *G. anatoliensis*, 17.8.1967 (leg. Brignoli);
- Acigöl- Burdargöl eminori, near salt lakes, 6/7 July 1973, 10 exp. (leg. Gentili);
- Yeniceköy, Ilgaz, Turkey, 15.6.1949, 6 exp. (leg.?);
- torrent towards Kara Golü, Karasu, date? 13 exp. (leg. ?Kosswig).

REMARKS. *Gammarus balcanicus* is one very plastic and variable species still in the process of segregation and divergence, forming numerous, mainly ecological local forms in various water streams as well as in the same water stream (KARAMAN, G., 1977). We can suppose that maybe some of these forms are developing in the different seasons of the year. On the other hand, only the genetic investigations and breeding experiments will show exact taxonomical validity of these populations and forms.

GAMMARUS BIRSTEINI Karaman & Pinkster, 1977

Rivulogammarus brachyurus Birstein 1935: 293, figs. 1-9; Karaman, G. 1975: 303, figs. IV-VII (= nomen preocc.);

Gammarus birsteini, nom. nov. Karaman & Pinkster 1977: 75, fig. 31.

MATERIAL EXAMINED:- Rize village, Kalkandere, Turkey, 14.6. 1969, 2 exp. (leg. Cottarelli).

REMARKS. Inner ramus of uropod 3 shorter than half of outer ramus. Inner face of segment 2 in pereopods 5-7 without inner facial setae.

GAMMARUS FOSSARUM Koch, 1836

Gammarus fossarum Koch, in Panzer, 1836: 2; Karaman & Pinkster 1977: 50, figs. 19-20.

MATERIAL EXAMINED: TURKEY: Torrent 2 km from Iznik (Istanbul Kapu), 12.12.1958, 3 exp. (leg.?);

- A. Hisar, March 1938, 5 exp. (leg.?);
- Istanbul, 19.7.1971, 4 exp. (leg. G. Osella);
- Hopa, vicinity, 19.6.1969, 7 exp. (leg. G. Osella);
- village Artvin, vicinity of Hopa, 19.6.1969, 3 exp. (leg. Cottarelli) cf.!
- Turkey, Jesilky, date?, 8 exp. cf. (leg.?).

REMARKS. The specimens from Asia Minor agree mainly with these from Europe. But, *G. fossarum* is very variable species, and the specimens from Asia Minor must be reexamined based on much more numerous localities and specimens, to establish their real taxonomic status and morphological variability.

GAMMARUS KISCHINEFFENSIS Schellenberg, 1937

Gammarus (Rivulogammarus) kischineffensis Schellenberg 1937: 508; Karaman & Pinkster 1977: 45, figs. 16 H-J, 17.

MATERIAL EXAMINED: Romania, July 1928, 5 exp. (no detailed locality) (leg. Hrabe);
- Kapou (= Kapi) (on E. of Silvan), Turkey, sulfuric spring, 16.9.1956, 20 exp. (leg. K. Lindberg);
- Bitlis region, Risatliya, 1800 m. a.s.l., Turkey, 8.6.1971, 13 exp. (leg. Argano, Boitani, Cottarelli);
- Erzurum, vicinity 30 km, Turkey, 1000 m. a.s.l., 9.7.1971, 12 exp. (leg. G. Osella);
- Askale, 1800 m. a.s.l., Erzurum, Turkey, 10.7.1971, 9 exp. (leg. G. Osella).

REMARKS. This species is often confused with *Gammarus balcanicus*, although *G. kischineffensis* differs from G. balcanicus by presence of several plumose setae along outer margin of outer ramus in uropod 3 in males, and by some other characters.

GAMMARUS KOMAREKI Schäferna, 1922

Gammarus komareki Schäferna 1922: 21, figs. 8-9; 10 m1, m2; tab. 1, 8, 8a1, 2, 8p1, 2; Karaman & Pinkster 1977: 81, fig. 33;

Gammarus komareki komareki G. Karaman 1969: 35, figs. 1-20.

MATERIAL EXAMINED: - village Zonguldak, Kapouz cave, Turkey, 7.7. 1968, 3 exp. (leg. Sbordoni);
- Viladereb, (Moul-Savalan near Ardebil Azerbaidjan), Iran, 24.7.1947,

12 exp. (leg. K. Lindberg);
- Moghan (Mechkel reg., Khorassan), Lake, Iran, 19.3.1947, 14 exp. (leg. K. Lindberg).

REMARKS: This species has been found in mixed population with *Gammarus balcanicus* and *Gammarus frater* Kar. & Pink. 1977. The specimens from Iran mainly agree with all characters of *G. komareki*, although new material is necessary to prove this determination.

GAMMARUS LACUSTRIS Sars, 1863

Gammarus lacustris Sars 1863: 207; Karaman & Pinkster 1977: 32, fig. 12 A-D.

MATERIAL EXAMINED: - Abant, Turkey, 8.6.1949, 3 exp. (?leg. Kosswig); Ibid., 1950, 4 exp. (leg.?);
- vill. Bolu, Abant Lake, Turkey, 29.5.1969, 2 exp. (leg. Cottarelli);
- village Artvin, Lake Yalnizcam gecidi, 2650 m. a.s.l., Turkey, 16.6. 1969, 3 exp. (leg. Cottarelli);
- village Artvin, Borcka, Turkey, 18.6.1969, 5 exp. (leg. Cottarelli); ibid., 7.7. 1971, 5 exp. (leg. A. Vigna-Taglianti);
- Emir Lake, Emirgam, Turkey, March 1938, 3 exp (leg.?) (*Rivolugammarus pulex emirgami*, Stanko Karaman, in lit.);
- Emirgan, Turkey, March 1938, 2 females (leg.?);
- Van, source Soutli, Turkey, 23.9.1956, 13 exp. (leg. K. Lindberg);
- Van, spring Madir, Turkey, 23.9.1957, many exp. (leg. K. Lindberg);
- Nimzoud-Dagh (near Tatvan), crater lake, Turkey. 27.9.1957, many exp. (leg. K. Lindberg);
- Nimrud Lake (Iraq?), 1914, 10 exp. (leg. Dr. V. Pirtschman);
- Bend-Amir, Lake II., coast, Afghanistan, 2.8.1957, 6 exp. (leg. K. Lindberg);
- Afghanistan, Zebak, Marecage, 16.7.1959, 10 exp. (leg. K. Lindberg);
- Afghanistan, Zebak (Badakhchan), Lake I., 16.7.1959, 4 exp. (leg. K. Lindberg).

REMARKS: The value of taxonomic characters of this species is very complicated because of the large variability of certain taxonomic characters (pereopods 5-7, uropod 3, antennae). Because of events during the glacial and interglacial periods in Pleistocene and later, exist numerous local populations isolated before, during and after the glacial period in numerous mountainous lakes. By this way, the single

isolated populations over very large area of Eurasia and N. America are becoming its different evolution, indicated that probably in the future all these populations will be change into a different taxa. At the moment, it is very difficult to establish the degree of isolation of each mountain population. Through the genetic and biochemical investigations should be possible to resolve the problem of taxonomical status of these isolated populations. At the other side, some other species show the convergent taxonomic characters with this species, especially the species from eastern Asia and N. America.

GAMMARUS PULEX PULEX (Linnaeus, 1758)

Cancer pulex (part.) Linnaeus 1758: 633;

Gammarus pulex pulex Karaman & Pinkster 1977: 8, figs. 1, 2, 3C-G, 4, 5.

MATERIAL EXAMINED: TURKEY:- Armutlu, 2.7.1944, 4 exp. (leg.?);

– Sapanca, 31.8.1959, 8 exp. (was with *Gammarus* cf. *Balcanicus*) (leg.?);

- Iznik Lake, tributary near Iznik, 10 m von Lake, on vegetation, 12.12.1958, 14 exp. (leg.?);

- Iznik Golu Lake, 13.6.1948, 10 exp. (leg.?);

- Iznik, brook near Yenischir Kapi at Lake, 19.4.1962, many exp. (leg. ?);

- Warm spring (24°C) between Akhisar and Marmara, 17.4.1962, 12 exp. (leg. Traut);

- Trabzon, June 1948, 2 exp. (leg. Kosswig);

- Suhr-Mar-i Inkaya Keny, August 1938, 5 exp. (leg.?);

- Konya vill., Hadim, cave Su-Ciktigi, 25.4.1973, 6 exp. (leg. Aquoletti);

- Kucuk-Kuyu, vill. Edirne, 29.6.1973, 9 exp. (leg. G. Osella);

- Boz-Dag, in one chanel, 3.7.1973, 4 exp. (leg. Gentili);

- Boz-Dag, vill. Manisa, 900 m. a.s.l., 3.7.1973, 12 exp. (leg. M. & G. Osella);

- Eskisehir, Bozüjük, 15 exp., was mixed with *Gamm. Balcanicus*, 17.8.1967 (leg. Brignoli);

GERMANY: Ahrensburg near Hamburg, Germany, 6.5. 1969, many exp. (leg. Mladen Karaman);

- Small brook near Weslerbrock by Straelen, Niederheim, 7/8/1931, many exp. (leg.? Schellenberg);

GREECE: Vrondisi monastery, village Zaros, Creta island, Greece, fontain/spring in monastery, 19.4.2000, 10 exp. (leg. Gordan & Bozana Karaman);

- spring on the road towards Mesala, Greece, 1955, 1 exp. (leg. A. Bertrand).

REMARKS. Further studies on other samples from various parts of Asia Minor are necessary to show if this species is single taxon or composed of more taxa, like these in Europe and North Africa, where very thinly, but distinct taxonomical characters separate various subspecies (*araurensis* Pink. 1972, *cognominis* Kar. & Pink. 1977, *gallicus* (S. Kar. 1931, *polonensis* Kar. & Pink. 1977). The very thick flagellum of antenna 2 in males as good taxonomic character of this taxon, is sometimes present in some other Asiatic species also.

Family Melitidae

MELITA PALMATA (Montagui, 1804)

Cancer palmatus Montagu 1804: 69, pl. 6, fig. 4;

Melita palmata G. Karaman 1982: 340, figs. 229-230.

MATERIAL EXAMINED: - Girezun, Turkey, 1970, 2 exp. (leg. Argano, Boitani, Cottarelli).

Family Niphargidae

NIPHARGUS VALACHICUS Dobr. Man., 1933

Niphargus tatrensis valachicus Dobreanu & Manolache 1933: 104, figs. 2-4;

Niphargus valachicus G. Karaman 1998:10, figs. 1-4.

MATERIAL EXAMINED: - Sinop (Black Sea coast region), Turkey, 1997, 3 exp. (were intermixed with *Synurella ambulans ambulans*), (leg. Mehmet Akbulut).

REMARKS: This is old tertiary Pontocaspian element, described at first from Romania. Later, this species has been discovered over entire pontocaspian basin, from Serbia till Iran (G. KARAMAN, 1998). From the ecological point of view. *N. valachicus* is one very resistant species, robust and large, penetrating secondary from the subterranean towards

the epigean waters, in swam-springs or other semi epigean clean waters, often mixed with *Gammarus* species.

Family Talitridae

ORCHESTIA CAVIMANA Heller, 1865

Orchestia cavimana Heller 1865: 979, pl. 17; Karaman, G. 1970: 27, pl. 8; Bellan-Santini 1993: 742, fig. 508.

MATERIAL EXAMINED: - Sapanca, Adapazari, Turkey, 17.7.1972 (leg. Osella), 10 exp.; ibid., 19.7.1972, 11 exp. (leg. Osella);
- Terme Mibic Ormani, Turkey, June 1949, 3 exp. (1 male and 2 females) (leg. ?Kosswig);
- between Silifke und Korigos, at margins of small freshwater lake, Turkey, 26.3.1962, 8 exp. (leg. Traut);
- Terme Mibic Ormani, Turkey, June 1949, 3 exp., (leg. ?Kosswig);
- near Narlica, Turkey, 20.1.1959, 14 exp. (leg. Kosswig);
- Volvi Lake, southern coast, Greece, 24.4.1962, 4 exp. (were with *Obesogammarus spandli*) (leg. ?);
- Tartus (=Tartous), vicinity (coast of Mediterranean Sea), Syria, 25.6.1971, 2 exp. (leg. A. Vigna-Taglianti).

REMARKS. This species appears in brackish or completely fresh waters, never in the pure marine salt waters, penetrating often along the rivers very deeply in the continent (along Danube river till Beograd; along Adige river till Lago di Garda Lake in northern Italy, etc.).

ORCHESTIA MEDITERRANEA Costa, 1853

Orchestia mediterranea A. Costa 1853: 171; Karaman, G. 1970: 18, pl. 4, figs. 32-35; pl. 5; pl. 6, fig. 43; Bellan Santini 1993: 746, fig. 512.

MATERIAL EXAMINED: Mediterranean coast of Turkey, data?, 8 exp. (Lindberg leg.);

REMARKS: Brackish and salt water coastal species, often in supralittoral under stones and detritus.

ORCHESTIA MONTAGUI Audouin, 1826

Orchestia montagui Audouin 1826: 93; Karaman, G. 1970: 6, pls. 1-2; Bellan Santini 1993: 749, fig. 514.

MATERIAL EXAMINED: Ayralik (vill. Balisehir), Turkey, 30.6.1973, 8 exp (leg. M. & G. Osella);
- Candak-Kale, Turkey, 29.6.1973, 7 exp. (leg. Gentili).

REMARKS. Brackish and salt water coastal species, often in supralittoral.

ORCHESTIA STEPHENSENI Cecchini, 1928

Orchestia stephenseni Cecchini 1928: 7, pl. 2, fig. 3; Karaman, G. 1973: 138, figs. 1-3; Bellan Santini 1993: 752, fig. 515.

MATERIAL EXAMINED: - Zeyting dag, vill. Midilli, Turkey, 30.6.1973, 2 exp. (leg. M. &. G. Osella);
- Lake Bafa, 11.6.1970,, 5 exp. (leg. Argano, Boitani, Cottarelli).

PLATORCHESTIA PLATENSIS (Kroyer, 1845)

Orchestia platensis Kroyer 1845: 304, pl. 2, fig. 2; Karaman, G. 1970: 12, pl. 3; pl. 4, figs. 35-31;

Platorchestia platensis Bousfield and Quesnel 1990: 45.

MATERIAL EXAMINED:- Samsun, vicinity of the town, coast of the sea, Turkey, 2.6.1969, 5 exp. (leg. Brignoli & Osella).

REMARKS. Coastal marine species, often in the vicinity of brackish waters, or in supralittoral.

TALITRUS SALTATOR (Montagu, 1808)

Gammarus (Cancer) saltator Montagu 1808: 94;

Talitrus saltator Chevreux & Fage 1925: 271, fig. 282; Bellan Santini 1993a: 760, fig. 520.

MATERIAL EXAMINED:- Samsun, vicinity of town at the sea coast, Turkey, 2.6.1969, 3 exp. (leg. Brignoli & Osella).

REMARKS. This species appear in the coastal zone of the sea, usually in supralittoral, under stones and detritus.

Acknowledgments. I am thankful to numerous scientists and collectors who collected various material of Amphipoda during their excursions over entire Palearctic during many years, and put them at disposition for the scientific studies.

CONCLUSIONS

Numerous new data of 21 species of marine and freshwater epigean and subterranean taxa, belonging to 8 genera and 5 families, respectively, from Palearctic, are presented, and some taxonomical problems regarding some of them are discussed.

LITERATURA

AUDOUIN, V. 1826. Explication sommaire des planches Crustaces de l Egypte et de la Syrie, Jules-Cesar Savigny, membre de l Institut, offrant un expose des caracteres naturels des genres, avec la distinction des especes. Description de l Egypte, Hist. Naturelle, 1 (4): 77-98.

BELLAN-SANTINI, D. 1993. Genus Orchestia, Talitridae, in: The Amphipoda of the Mediterranean (Ruffo, S. edit.), Part 3. Gammaridea (Melphidippidae to Talitridae). -Memoires de l'Ist. Oceanographique Fond. Albert Ier de Monaco, 13: 742-753.

BELLAN-SANTINI, D. 1993a. Genus Talitrus, Talitridae, in: The Amphipoda of the Mediterranean (Ruffo, S. edit.), Part 3, Gammaridea (Melphidippidae to Talitridae). -Memoires de l'Ist. Oceanographique Fond. Albert Ier de Monaco, 13: 760 (1 page).

BIRSTEIN, J. A. 1935. Zwei neue Gammariden aus Westasien. - Zool. Anzeiger 109 (11-12): 293-296.

BOUSFIELD, E., QUESNEL, V. 1990. The Beach Fleas Sandhoppers (Amphipoda: Talitridae) of Trinidad. - Living World Journal Trinidad & Tobago Fleid Naturalist Club, 1989-1990, pp. 43-45.

CECCHINI, C. 1928. Contributo alla conoscenza degli Anfipodi. - R. Comit. Talass. Italiano Memoria, Venezia, 142: 1-10.

CHEVREUX, E., FAGE, L. 1925. Amphipodes.- Faune de France, 9: 1- 488, pls. 1-488.

COSTA, A. 1853. Relazione sulla memoria del Dottor Achille Cista, di ricerche sui crostacei amphipodi del regno di Napoli. - Rendiconto della Societp Reale Borbonica, Accademia della Scienze, new series, 2: 167-178.

DOBREANU, E., MANOLACHE, C. 1933. Beitrag zur Kenntnis der Amphipoden Rumäniens. -Notationes Biologicae, Bucarest, 1 (3): 103-108.

HELLER, C. 1865. Kleine Beiträge zur Kenntnis der Süsswasser-Amphipoden. - Verh. d.k.k. zoolog. botan. Gesell. Wien, 15: 979-984, pl. 17.

KARAMAN, G. 1969. XVII. Beitrag zur Kenntnis der Amphipoden. Bemerkungen über Gammarus komareki Schäf., seine Taxonomie und Verbreitung. - Fragmenta Balcanica, Musei Macedonici Scientiarum Naturalium, Skopje, 7 (5/ 163): 33-44.

KARAMAN, G. 1970. XXIX. Beitrag zur Kenntnis der Amphipoden. Genus Orchestia (Talitridae) in Adriatischem Meer. - Glasnik Republ. zavoda za zastitu prirode - Prirodnjackog muzeja u Titogradu, 3: 5-36.

KARAMAN, G. 1973. XLV. Contribution to the Knowledge of the Amphipoda. Orchestia stephenseni Cecchini 1928, one new Species for Adriatic Fauna (Gammaridea: Talitridae). - Fragmenta Balcanica, Musei Macedonici Scientiarum Naturalium, Skopje, 9 (14/214): 137-145.

KARAMAN, G. 1973A. 53. Contribution to the Knowledge of the Amphipoda. Some new or very interesting Gammarus Species from southern Europe and Asia Minor.- Poljoprivreda i sumarstvo, Titograd, 19 (3): 1-42.

KARAMAN, G. 1974. 58. Contribution to the Knowledge of the Amphipoda. Genus Synurella Wrzes. in Yugoslavia with remarks on its all World known Species, their synonymy, bibliography and distribution (fam. Gammaridae).- Poljoprivreda i sumarstvo, Titograd, 20 (2-3): 83-133.

KARAMAN, G. 1975. Two very interesting Species of Gammarus (Fam. Gammaridae) from Euro-Asia, Gammarus bosniacus Schäf. 1922 and G. brachyurus Birst. 1935 (55. Contribution to the Knowledge of the Amphipoda). - Boll. Museo Civico Storia Naturale Verona, 1: 295-309 (1974).

KARAMAN, G. 1975A. Gammarus species from Asia Minor (Fam. Gammaridae) (56. Contribution to the Knowledge of the

Amphipoda). - Boll. Museo Civico Storia Naturale Verona, 1: 311-343 (1974).

KARAMAN, G. 1977. Contribution to the Knowledge of the Amphipoda 90. Revision of Gammarus balcanicus Schäf. 1922 in Yugoslavia (Fam. Gammaridae). - Poljoprivreda i sumarstvo, Titograd, 23 (4): 37-60.

KARAMAN, G., PINKSTER, S. 1977. Freshwater Gammarus Species from Europe, North Africa and adjacent regions of Asia (Crustacea-Amphipoda). Part.I. Gammarus pulex-group and related Species. - Bijdragen tot de Dierkunde, 47 (1): 1-97.

KARAMAN, G. 1982. Family Gammaridae (sensu lato), in: The Amphipoda of the Mediterranean (Ruffo, S. edit.), Part 1: Gammaridea (Acanthonotozomatidae to Gammaridae). -Memoires de l'Ist. Ocean-ographique Fond. Albert I^{er} de Monaco, 13: 245-364.

KARAMAN, G., PINKSTER, S. 1987. Freshwater Gammarus species from Europe, North Africa and adjacent regions of Asia (Crustacea-Amphipoda). Part.III. Gammarus balcanicus-Group and related species.- Bijdragen tot de Dierkunde, 57 (2): 207-260.

KARAMAN, G. 1998. First discovery of the Family Niphargidae (Gammaridea) in Iran. (Contribution to the Knowledge of the Amphipoda 234).- Glasnik odjeljenja prirodnih nauka CANU, Podgorica, 12: 9-22.

KOCH, C.L. 1835. (In Panzer, 1836) Deutschlands Crustaceen, Myriapoden und Arachniden, Ein Beitrag zur deutschen Fauna. - G.A.W. Herrich-Schäfer, Regensburg 1835-40, 5 (1): 1-24.

KONOPACKA, A., PLAZEWIXZ-PASZKOWYCZ, M. 2001 Life history of Synurella ambulans (F. Muller, 1846) (Amphipoda, Crangonyctidae) from central Poland.- .-Pol. Arch. Hydrobiol. 47 (3-4): 597-605.

KROYER, H. 1845. Karcinologiske Bidrag. - Naturhistorisk Tidskrift (NS) 2, 1: 283-343, 403-638 (1844-1845).

LINNAEUS, C. 1758. Systema Naturae. Edition Decima, Tomus I: 1-824. Holmiae (Stockholm, Laurentii Salvii..., p. 633.

MARTYNOV, A. 1931. Zur Kenntnis der Amphipoden der Krim.- Zoologische Jahrbucher, Systematik, 60 (5-6): 573-606.

MONTAGU, George, 1804. Description of several Marine Animals found on the South Coast of Dev-onshire.- Trans. Linnean Soc. London, 7: 61-85. (1802).

MONTAGU, G. 1808. Description of several marine animals found on the south coast of Devonshire.- Trans. Linn. Soc. London, 9: 81-114.

MÜLLER, FR. 1846. über Gammarus ambulans, neue Art. - Archiv für Naturgeschichte, 12 (1): 296-300.

PINKSTER, S. 1993. A revision of the genus Echinogammarus Stebbing, 1899 with some notes on related genera (Crustacea, Amphipoda).- Memorie Museo civico di Storia Naturale (II. serie), sezione Scienze della vita (A. Biologia), no. 10: 1-185.

RUFFO, S. 1974. Studi sui Crostacei anfipodi LXXV. Il genere Synurella Wrzesn. in Anatolia, descrizione di una nuova specie e considerazioni su Lyurella hyrcana Dersh. (Crustacea Amphipoda, Gammaridae). - Mem. Mus. Civ. St. Nat. Verona, 20: 389-404 (1972).

SAINTE-MARIE, B. 1991. A review of the reproductive bionomics of aquatic gammaridean amphipods: variation of life history traits with latitude, depth, salinity and superfamily. - Hydrobiologia, 223: 189-227.

SARS, G.O. 1863. Beretning om en i Sommeren 1862 foretagen zoologisk Reise i Christianias og Trondhjems Stifter. - Nyt Magazin Naturvidenskaberne, 12 (3): 193-252.

SCHÄFERNA, K. 1922. Amphipoda balcanica, with notes about other freshwater Amphipoda. - Vest. Kral. ceske Spol. Nauk, Praha, 2: 1-110.

SCHELLENBERG, A. 1937 Kritische Bemerkungen zur Systematik der Süsswassergammaridean. - Zoologische Jahrbucher, Abt. fur Systematik, Okologie u. Geographie der Tiere, 69 (5-6): 469-516.